

LEGISLATIVE ASSEMBLY OF THE NORTHERN TERRITORY

Sessional Committee on Environment and Sustainable Development

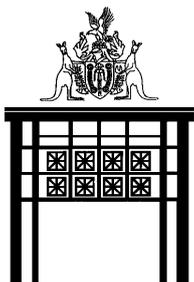
*Issues associated with the progressive entry
into the Northern Territory of cane toads*

Volume 3

HANSARD TRANSCRIPTS-PUBLIC HEARINGS

October 2003

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MEMBERS OF THE COMMITTEE

Membership of the Committee:

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Mr M Bonson, MLA

Mr S Dunham, MLA

Mr E McAdam, MLA

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TRANSCRIPT NO. 1

Borroloola Public Hearing

Tuesday 6 May 2003

PRESENT:

Committee: Ms Delia Lawrie, MLA (Chair)
Mr Matthew Bonson, MLA
Mr Stephen Dunham, MLA
Mr Elliot McAdam, MLA
Mr Gerry Wood, MLA

Secretariat: Mr Rick Gray
Ms Maria Viegas

Attended by: Mr Bill Baird
Mr Richard Baker
Mr Ross Browning
Ms Felicity Chapman
Mr Josh Coates
Mr Graeme Dingwall
Ms Thelma Douglas
Ms Jemima Miller
Ms Dinah Norman
Mr David Sidey

Note: *This transcript is a verbatim, edited proof of the proceedings.*

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- Mr SIDEY:** You don't, you definitely haven't seen them upstairs.
- We've got a two-storey house and they're confined to the bottom level. The green tree frogs live on the top level and they live on the lower level
- Mr BONSON:** The green tree frogs still going
- Mr SIDEY:** Yeah they're still going. It's quite noticeable the wildlife, the goannas and you know about the snakes
- Mr DUNHAM:** I don't know ... you seen many frillies around
- Mr SIDEY:** No I haven't actually. But you ordinary, you know there's goannas getting up about...you know
- There's definitely a population of green trees frogs still here.
- Mr WOOD:** Oh that's good to hear.
- Mr DUNHAM:** I noticed on the list that they're not that worried about them

-
- Mr SIDEY:** No. We've got a young dog and that's our biggest problem, how to teach him not to tackle these.
- Madam Chair:** How you been going about it?
- Mr DUNHAM:** Have you nailed one yet?
- Mr SIDEY:** No as soon as they bear if he survives it we'll be right, he won't touch it again. And Stan here tells me that once they get one nip
- Mr DUNHAM:** What sort of dog, a terrier sort of dog
- Mr SIDEY:** Oh he's a little terrier thing
- Mr DUNHAM:** He'll have to bite it.
- Mr SIDEY:** He's a rammer actually... He's only about this long and so high he's straight out bred to chase vermin on the barges so yeah he's going to be a cane toad problem. That would be my biggest concern of that, trying to raise a dog. The locals tell me you just douse them with milk.
- Mr DUNHAM:** The ones I saw, I've seen about 3 now, they just put a hose in their mouth
- Madam Chair:** Yeah that's what the vet says, just hose, flush it
- Richard what's your surname?
- Mr BAKER:** Baker
- [RECORDING FAILURE]
- RECORDING
RE-STARTS: 11:47:27
- Mr DINGWALL:** They're out on the islands
- Mr DUNHAM:** Yeah we've heard, We read that and apparently someone here has actually seen them swimming.
- Mr DINGWALL:** Yeah I quite often see them swimming around. Actually I was talking to Pete down at King Ash Bay on the weekend, there's not too many of them down there at the moment, they've just had flooding in that area and whether that's had something to do with it, that they reckon there's hardly any, hardly a cane toad there now and they go through the cane toad places
- Mr BAKER:** And that salt water must knock 'em around a bit too cause
- Mr DINGWALL:** They probably go out into the flat on the fresh to get em
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- Mr BAKER:** Later in the year when it gets drier and you get salt water right up through here, I don't see them on the creek... where they've swum across and they're just dead on the other side of the bank and there must be too much salt water and they come out the other side and sun burn them and that and killed them
- Mr DUNHAM:** Are they all heading one way?
- Mr BAKER:** Yes
- Mr DUNHAM:** So they're still heading north and west
- Mr BAKER:** Yes
- Mr BONSON:** Does anyone know why they might be doing that? I found that very interesting that they're going north-west and everyone sees them moving in that direction. No one has a theory?
- Mr WOOD:** More food
- Mr BAKER:** They must know where the water is too cause you don't see too many... I been in Elliot area a couple of weeks ago and they down as far as Hayfield Station and not in that Elliot area. You might get the odd one I think but ... not like this place
- Madam Chair:** We've got the recording working now, so you can say your name before you speak it helps Maria do her work.
- Mr DUNHAM:** So these creeks, there's only little what? Couple of meters? Four meters?
- Mr BAKER:** ... rivers but there's a low area.
- Mr DUNHAM:** So in 10 meters they could themselves ahead of the dry?
- Mr BAKER:** Yeah, I didn't actually see them in the water but on the banks when they came out the other side.
- Mr DUNHAM:** That's interesting.
- Mr BONSON:** There's biggest mobs or just
- Mr BONSON:** Later on in the year.
- Madam Chair:** So have you noticed, Graeme, any impact on your fishing tours, on business?
- Mr DINGWALL:** No, like I've been here for five years now and you used to see a few freshwater crocs down around Rocky Creek here, probably up to about four years ago but it's very rare to see
-

- one now. Have you been up the other side lately?
- Mr BAKER:** No
- Mr DINWALL:** Most of them are up the other side of the crossing. I haven't been up there for ages.
- Mr BAKER:** What I found there, like up the river there where there's big mob of freshies, freshwater crocodiles, and then you've got ranges, then a stretch probably 300 meters no freshies and then you've only got freshies again so that you can always guarantee that there's a saltwater crocodile there without a doubt, if there's a break in the freshies.
- Mr BONSON:** Brings up to the next question, well, how's the salties been coping? Have they been trying to eat the cane toads, they been dying, no one knows?
- Mr BAKER:** No no-one knows.
- Mr DINGWALL:** You haven't seen any floating or anything?
- Mr BAKER:** No
- Mr DINGWALL:** Plenty of them around.
- Mr WOOD:** Those dead cane toads, anything feed off those or they just basically rot?
- Mr BAKER:** They just rot there
- Mr McADAM:** Has anyone, sorry, has anyone asked you to gather those toads for scientific purposes to just determine whether in fact salt has an impact.
- Mr BAKER:** No
- Mr McADAM:** I don't know if it's relevant but I would have thought that you know someone may have said collect a few or you know for a sample of whatever to determine
- Mr DUNHAM:** Well, salt is toxic to them, I'm just wondering what level they could tolerate, I mean if you pour salt on them that'd kill them.
- Madam CHAIR:** Going back to the mine. What sort of work have you been doing to assess the impact? You say you've looked at the ratio of six to one?
- Mr BROWNING:** We haven't done anything specifically for cane toads, over there it's free mining, but we've been doing other studies and obviously assessment of the general biodiversity is important and you obviously note how many cane toads are there. And we've got the studies from 10 years ago that we

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- can do comparative studies I guess and you naturally do that when you're looking through the data. But we don't do it specifically for cane toads.
- Madam CHAIR:** And what's been the impact on the mine site with the cane toads, the nuisance factor or
- Mr BROWNING:** Yes, certainly an aesthetic factor and that's everywhere but as far as the day-to-day operations there's not a large impact that they're around
- Mr DUNHAM:** Richard, you say that at night how they camp under the lights, obviously they're after bugs, do you find in town that there's certain types of food they go for? We've been reading how they like dog tucker and they like bugs but they'll eat anything. Do you find that you can pick where they're going to be if they congregate in a certain area looking for food, here in Borrooloola?
- Mr BAKER:** Yes, under street lights.
- Mr DUNHAM:** Streetlights. So they're mostly after bugs?
- Mr BAKER:** Yes.
- Mr BONSON:** This is gonna sound like a silly question but we were told about this lavender bug in Katherine, that these cane toads have been eating them and then they're waking up in the morning and finding that these toads are dead from this lavender bug, its poisonous. You don't have that here?
- Mr BAKER:** No
- Mr DINGWALL:** What is a lavender bug?
- Mr WOOD** Stink bug we used to call them.
- Madam Chair:** Stink bug, stink beetle
- [inaudible]
- Mr BONSON:** So you haven't seen any of that here then, they've been eating those bugs and dying?
- Mr BAKER:** No
- Mr DUNHAM:** So when they've first come through people were pretty shocked about them eh when they first saw them?
- Mr BAKER:** Yes
- Mr DUNHAM:** Well we're going to have the same problem in Darwin and, I guess, around this table we know we're not going to be able to pull them up, you know, but we can talk to people about

things they can do like, for instance, looking after their dogs, telling the kids not to play them and things like that. So have you got any advice to us about what we should be saying to people about preparing themselves for the cane toads? Is it mainly the dog problems, that's the biggest thing, people's dogs'll will die?

Mr DINGWALL: Young pups. The things is I had one of my pups chewed on one and I rang the vet and he said just clean its mouth, wipe its mouth out, don't let it drink. He was spewing all the time. I was sitting under the mango tree having a few beers and watching him sort of thing. By about 11 o'clock at night he was starting to come good so I had a few more drinks to celebrate that. To cut a long story short, in the morning I was crook as a dog and he was as fit as anything.

Mr WOOD: I was told you put a hose in their mouth. He said not to give him a drink?

Mr DINGWALL: That was the vet that was here at the time, he said no, wipe their mouth out with a dry rag and don't let them drink.

Madam CHAIR: Maybe he was saying don't let them swallow.

Ms CHAPMAN: Swallow the poison

Ms Chair: Yes, so flushing

Mr McADAM: Are you sure he wasn't saying for you don't you drink?

Mr DINGWALL: I might have got that confused.

Madam Chair: I'm interested to hear that the impact we've heard already this year about the impact on food sources for people with the goannas going. Have you got anything you'd like to talk to us about that?

Ms CHAPMAN: I work for Mabunji, Felicity Chapman. I just spoke to a few of, as I was handing out some of the invitations, just asking them what they saw from the cane toad and people from Robinson River, Tony Jack, he reckons he can't get sugarbag honey anymore since it coincided with the time the cane toads came in, and in general people said there's no goannas and no snakes anymore. They can't get the same bush tucker as they did before. So that was the general consensus.

Mr WOOD: Honey. Little bees

Madam Chair: And how have they been handling that? What has been the response to that?

Ms CHAPMAN: Oh what can they do, eh? They're very disappointed about the sugarbags, firstly, the cane toads eating the bees. It's

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- not going to come back, is it?
- Mr WOOD:** But your sugar, the uhh honey basically up in the trees?
- Ms CHAPMAN:** I don't know. Ask these ladies. You know
- Ms DOUGLAS:** Up the tree because they fly everywhere, making flowers from the honey, this is why the cane toads will get them.
- Mr WOOD:** So when the bees are down for the low plants, they're getting eaten by the cane toads?
- Mr DUNHAM:** That's why the silly buggers bought them in to eat those little bugs. At least they work, hey?
- Ms CHAPMAN:** You'll get native bees on your skin
- Mr WOOD:** They're friendly
- Ms CHAPMAN:** They're a very friendly bee.
- Ms CHAIR:** So has there been any attempt to sort of breed the bees up high, or anything like that? Has there been any local response?
- [inaudible]
- Madam CHAIR:** What about goannas. Has the community sort of tried to keep goannas eggs safe and anything like that?
- Ms DOUGLAS:** This is how I would like to start from the beginning of the cane toad when they first came to Australia and when they came up to Borrooloola then we didn't know nothing about cane toad because its been a different things. It's not like an Australian frog, you know, the sand frog and also the tree frog. This is the one that been killing all our whats-a-name goanna, also blue tongue, bees. Every morning we used to go down to the river and see the fish everywhere at the banks dying. So we just won't be happy.
- Madam CHAIR:** Big fish? Little fish?
- MsDOUGLAS:** Yes, any fish, barra, bream, catfish. So they stop you know. And then after that I think they hunt the goanna away and also the blue tongue and, you know, we didn't know nothing about it and then we heard a story that they told us, I think umm, that they bought this cane toad to kill some beetles because of sugarcane and also the devils, you know used to eat them. And now they been spread all over the place, so that's been really bad for our local people, you know. That was really bad, and now we feel like getting fish now they're coming back.
- And I think that there is two kinds of cane toad. One is a

long face with umm marks spread down at the back that is poisonous. And other one is a round face. So that's I think is a normal one. So there is two kinds of cane toad. And you know. This is what umm, they can run faster than anything, you know. They not like a sand frog, they're not like the tree snake umm frog, this is different thing you know, they run from place to place and they more fast than that now they're half way through our waterway. So this is what's been happening with our bush tucker, and now they're nearly coming into Tennant Creek way too, you know seen few of them cane toads half way on the road when we went to the ceremony.

Mr McADAM: Near Dunmarra at that?

Ms DOUGLAS: Yes, they are everywhere.

Mr McADAM: Near Dunmarra and that Hayfield way

Ms DOUGLAS: Yes. We don't know how to stop, you know, but all our children you know they used to run with the salt and pour the salt on their backs and their you know, don't like salt. So this is what they used to kill the cane toads but they'll never kill them all. So this is what happened now, there's too much been coming in.

Ms MILLER: Too much here now.

Ms NORMAN: Yes

Madam CHAIR: What would you like to see happen? If anything can be done, what would you like to see happening about it?

Ms DOUGLAS: Well, how can you kill the cane toad when it's everywhere all over the place? Hundreds of 'em under the log, inside the hollow log. So how can you kill them all? Now they're spreading everywhere. So that is bad. And now we just give up, you know? We have just given up. If we could have think about this before when the cane toads start in Queensland way, or in Sydney, then we you know people should have stopped that. But now it's all over Australia.

Mr DUNHAM: Can't stop it. Too late.

Ms DOUGLAS: That's right.

Mr DUNHAM: That's a true story, you know, we'd love to say okay we'll get rid of them. But we can't get rid of them.

Ms DOUGLAS: That's right because he's everywhere. You can kill them on the road, but not outside area.

Mr DUNHAM: They're past Ngukurr, you know, they're right up Mann River, they're right up near Gunn Gunn and all that country,

right back in towards Kakadu and Katherine River, right down to the Katherine River. So they're that close to Darwin. And see they haven't seen them up there so they're really going to sing out when we tell them about this, so that's why we've got to hear from you how did it, you know, how you talked to your kids, fixed the dogs up and, I suppose, at the end of it, how you accepted it because we're going to have to do the same thing, we're going to have to accept that that's part of our life now. Cane toad area.

Ms DOUGLAS: And every night when the light's on outside on the verandah you know you see the cane toads come in for the...and they just.... outside in the light.

Mr DUNHAM: They reckon they hitch lifts too, hopping into motorcars and hitching a ride. Do you check your car before you go, or you have seen them?

Ms DOUGLAS: Well they always check the car. So, you know that's too much for cane toads now.

Mr BAKER: What about signs on your boat ramps too and people going out to the islands, "Check Your Load for the Toad" and that sort of stuff.

Mr DUNHAM: Are they mostly in swags and stuff, or do they sit on the bottom of the boat, just sitting on the hulls? Where do you find them?

Mr BAKER: In the swags

Mr DUNHAM: In the swags yeah.

Mr WOOD: Can I ask a question? You mentioned there might be two cane toads. Is there a male and female, and are they much different?

Ms DOUGLAS: I thinks so.

Ms CHAPMAN: Sometimes they look more angular when they get older.

Ms DOUGLAS: When they sleep in the night, they gonna all just you know, them all together.

Ms CHAPMAN: Different ages, different condition.....they are all bony.....

Mr McADAM: So you know when they come at night time and they're on your verandahs, that's because you've got a light on and obviously there's lots of

Ms DOUGLAS: They just come around when that beetle falling down from there

Mr McADAM: Under street lights? So maybe Darwin should just turn off

all its lights.

Mr DUNHAM: I was thinking that. All you do is have some high halogen lights you know and some sort of a trap down below. Every school oval, just put a big light out in the middle.

Madam CHAIR: We could get Council to light up our local parks for a change.

Mr BONSON: I suppose there's one thing that just to pick up on what Steve's saying, what we've found out is that umm no one's really had a good, scientific look at all the problems to do with cane toads whether its in Queensland or the Territory and I'm a bit of an optimist hoping that we can uncover some way of dealing with or minimising the effects of cane toads in the Territory. So I haven't given up hope yet that we can do something about this. I think by coming out and being with people and getting people focused on this issue we might be able to come up with a solution.

The one thing that I noticed you said was no one told you guys that cane toads were coming and there's lots of other Aboriginal communities on the other side of the Stuart Highway that don't probably know anything about cane toads and soon they're gonna find out all about it.

Do you think it would have helped if you guys would have knew about it? Would it have made people feel better?

Ms DOUGLAS: Well, I think that a lot of people coming in from Tennant Creek, you know, and from Darwin area, they also know about the cane toad in Borroloola. So they know about it.

Ms CHAPMAN: Jooby(?), you saw in those areas to put in some monitoring now before they arrive

Mr BAKER: Yes

Ms CHAPMAN: you would be able to support all these.....

Mr BONSON: A lot of the information we are getting is anecdotal information and I understand that in the Kimberley is it, the phase on the freshwater crocodile. There's sort of been a bit of a hopelessness about the inevitability about what's going to happen. But I think people are starting to realise well you know we need to properly have a look at it because there's all that about Kimberley in Western Australia area, that cane toads haven't got to yet. And that maybe we might be able to do something or limit it.

Ms DOUGLAS: Well, someone that bought that cane toad from overseas to put in Australia, like in Queensland and then they spread all over the place, they should let people know about it. Instead of what you know instead of we now deciding to do

something, but we can't because that is too much, it spread everywhere. You can find some of them but you won't find others. They'll be all over the place. And they still go through Western Australia.

Madam CHAIR: It's interesting what you've said about the fish because it seems to be the aquatic impacts seems to be the one area that no scientist has been able to give us any information about. Graeme, have you noticed fish stocks down or anything like that?

Mr DINGWALL: Well I hadn't put em down to cane toads. Occasionally you see a fish floating but you don't, I haven't put it down to that.

Madam Chair: ...finding the same numbers of fish around?

Mr DINGWALL: Yes. There's been a few more around this year, I think. I put that down to more that we've had a couple of years of good floods and stuff like that and it has produced a lot more bait fish and all that sort of stuff.

Mr BONSON: The one interesting one that we heard is that the barramundi are eating the cane toad, the tadpole, but then they spit them out.

Mr DINGWALL: Ah yeah. That could happen.

I liken it a bit to the European carp in the Murray Darling system and that they were everywhere 20 years ago, but you fish the Murray now and it's hard to find a carp, you know. It seems to balance down, they come in in big waves and then I don't know it just sort of balances. They just seem to Like my dog that has chewed on it, they could hop over his nose and he won't touch them.

Mr WOOD: Have all the islands been invaded yet?

Mr DINGWALL: Believe so. Dick you'd know better.

Mr BAKER: West Island, Centre Island and that two at North Island but they were dead. Found them underneath the water tank but there could be more there.

Mr DUNHAM: Found one?

Mr BAKER: I'd say they're doing ... cause there's a weir that runs straight out ... big clumps...

Mr WOOD: You know about them taking the northern quoll from those islands off the Arnhem Land coast. not near any freshwater runoff, but whether there was any way of trying, say, work on some of this islands. I don't know whether some of those islands have sand goannas, you could at least sort of have some of the species checked, even if it

- was dying off here, at least some of those species were there and if it was ever possible to reinhabit the country with those species, at least you'd have some sanctuary. But if they're already there that maybe too late.
- Mr DUNHAM:** What about Maria (?), they wouldn't have got there, it's too far, ah? [inaudible]
- Madam CHAIR:** We've also heard that groups like Frogwatch suggest that umm a fair amount of local vigilance, if you like, can actually impact to lower the numbers. Has there been any movement to form any groups around here that go out and actively look for where they're laying their eggs? Because we hear they lay their eggs in long gel ropes, about 30,000 eggs at a time. Has there been any localised activity to have a go at them?
- Mr BROWNING:** It would be futile.
- Ms CHAPMAN:** You've got little waterholes and streams and creeks and lagoons everywhere.
- Madam CHAIR:** Too much water
- Ms CHAPMAN:** They get the Wet every year they must move too fast ehh across country. They've got an incredible advantage in the territory.
- Mr DUNHAM:** How do people kill them? I mean we heard people saying they hit em with a stick, a shovel. How do people normally kill em? Don't worry about them anymore?
- Ms CHAPMAN:** People use Dettol
- Mr Dunahm:** Spray them with Dettol
- Mr DINGWALL:** I let em go.
- Mr DUNHAM:** You just let them go?
- Mr DINGWALL:** Yeah, and they eat a few insects around the house, useful, I don't have that many.
- Madam Chair:** Why do you think you don't have that many?
- Mr DINGWALL:** I reckon my area's fairly dry, arid zone, part of the subdivision there. People that have got you know nice green lawns and all that sort of stuff they tend to get a few more.
- Mr WOOD:** It's an intentional habitat you got there. You got the big tree for the green can and then everything else is just ...
- Mr McADAM:** What about dingoes?

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- Mr BAKER:** Dingoes. First come through Elliot, they probably had an impact on them but probably only us up all the time with 1080 baiting
- Mr McADAM:** Doesn't seem to have
- Mr BAKER:** Property owners ringing us up all the time
- Mr DUNHAM:** Their everywhere eh?
- Mr WOOD:** Although it would be a bit crowded, they learnt the hard way.
- Mr BONSON:** What about bats? Fruit bats, don't see many?
- Mr DUNHAM:** It's only the ghost bat that eats meat, isn't it?
- Mr WOOD:** Do you know why the brown snake and the western brown I think they have got the over here and is this from Kakadu, it mightn't be down as far, but do you why some snakes have got problem, and if you're saying all the green pythons can munch up a cane toad and survive
- Mr BAKER:** I've never seen one eat a cane toad. As I say I've seen them eat green frogs, black river snake but he eats frogs and there's plenty of them about. I don't know if they can eat it doesn't effect them. I don't know I haven't seen a brown snake for a while.
- Mr McADAM:** Has there ever been any, I know it's a bit late now, was there anything when the kids went to school about cane toads? As part of the school, just to make people aware of that sort of stuff.
- Ms DOUGLAS:** (shakes her head)
- Mr McADAM:** Never.
- Madam CHAIR:** And Richard as rangers, do you think the more information we give people to actually know what they are looking for, know the impact, know how to handle them, know how to minimise their numbers, do you think that would help?
- Mr BAKER:** I don't know how you'll go about minimising their numbers, umm yeah they got this pamphlets out, got em in our office
- Mr DUNHAM:** Can I have a look?
- Mr BAKER:** A few simple facts about them written out, what effect they'll effect they'll have on your pets and that sort of stuff
- Mr DUNHAM:** I think there was a worry too in urban areas that people would start killing native frogs, mistaking them for the cane toad.
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- Mr McADAM:** That's why it's important to have it in the school curriculum, you know like in the bush communities, as they head north-west or wherever they are gonna go. Because you don't want people just knocking off every frog they see that might look like a cane toad.
- Madam Chair:** So they're mainly moving out at night, you see them under the lights, during the day they're pretty well hidden.
- Ms CHAPMAN:** If you've got a long dry spell and when it rains they'll all come out to start mating.
- Mr WOOD:** Do fires have any effect if you have a very fast fire, can they....
- Ms CHAPMAN:** I reckon they crawl... I reckon they're probably in their burrows half the time...
- Mr BONSON:** We've been hearing that they get in the toilets here at Borrooloola.
- Mr CHAPMAN:** Sorry
- Mr BONSON:** Can they get in the toilets?
- Ms CHAPMAN:** Toilets, I've never seen a cane toad in the toilet.
- Mr DINGWALL:** Nah the green frog mate.
- Ms CHAPMAN:** Might be green frog because they can't been jump, cane toads. Only about 10 to 16 centimetres.
- Mr BAKER:** A lot would get out if you took that lid off.
- Ms CHAPMAN:** They don't normally like sitting in water.
- Mr DINGWALL:** They might be able to jump
- Madam Chair:** So they can jump?
- Mr DUNHAM:** They'll stand up
- Mr BAKER:** Yeah if you take the lid off he'll work it out how to get out of there
- Ms CHAPMAN:** If you put them in, if you've got a galvanised rubbish bin and go around and pick up all the cane toads and throw them in they'll die in a few days. It's not very
- Madam CHAIR:** Not very humane
- Mr CHAPMAN:** Not very humane I suppose but
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- Madam CHAIR:** People have talked to us about ditches too, for the light-created ditch, a pit, put a light there that you'd get quite a few that way?
- Mr BAKER:** They're doing that in Cairns
- Mr McADAM:** What do they do?
- Mr BAKER:** Dig a hole and put a drum in there or something and hang a light off the top ... come there for the insects
- Madam CHAIR:** You've got to be careful with the height so you don't trap other native species.
- Mr BAKER:** Yeah that's what you want to look out for as well
- Mr BONSON:** So what happens when they do that, do they notice the difference in how many numbers are around?
- Mr BAKER:** No they were just people that are out in the golf clubs and that sort of stuff they weren't doing it because
- Mr WOOD:** They were saying to Adrail where a was up in water had a light over the top working at night they were sliding down to get the insects but couldn't get back out. They said you could make perhaps a small one in your backyard, like just only for localised control. I mean I think that's all that really can happen at the moment until somebody comes along, or maybe people Darwin more densely populated if they want to keep them out may have little ways of controlling them, they them but they may
- Ms CHAPMAN:** That's the thing you can't just do a one-off you have to do it all the time. I know a ranger at W National Park in Queensland and he used to go around night time and collect them all and put them in garbage bags and they cook in their own juice sort of thing. And he said he made a difference, but you had to do it constantly.
- Madam CHAIR:** Yeah we've heard that people with localised action actually make the difference that around Cairns and Townsville they're starting to get pro-active about it now.
- Mr WOOD:** There has been talk as in a small fence, 500 high but some said that they'd still get over that. So if someone had a small suburban block they could climb low fence, but you'd have to make sure the gate was locked or shut and very close to the ground, no branches fell over it and all that sort of stuff, but it still would require vigilance.
- Mr BONSON:** Richard all these frogs in the back here are they still around the place, do you still find them?
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- Mr BAKER:** Yeah
- Mr BONSON:** You mean they are just living side by side with these cane toad.
- Mr BAKER:** [inaudible]
- Mr BONSON:** So the cane toad doesn't try to eat them.
- Mr BAKER:** When they first came through created a bit of a they were making an impact on them, the eggs and that when they lay in the water, the cane toad was eating them.
- Mr BONSON:** Have you ever seen this thing, this one here
- Ms CHAPMAN:** This sort of thing would help if it was distributed. I mean most people don't always go down to the offices and look for stuff . They don't really know
- Mr McADAM:** Does that go into schools?
- Mr BAKER:** We got them at the office.
- Mr BONSON:** The one thing we've heard is in urban areas that you keep cane toads out of your block of land, and apparently they can't climb over a certain height and if you fence off your area there you'll be able to keep the cane toads out of your block or whatever.
- Madam CHAIR:** You'd get the odd incursion when you opened the gate, but then you'd kill the odd incursion.
- Mr BONSON:** So people haven't tried any of that around their urban areas around here?
- Ms CHAPMAN:** We've even got trophy(?)
- Madam Chair:** Yeah exactly
- Mr DUNHAM:** Like swotting flies you take out the first 50 there's another 10 000. I think in Darwin though you know there's a lot of people with swimming pools that are going to be a bit worried. Pools are full of cane toads, there may be the light trap or something might be If you've got a swimming pool, leave a light on in a corner and they'll be there instead of in the pool. Maybe.
- Ms CHAPMAN:** Do you usually see a lot of cane toads in ground pools though?
- Madam Chair:** We've heard evidence.
- Mr DUNHAM:** Yeah they do they get in to Borrooloola Hotel.
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- Ms CHAPMAN:** How many do they get at a time though, the odd one or is it
- Mr WOOD:** I think it says 12 a day in here, so when was this written
- Mr DUNHAM:** I'm still looking for ways where you can sort of give us some advice about mitigation cause you're not going to get it all eradicate and I think that's just dreaming stuff. And I know Matty said there hasn't been much work done on it, if you look at the back of the paper there's probably a wad like that of stuff people been working since 1935 when they dropped it.
- Ms CHAPMAN:** Has Queensland done anything? Have they got any bright ideas?
- Mr DUNHAM:** I think what's happened in Queensland is interesting is the re-adaption to native wildlife. You know there have been wildlife learn how to live with them and how to avoid them, or eat them or whatever and the resurgence of population has come because you've got the smarter cohort of animals coming through that didn't die because they ate them, and that seems to be the Queensland experience is the re-emergence to not native pre-existing animals but certainly re-emergence to native species.
- Mr WOOD:** I think what you're saying is that the problem's been is there has been no base data and that's one of the things that's missing, so they haven't been able to say well this is what we had but in came the cane toads and this is what we've got now. And I thinks that's what the Kakadu people are also saying that the base data is not there yet and maybe that's where all the work has got to happen.
- Mr BONSON:** I suppose that what I'm interested in is obviously these things that have been sent to this committee that will hopefully become public and it might something, even just gathering information and with information to one area, and I suppose what I understand has been happening is there hasn't been any co-ordinated gathering of all the different studies all around the place and for me I suppose little Frogwatch in Katherine and observation about lavender beetles and you're saying that doesn't happen here but they say it's happening in Katherine. Now I'm not saying that's the answer but we might discover something that could minimise the effect that they have, and that's what this is all about, is hearing and this information. Like about the bees, we haven't anyone give us that information until today. And from what I know is in all the material I've read is that that hasn't been noted, about the bees, so this is what we're trying to do is, just little bits of entered data or observations that people have come with, is hopefully it be, brought up to some kind of foundation of information that's going to lead to something I suppose, so if

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- there's anything you can think of that not only seems a real simple thing but it could be important.
- Mr BROWNING:** Yeah I was just thinking one of the major policies to reduce the speed of spread and road signage of people checking their vehicles or swags or what have you is something that doesn't seem too much
- Mr McADAM:** Nor in the schools
- Mr DUNHAM:** And there's been two long weekends I reckon they'll be in Darwin by tonight. Yeah because there's been a lot of boats streaming and if you're saying "Don't Load the Toad" or whatever the trailer or whatever and you find them in swags well there's bound to be a couple hundred in Darwin by tonight.
- Mr McADAM:** Is there signs at King Ash Bay?
- Mr BAKER:** Yeah, there's one in King Ash and there's another in ... Creek.
- Mr DUNHAM:** But you're worried about the islands more than landside aren't you?
- Mr BAKER:** Yeah.
- Mr DUNHAM:** So have you got them on the boat ramps?
- Mr BAKER:** Yeah.
- Mr DUNHAM:** It's a good idea.
- Mr BROWNING:** I think also like thinking beyond Darwin, and it seems to be inevitable, you know getting into the Kimberley and that area of country slow down. May to come through in the meantime.
- Madam CHAIR:** One of the things we're looking at is how we can protect the Tiwi Islands too, look at boat loading, barge loading areas, rig up lights, encourage the young kids how to go down there, trap them, kill them that sort of thing so that we can try and sustain the biodiversity in the Territory of the Islands while we're doing the battle on the mainland. That's been something that's come out of previous hearings. So that's why we're talking about the impact on the islands around here.
- Ms CHAPMAN:** And if there is, like Tiwi Islands and the islands here there is regular transport of groups, and cane toads they're chasing generators out
- Madam CHAIR:** Where if you have a cleared area of specifically really quite substantially cleared area with lights rigged to attract them
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and if you like careful scrutiny of loading and unloading which we don't do naturally, but if we're actually doing it quite specifically to protect own bio-diversity and then where there are cane toads on some islands actually have an effort to kill them, remove them.

Mr McADAM: Can I just ask one question to Dick? You know the Lake Woods behind Elliot and further to the south of Elliot, well that lake fills up from Newcastle Creek eh?

Mr BAKER: Yeah

Mr McADAM: And that starts up near where, Taninbrumi(?) way?

Mr BAKER: Yeah it does

Mr DINGWALL: The channel there

Mr BAKER: Yeah and that runs right down around the

Mr McADAM: OT and and

Mr BAKER: that beach and Longreach and Lake Woods

Mr McADAM: So is there any cane toads in that area where this river starts, where this water starts?

Mr BAKER: Yeah

Mr McADAM: There is. So how come, I've only heard the anecdotal stuff, someone says yes they are in Longreach and Lake Woods and other people say they're not and that water systems comes right down through there, and yet I know they're at Hayfield, I've seen them at Hayfield.

Mr BAKER: They could be there but the only way to check is go there after dark and listen for them and get a taping the one from here, that's the best way to bring them out, get a taping and go down and play that and they'll soon call back

Mr BONSON: So you've actually done that and it's worked.

Mr BAKER: Yeah we've done that.

Madam CHAIR: So does Parks and Wildlife do that, that you've got enough tapes of their calls.

Mr BAKER: That's how they caught those ones in Darwin.

Mr WOOD: Yeah it wouldn't be hard to get somewhere.

Madam CHAIR: So you could do that, make tapes readily available to people.

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- Mr WOOD:** I think Frogwatch through Ian Morris, they did a whole series of sounds of frogs and I they included the cane toads, that's how they
- Mr BAKER:** Andrew Pickering our community education officer in Katherine, he'd have a copy.
- Mr DUNHAM:** There you go on the way home mate, go at night time, turn it on
- Mr McADAM:** Well I might just stay here for a couple of days, see if I can practice.
- Mr McADAM:** But I was gonna ask, so you're a scientist and that?
- Mr BROWNING:** Yes I am.
- Mr McADAM:** You're probably not familiar with Lake Woods, I mean it's not continually full of water, well the Longreach is, and there's always a flow in the area so sooner or later they're going to get into that water system and it's and I know she hits further south I don't think they can further south, that's my view, I mean I don't know, who knows they could end in the Maryann Dam for all I know if someone protects them in the back of a motor car. So what concerns me is because people say we don't know a lot or we're doing a lot of second guessing, I think that's right, we don't have some definitive answers in terms of probably further research that needs to be carried out, and because you've got a confined area, I mean we know these fellas are heading north and west, they're going to continue going, we know that when they go down to Lake Woods, I don't think they can go further south, that's my view, so they'll get stuck in the Longreach system. Judging from the data and information have there's obviously lots around the place, probably none too, but is there anything that we any definitive studies that could be carried out.
- Mr BROWNING:** There would be and I'm not the person to ask, it's a specialist area, but certainly I'll have a talk to Keith Martin who has done a lot of work as and who doesn't from Queensland.
- Madam CHAIR:** Where's he based, Keith Martin?
- Ms CHAPMAN:** He's based at Cairns now but he worked at Parks and Wildlife in the NT for a while, I can give you his telephone number if you like.
- Madam CHAIR:** Yeah that'd be good.
- Mr BROWNING:** He's also done studies here. He's done aquatic around minesites before cane toads were introduced. And he was for a time to do transects in historical areas of cane
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- toads on the fringes and he'd been doing that work A coordinated approach and then making that in the Territory.
- Mr BONSON:** That seems to be the problem in the past that people have done individual studies and there's nothing co-ordinated. There was one study that I saw about New South Wales and they were saying that this might help, and to answer Elliot's question, they only go so far south because of cold and because of dryness, so if it's dry and cold they won't go there, you presume that in the Central Australia area that it will be too cold for them and too dry.
- Mr BROWNING:** We had a pretty long dry here last Dry and we noticed that the cane toads dropped right off until about say a month after the rains came through and then built right back up again, so the Dry really knocks them about.
- Madam CHAIR:** Excellent
- Mr BROWNING:** The problem is with the artificial watering, not like
- Mr DINGWALL:** The arid zone
- Mr WOOD:** Not using natural methods of gardening, I suppose for little towns and places like Darwin it is going to be a haven for them, there's plenty of water tables in Darwin during the dry.
- Mr BONSON:** You said something interesting about the Dry knocks them around, so there's hardly any numbers around there. Did you do studies about, you know we've been given evidence there's all these strands of eggs in the water billabongs and catchment areas around the place, does anyone go out there during the Dry and have a look for those things.
- Mr BROWNING:** No, just observations
- Mr BONSON:** No-one's gone looking for them in the Dry to say well we attack them in the dry to say if we attack them in the dry will have some effect on them?
- Mr BROWNING:** I'm sure someone has but I know we haven't.
- Ms CHAPMAN:** I reckon during the dry season they just stay in the forests.
- Mr BONSON:** So they just hibernate mainly
- Ms CHAPMAN:** Not necessarily hibernate
- Madam Chair:** They lie low
- Ms CHAPMAN:** ... soil but cane toads moved out of their normal habitat many years ago in Queensland, and moved right across western Queensland which is very dry and ended up in the Territory, they're already out of their norm, their
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- normal range
- Mr BONSON:** It's just funny that evidence in New South Wales, there's like a line there where they don't go across
- [inaudible]
- Madam Chair:** One at a time guys. It's hard for Maria. Sorry what was that? Gerry
- Mr WOOD:** What is the cane toads coming up this far and stopping and the rabbits come up and we just have the whole of Australia covered in pests.
- Madam CHAIR:** That's right and the cats and the camels.
- Mr WOOD:** And mimosa. So are they having trouble with stock feeding out of waterholes with the cane toads. Any reports on cattle being crook, that's one way The Barkly I suppose also permanent water in places
- Ms CHAPMAN:** That might have happened at a time when there's drought and there's not much water around
- Mr WOOD:** There'd all be a certain amount of water in them anyway.
- Mr BONSON:** Someone else mentioned frilled-neck lizards. People haven't been seeing frill neck lizards around.
- Mr Baker:** Yeah I've seen them. I don't think they tackle them you know
- Mr McADAM:** If you have frill necked have a look at a cane toad and the cane toad look at the frill necked
- Madam CHAIR:** Any other questions? Any other comments?
- Ms DOUGLAS:** We reckon here that here, I think that cane toads may travel from here to Darwin, but we're looking into desert area that they won't travel that far.
- Madam CHAIR:** They won't go Alice. Keep going north?
- Ms DOUGLAS:** Yeah.
- Mr McADAM:** What about Longreach
- Ms DOUGLAS:** I think they travel that way.
- Madam Chair:** They're just doing that to annoy you Elliot.
- Ms DOUGLAS:** This is where they started from, they started from there. And I thinklooking into how every time when they go with no water
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- Madam CHAIR:** They follow the waterway
- Ms DOUGLAS:** Yeah, they follow the waterway all the time, ... and low. You know you can't really
- Mr WOOD:** I suppose the rest are getting carried, vehicle Tennant Creek and Alice Springs because Alice Springs have got plenty of grass, whether the frost might not allow them, that would be interesting
- Madam CHAIR:** Yeah, cold weather maybe. They say they don't like the cold.
- Mr DUNHAM:** They can handle six degrees, that's pretty cold.
- Ms CHAPMAN:** You know how we were talking about in the dry season, the dry part you don't see them very much, if you dig around in the garden you might be able to find them.
- Mr BROWNING:** I came from Collinsville in Queensland and it got down to -5° regularly with frost and there were a lot of cane toads there.
- Madam CHAIR:** Really
- Mr BROWNING:** I agree that they don't like cold and there's some reason there, but they certainly don't mind frost.
- Mr McADAM:** I suppose that if there was a body of water there that's permanent even if it gets down to that, they get there, they're going to adapt or adopt and they are going to be there.
- Ms CHAPMAN:** Even if it did knock off that batch of tadpoles there's plenty of other cane toads in that vicinity that could make up for it after the frost has gone the frost did affect cane toads.
- Mr BONSON:** There was actually a show I was watching *Imparja*, there was a 60 minutes and they did cane toads in Kakadu and they were saying 35 000 eggs one toad can lay and they lay twice a year. So that's a bit of a problem.
- Mr DUNHAM:** What was the name of the town?
- Mr BROWNING:** Collinsville
- Mr DUNHAM:** In Queensland
- Mr WOOD:** I suppose we now know why they are a pest, tough as all nails, surviving all the time, probably going to be up there with cockroaches, probably be able to control them eventually but probably you'll never ever get rid of them. Though CSIRO are talking about it, this genetically modified tadpole
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- Madam Chair:** Makes it infertile
- Mr WOOD:** Yeah, virus, but that's looking at ten years.
- Mr DUNHAM:** Well they started in 1995 mate.
- Mr BONSON:** On that same show they were talking about that I think we're going to get evidence off him to \$1m for four years, so \$250 000 put aside by the Commonwealth per year for the next three years, taking out administration costs and wages you get a very small amount of money, so up the hopeful things I see out of this committee is we can galvanise people's opinion and bring some funds into the Commonwealth, Territory government etc, for developing something like that. So that was something very interesting and I think is recognised as probably one of the most renown toad experts and I think he is coming to see us, isn't he Rick?
- Mr Gray:** Captain Frog
- Mr BONSON:** Yep Captain Frog
- Madam Chair:** Captain Frog
- Mr BONSON:** So it will be interesting for people to actually see if you get an opportunity, I'm not sure if it was shown here in Borrooloola last Sunday, but 7.30 on Imparja and 60 Minutes a big show on cane toads.
- Madam Chair:** worth seeing that cane toads
- Ms CHAPMAN:** When was it on?
- Mr BONSON:** When I was in Alice it was on there at 7.30 so I'm not sure if it was here.
- Mr WOOD:** It would have been
- Mr McADAM:** Josh what about you doing some work on turtles or.
- Mr COATES:** I did some work on turtles last year, my focus is I'm just here to have a listen cause I'm interested backed up a few anything new to that.
- Madam CHAIR:** We've heard some evidence about impact on turtles from other people. Did you notice anything yourself.
- Mr COATES:** I haven't notice anything. What have you heard?
- Madam CHAIR:** Reduction basically in turtle numbers.
- Ms CHAPMAN:** Freshwater
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- Madam Chair:** Freshwater turtles. Just affecting food source.
- Mr COATES:** That would make sense to me with the toxic tadpoles, but I haven't heard anything along those lines.
- Madam CHAIR:** Have you noticed Thelma, freshwater turtles, have you got less now with the cane toads or OK?
- Ms DOUGLAS:** They're OK because every time we go down and get some turtle, long neck turtle, short neck turtle, also the fish?, so that's coming very good cane toads
- Madam CHAIR:** What about at the starts when the cane toads were here in big numbers those years ago.
- Ms DOUGLAS:** Goanna and blue tongue never come back here. So that's the main one for everybody. We always see our small goanna running across the road but not the big ones like we used to get before. And also sort of snakes coming back but not goanna yet and blue tongue.
- Madam Chair:** Should we put on lunch for everyone guys? Our shout
- Ms DOUGLAS:** Excuse me, what is going to happen now with the cane toads, what you people deciding to do with the cane toads.
- Madam CHAIR:** Good question.
- Madam CHAIR:** We are trying a few different things maybe, particularly like I said before, the islands, keep the islands trying to protect the islands if possible. Get people to be to understand what the cane toad looks like so they don't kill other frogs, which has been a problem for some people, they think oh that brown frog it's a cane toad so they kill that frog. Encourage people to, certainly in places where you can, like in Darwin there's only a few freshwater places, so encourage local groups to go down there and literally collect the cane toad eggs to keep numbers down.
- People in the rural areas, get them to look at fencing around their dams, billabongs things like that.
- Mr WOOD:** We're waiting for the government assistance on that.
- Madam CHAIR:** Just manage, we're just going to try and do what we can to manage the numbers so that we're protecting enough natives like enough of our goannas survive and we've already moved the northern quoll out of the Top End and to over on an island because that was the one that was gonna go extinct.
- We're also I believe, it's early days yet, we haven't finished our enquiry, but I believe we need a group of experts to

focus on it rather than have CSIRO off doing their thing and Parks and Wildlife doing their thing and the NT Key Research Centre doing their thing, I think there needs to be more collaboration between the experts so that we're not duplicating efforts in places and we're wasting some money, and if there is some money free it up, put that money down into caring for country type programs where we can create meaningful jobs for indigenous Territorians, and do some good work to protect our native species.

That's some of the issues that have been kicking around this committee since the start of the enquiry, but we're only, if you like, three quarters of the way through, we've still got to go to public hearings in Jabiru, Katherine, Litchfield, Palmerston and Darwin. We've still got more experts to meet with, we've met with close to half a dozen experts so far, scientists, no one yet has confessed to being an expert on the cane toad. Certainly the scientists we have spoken to have been very useful in telling us about the habits of the cane toads and what they think could be done.

People are now starting to take more effort in thinking about the different types of traps that could be developed, looking at the way we set up our lighting around our urban area and our bush areas. Like we've heard today we can't stop them but can we protect enough of your food sources like the goannas, the fish, the turtles, and so that our biodiversity survives. What we hear is they move through a large front of numbers so we need a way of dealing with that front so that not everything is wiped out, and it will take effort from a lot of people, not just from government.

Ms DOUGLAS:

I reckon the islands are going to be safe because I went to Mornington where my family are, so I stayed there for two months and we never see any cane toads so we went to ??? Island and I stayed for one week with my grandmother and ??????. hear about cane toads because I think when the cane toads swim across they will die half way because of the salt water.

Madam CHAIR:

We worry about people on boats taking them over, and their swags as you've heard today, they mess in with the swag. So I think every man who likes to go fishing needs to say well am I prepared to be a part of the problem or can I help remove the problem, every person who goes over on a barge to offload food, supplies, do we have people locally trained there with lights set to grab the cane toads because yep sure some of them might be able to swim the distance but plenty of them will be able to travel with us people.

Mr McADAM:

Is that Ranger program from the city does that, are people handing out some of the stuff to people when they are on the water?

Ms CHAPMAN: No not at this point, Elliot, but it is certainly something that we could check out. ... looking at ... brochures and fisheries

Madam CHAIR: And there is that whole issue of public awareness, the more aware people are, the more they can actually help to sort the problem through. We're not going to work a miracle but we want to, we're doing a fair amount of work. Otherwise the vets in Darwin will get very very wealthy. They already are wealthy enough. Plenty of animals up there. Don't worry they drive a Merc thanks to my dog.

TRANSCRIPT NO. 2

Katherine Public Hearing

Tuesday 6 May 2003

PRESENT:

Committee: Ms Delia Lawrie, MLA (Chair)
Mr Tim Baldwin, MLA
Mr Matthew Bonson, MLA
Mr Stephen Dunham, MLA
Mr Elliot McAdam, MLA
Mr Gerry Wood, MLA

Secretariat: Mr Rick Gray
Ms Maria Viegas

Appearing: Mr Werners Army
Ms Sarah Kerin
Mr Andrew Pickering
Ms Kath Ryan

Note: *This transcript is a verbatim, edited proof of the proceedings.*

Madam CHAIR: ...Northern Territory is commencing. My name is Delia Lawrie, I am the member for Karama, and chair of this august committee which constitutes also Tim Baldwin, member for Daly; Stephen Dunham, member for Drysdale; Gerry Wood, member for Nelson; Elliot McAdam, member for Barkly; and Matthew Bonson, member for Millner. If you could introduce yourselves as well so that we all know each others' names.

Mr PICKERING: Andrew Pickering.

Ms KERIN: Sarah Kerin

Madam CHAIR: Andrew and Sarah, welcome.

Mr BALDWIN: And that's Werners Army who is just signing the attendance list.

Madam CHAIR: The committee has been tasked by parliament to identify the problem and risks associated with cane toads in the NT; the potential extent and effects cane toads have, or will have, in the NT; the cultural, social, economic and other factors associated with the encroachment of the cane toads; to identify the current level of understanding concerning cane toads to date; and assess the need for public education and awareness programs; identify ways to manage the environmental impact of cane toads; and to

assess community concerns and expectations in respect of the progressive entry into the NT of cane toads generally; so quite broad ranging terms of reference inquiring into cane toads. We have had meetings already. Hello, welcome. We have only just started. We have had meetings of specialists in Darwin. We had a public hearing in Borroloola today, we are at Jabiru tomorrow. There are further public hearings in Litchfield, Palmerston and Darwin next week. We have been to date in the gathering information phase and we are now in the public hearing phase. We thank you for your attendance here this evening and to take up precious time, and the way we meet is it is a bit of an informal, you talk about what you are aware of, what your concerns and issues are, and you will find the members very quickly jump in and ask you questions. Sarah, I might just kick off with you if I may.

Ms KERIN:

I guess just to give a bit of background first so that you are aware of my background and association with the cane toad. I was part of some original research that was done back in the mid late 80s which was when the cane toad were first coming into the Northern Territory and were moving through the Gulf of Carpentaria. That was very much sort of preliminary base line stuff, looking at population dynamics of the cane toads, looking at their competitive interaction with dry season frog communities, and also doing some work on the activity patterns of the metamorphs which, there are probably more there now, toadlets, it is a transition stage between tadpoles and the adult toads. We also did dietary analysis of the reproductive stuff. So I was probably fortunate enough back in the 80s when I was first beginning my career to be involved in some of the work that we did with the toads. Since then, I sort of graduated into the park management system and my perspective probably now is more so from a park management system aspect rather from a research perspective *per se*. Essentially, from where I sit, the main issue in the park management context would be the lack of base line data with our species' assemblages in terms of what sort of toads now have on them in terms of gradation and also competition. We have established across the park network in the Katherine region, not on all of them but on a number of parks in the Katherine region, some base line monitoring plots, and also there is some work that has been done by CSIRO. And of course, some of the frog work that was done in the Gulf of Carpentaria back in the 80s which do give us the potential to go back and compare. But in terms of predators, for example, things like crocodiles, goannas and bluetongues, snakes, things like that, we really do not have much information on what sort of impact they would have. There is a lot of anecdotal information about it but in terms of actually studies, we have done some stuff on goannas and bluetongues, which I did in the late 80s and early 90s, but from a park management perspective, that is

the area we really would benefit, I think, with some more information.

Mr WOOD: Was there any base line data of before the cane toads came, of what was in the bush. Did you say, there was X number of quolls... so that then when cane toads arrived you had something to compare it with?

Ms KERIN: On a full scale, no. In certain areas, there is some parks perspective. Obviously, we have got surveys for ... in our parks prior to the toads coming through. But in terms of broad scale, i.e. sitting down and some brainstorming alternatives, you know, what predators where and those sorts of things, I am not sure that we ever did that.... species there is going to be an impact from the toads, let's go out and do some work and try and establish that. And those species are quite hard to work on, some of the snake species for example, they are very difficult to try and find information about. We have got some information but we are not full scale, and certainly with regard to the park network, we have got the opportunity in those parks within the Katherine region, for example, provided the toads have not arrived, to put in place some of those monitoring mechanisms which we have been doing.

Mr WOOD: And do they monitor things like macro invertebrates in the water? Because that is something that that was seen could be done.

Ms KERIN: We generally do not have the resources to do that sort of sampling. It is mainly just for vertebrates and to some lesser extent, invertebrates.

Mr WOOD: I thought maybe because they use the watercourse, that would be an important thing to look at, because of the number of tadpoles, or the number of eggs, that are hatched, whether that has an effect on things that would usually use those macro invertebrates, and the chain that that leads up to. Whether that takes away the food source?

Ms KERIN: I would probably agree with you. However, our focus seems to be very much on terra firma. And also the larger vertebrate species, crocodiles, turtles, things like that.

Madam CHAIR: Is there a central point of collation? The information you are collating in this region, does that go to Parks & Wildlife centrally, is there someone who is sort of monitoring overall the...

Ms KERIN: No. The monitoring is being done very much on a park by park basis. Some of it also is associated with CSIRO too, it was done for co factions, or through parks and

Ms RYAN: What is the biological record scheme for that?

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- Ms KERIN:** The biological record scheme is used as part of our data collation process. We don't sort of focus on that in terms of this monitoring We don't always
- Ms RYAN:** Thanks.
- Madam CHAIR:** Is there anything from your knowledge of monitoring that you think the inquiry should look at considering in its recommendations to government in terms of tackling the incursion, and one of the issues we have been looking at, obviously, is minimisation.
- Ms KERIN:** Obviously we have been addressing in part small animals, i.e quolls. That's why the issues when we starting looking at the progress of toads in the Territory that we looked for quolls in the Gulf of Carpentaria. We searched but did not find any. So that is obviously a major issue. In terms of predators, I am not sure we have Out the those predators that would be impacted by toads overall, and that is from a Territory perspective, not necessarily for the Katherine region.
- Madam CHAIR:** So would you recommend more emphasis put on the impact on the predators? Are you doing the monitoring, what else can be done?
- Ms KERIN:** I think realistically, in some respects with regard to toad invasion, it is like shutting the gate after the horse has bolted, in terms of controlling them. Physical evidence I think is a waste of time..... resources to throw at the problem. And I really think the only option is by control in some way, shape or form, be that working on with CSIRO. Unfortunately, unlike plants, cane toads don't sit still so they are a bit harder to try and manage. But I think, and I may be a bit ignorant here, but in terms of looking at the government bodies looking at it overall like CRC, states and all saying alright, this is where they are, what do we need to know in terms of managing, in terms of impact on biodiversity, and come up collectively with some sort of strategy or program to impact the whole thing, both in terms of the Northern Territory and the rest of northern Australia.
- Mr BONSON:** Sarah, just talking about biological initiatives, we have had evidence from Frogwatch that people have seen the toads eat lavender beetles, we have lavender bugs down here, and then die. Have you seen that yourself?
- Ms KERIN:** No. Quite simply, I have had it when people have been saying that they're The bugs for whatever reason, just tend to kill them.
- Ms BONSON:** So you haven't done anything like opened up a dead cane toad and checked out...
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- Ms KERIN:** Not personally, no. Possibly been a bit on that.
- Mr WOOD:** You know that Parks & Wildlife revert quolls to the islands off the coast. Do you think there would be any sense in perhaps having some areas, I know it would be expensive, but basically, fenced off. They would have to be fairly large areas. If there were some plots, you might say, if they ever got rid of the cane toad, where we did keep areas free of cane toads, and I know there are some practical problems with trying to fence something right off, but you are not going to be able to get everything on islands. Some snakes, for instance, might not be able to live on the island. But there might be areas where you know are these creatures, that are under threat, and if they were fenced off, because we know fences that are a certain weight that would stop cane toads getting through.
- Ms KERIN:** I guess I am being a pragmatist in terms of what is realistic and what is not, and in terms of, I get back to the point that we really do not have that much based on the data in terms of their impact. We have some, but in terms of what data and ultimately that needs to be biodiversity in the Northern Territory. I am not sure, it is anyone's guess, but that is another factor of science in terms of that is the way it is. In terms of preserving areas, I guess you have to be fairly certain that whatever is in that habitat, you would need to have a habitat of a reasonable size to be able to sustain the populations that you were trying to protect. But I can't, because I do not think we have enough information, to say that. You can try it but you would not be sure that you were very clear, you need to be very sure that whatever it was that you were looking to protect, that you had sufficient habitat to protect, and that that was you know, a valid reason to protect. In terms of it would be under direct threat from cane toads.
- Madam CHAIR:** What is your perception of the public awareness of cane toads, how to deal with cane toads, they are in the Katherine region, do people ask rangers about the cane toads, is there a poor awareness or a growing awareness?
- Ms KERIN:** I think as the toads progressed, a growing awareness through the Territory. Interestingly enough it is a lot of our visitors that ask us about toads, more so than locals. Locals tend to dispatch toads any which way that comes easy. But I think certainly, if you compare say Katherine to Darwin, obviously you have got this awareness are not high in terms of what they do to dogs, chooks, pets, and all those sorts of things. So I think there is certainly some potential, or enormous potential to do some advertising, some public awareness on this.
- Mr DUNHAM:** We have read some literature that the metamorphs do not

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- actually impact on the chooks at all.
- Ms KERIN:** On the what?
- Mr DUNHAM:** Chooks....
- Ms KERIN:** It is possible. There is a period in their development whereby they are not toxic, or they are considered not to be toxic. They are highly toxic as tadpoles and when they first emerge into the bank, until they develop their large Glands they are not toxic, or at least that is what we have found.
- Madam CHAIR:** Andrew, have you got any
- Mr PICKERING:** No, I was just going to bring up what this gentleman said about fencing, to what sort of grade would you make to stop cane toads, in my experience, it's like having cane toads in a tank. I didn't know who to ask about piecing, into what sort of area would you make to stop the cane toad. And my experience at home is I have had a cane toad in a tank. Now, I think the only way that frog probably got there was a bird, when it was alive, in the tank. I mean, what sort of barrier do you put up? It was probably a hawk or a kookaburra. And I have also come to the That they can not jump so well. I found two toads
- Mr BALDWIN:** They don't climb vertical either, do they? Not to a great distance. They have not got the sucker things or whatever they are.
- Mr PICKERING:** No.
- Madam CHAIR:** We have heard evidence that ditches with a light in it, attract them into the ditch and they can not get back out again. We have to look at the heights of the ditches, because you do not want to trap native species in the same way. We have heard evidence of people literally scraping them up and putting them in bins and they are left to die. But everyone has told us certainly they are attracted by the lights so we are inquiring as to whether anyone has got any suggestions about
- Mr BONSON:** Like toad traps I suppose.
- Ms KERIN:** Toad zappers.
- Mr PICKERING:** On the east coast, the frog types that they they dig a hole and put a in it and a light over the top and it seems to be very effective. If you are thinking about maybe changing populations, from what I have heard, it is only a decade before they start to wane in numbers any of those things.
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- Mr BONSON:** Do you know a little bit about what has happened in the NT?
- Mr PICKERING:** I know a little bit...
- Mr BONSON:** Could you maybe enlighten us about what your knowledge is?
- Mr PICKERING:** Mostly Frogwatch. I am also a property owner and I am concerned because I have seen a huge loss of Johnson crocodiles. I do not know what the effects were on the east coast. I would like to know that sort of background too. But the trouble is I am a Johnny come lately and concerning the big picture. I have been on the property for six years, but every year in the dry season, there has been a migratory exodus down creek and from the creek then down into the Katherine River, and I used to count up to sixty tracks, quite large specimens sometimes. And they were actually finding Sometimes they would not make it to the river. They would knock up and not actually find them there and leave them alone. But it is not happening at all. It is all finished. I am not seeing any of those slide marks.
- Mr ARNY:** Do you think there was a copings crocodile out of this gorge?
- Ms KERIN:** Initially, when toads first came through we had seven mortalities
- Mr ARNY:** I know, dogs were killed, yes.
- Ms KERIN:** But since then, it has been stable and I mean, smaller crocodiles, we expected the younger croc would not have learned or be taking toads. About that, we seem to have reasonable populations, like they are still getting good recruitment. So there is a lot of conflicting information about
- Mr DUNHAM:** Are they learning avoidance without any
- Ms KERIN:** I could not answer that one. I have not seen freshwater crocodiles take toads. I have certainly been on Wathold and Gulf and Katherine region and Katherine River, and the Roper, and seen toads along the side of the waterways and crocodiles in the water, but I have not actually seen them taking them. There is some suggestion that if they actually swallow them and get them down in their gut that they will not be able to survive. But that is not So I guess it gets back to we really need to do some trials to see exactly what the situation is.
- Mr BALDWIN:** Sarah, you said monitoring and getting that base data right. Would you sort of say that there is an opportunity in this region, where the toads have not impacted on some of our
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parks, that there would be an opportunity now, or say if we had some money, and whatever, that we could go and do that sort of intensive monitoring, in one of our parks that has not been impacted yet, that is going to be impacted.

Ms KERIN: Obviously, it is only parts in the west that they haven't been colonised yet so...

Mr BALDWIN: Yes, so they keep reversing those.

Mr KERIN: Yes, definitely their habitats are relatively intact and So if there is the opportunity. We are doing some minimal stuff out there and that is in association with other monitoring going on, with fire management out there. But it is only at Keep River really, where it is specifically based frog at the moment and that is out there.

Mr WOOD: Would you look at Litchfield National Park? They are not there yet.

Ms KERIN: Certainly. I was thinking maybe of going... to Litchfield yes, and certainly the wetlands. Because if you look at the difference of habitats between these latitudes and north, there is a huge difference. There is a massive wetlands up in the Mary River system, the Adelaide River system, and places like that, so

Mr BONSON: [inaudible]

Ms KERIN: Yep exactly.

Mr BALDWIN: So what would that mean? That would mean some intensive study now to see what the base line data is, and then monitoring over the impact of the toads is the first way of the longer term sort of stuff.

Ms KERIN: You would be looking at doing basically a species inventory so that is Counting classes, mammals, reptiles, amphibians, and birds, and giving a area, with these key habitats I guess where you expect the toads greatest impact. It will be interesting to see what happens when we are doing it for the floodplains because they can shallow water in the gulf country as long as they work their way north, and there is lots of nice shallow water, unfortunately, in that system. So that is a bit of a worry.

Mr BALDWIN: From a practical point of view, I mean, how long is a piece of string, but what sort of resources do you need to go and say, do Keep River. The inventory. To a point where you have good base line data then to monitor.

Ms KERIN: Probably You could do a wet season and dry season sample. The dry season sample, you could probably get away with the training camp along the lines we used to

have, and that would be in the order of around about \$40 000 to do that. That is not including salaries, of course. So \$80,000 or something like that. Wet season would be a little bit more expensive because it is inaccessible in the wet season to do that but the dry season no information. So you are probably looking Depending on the size I mean, obviously something like Gregory, you would not necessarily write down 'desert' but where it would be, would be the largest part

Mr BALDWIN: The upper reaches of the Vic River or something around there.

Ms KERIN: Wickham would be a good example.

Mr BALDWIN: Yeah, Wickham.

Ms KERIN: And they will hop upstream, so you can anticipate that they will arrive there sooner or later, so that would

Mr McADAM: Sarah, has there been monitoring done in any of the other states that you are aware of?

Ms KERIN: I could not tell you within a park network Certainly with Queensland, when the toads were starting to fan out in Queensland people did some work but I am not quite sure how extensive it was in terms of

Mr McADAM: It might be good, Rick, to try and track that down to see

Ms KERIN: There was a lot of collaboration with Queensland data book in particular in the mid 80s, with Parks & Wildlife looking at population dynamics, tadpoles, competition as well. But once I moved out of the research sphere, I didn't keep up with it.

Madam CHAIR: Now, Andrew, you said that you have contact with Frogwatch. Some of the information we have received about that says that in parts of Queensland, after the front moves through, we have heard that when the cane toads arrive, they arrive in very large numbers as a front, they moved through, and then you have some sort of a dropping off of cane toad numbers, and it is during that period of dropping off that localised action where people are literally going and searching popular water spots and collecting the cane toad eggs which are in the gell. Do you think there would be any opportunity for groups like that forming in Katherine, people who are actually out there looking to minimise the effect of cane toads?

Mr PICKERING: Yeah. I mean, that is sort of happening now. You have got your boots, Lots of little boys with torches and, followed by mums and dads.

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- Mr ARNY:** It is a clinical fault that you can see, it does not matter if it's a
- Mr PICKERING:** But still, you will only do it in patches, you know, it will not be affecting do that so possible then you pick up the toad somewhere else.
- Mr ARNY:** You're producing two and a half million eggs.
- Ms KERIN:** Individual females
- Madam CHAIR:** What would you like to discuss?
- Mr ARNY:** I'm in Katherine now 40 years, 37 years, in the tourist industry. And of course for us it is a concern, say wildflowers, someone said wildflowers disappear. I do not know if it is actually come from the same kind but I have lived in the same place where I am living now for 40 years and in the same house where I am living now, for 25 years. And one of the things that was actually in the house, we always had those green tree frogs there in huge amounts of numbers, and sometimes they are quite annoying, you know, when they are calling, but it was also a little bit like a tourist attraction for our visitors who came to us. In the evening time, especially say at the end of the wet season, we can have on our windows, 25 or 30 little green frogs and they are catching little insects and things like that. This year, I can only remember one green frog on it. I only saw four green frogs, and three of them I actually got out of the toilet bowls, I do not know how they got in there or where they came from, but that is where they came. So I think somehow they must have a devastating impact on frogs. I mean, I do not think there are so many toads here, like I remember last year, when I went down to Mataranka, and Brian showed me when he lifted up the planks, about 50 cane toads underneath these planks. I could not believe that they could be that thick. I just believe that there are not so many cane toads here this year and last year. It is very concerning for the tourist industry that wildlife is disappearing and you know about the fact, and I do not know what we can do. I always thought that from other animals we might get some help for that, get some venom or some poison. Can you use the poison for something, I mean could it be profitable? So that we can send out the kids to collect them for 50¢ each or whatever.
- Mr DUNHAM:** It's hallucinogenic.
- Mr WOOD:** It is banned, isn't it?
- Madam CHAIR:** It sends people crazy, it is an hallucinogenic.
- Mr WOOD:** It has actually got a class under the pharmaceuticals...
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Mr ARNY: But if it could have some use, and you could send people out and can minimise it, you know, collecting it for 50¢ each or so. The other thing is I think that if only CSIRO may design a biological card for ways we can minimise the toads. But it is a concern for the tourist industry. Especially if they are going further north, where they have doubly as much high import than we have, is it going to be worse, or what sort of impact will it have?

Madam CHAIR: Sorry we did not your name at the start.

Ms RYAN: I am Kathy Ryan, I am the environmental officer for the council.

Madam CHAIR: Alright Kathy, is there anything at this point that you would like to add?

Ms RYAN: No. Only from what I know, which is not very much at all, that these two are probably right in saying that starting a massive trapping campaign for cane toads now is too late. You want to monitor the species that you have still.

Mr ARNY: I think it was always too late, you never could have You know, the Northern Territory is three and a half times bigger than Germany, six times greater than Great Britain and we have got 200,000 people. Look, it is just impossible.

Mr DUNHAM: Do you think we should let it go to Germany?

Mr ARNY: No, it is too cold. But some sort of biological, is there anything that affects us here so we can do something. I mean, they brought it in.

Madam CHAIR: From CSIRO we have received information that they have identified the DNA which will make them ultimately infertile but they have got to find the vector to carry that and this is possibly going to take about 10 years. There is hope but due to the amount of research required it would possibly be a decade before we saw any major result.

Mr ARNY: So long as it does not go worse and

Mr WOOD: That's why we asked about the lavender beetles. They would have a bit of toxin there.

Mr BONSON: Werner, have you seen a lavender beetle kill the frogs?

Mr ARNY: No, actually it was one of those things, you see we have got a 24 hour service station and we always had a very, very big invasion of lavender beetles. This year there were very, very few and we always had problems with them going into everywhere, going into food, and trying to keep them out of everything but actually lavender beetles were very much

upset and when I Was it cane toads or..... So they are not staying many lavender beetles..... But that is what is my feeling.

Mr BONSON: So do you think there is a coincidence that this year.....

Mr ARNY: Look, I really do not know. I wouldn't have a clue.

Mr BONSON: But we were investigating that, I think the evidence we have received is that this year, that cane toads have been less in Katherine, and you are saying that lavender beetles have been less. I would be interested to know if there is some kind of link, or if there is some kind of study that can be done.

Mr ARNY: I don't know. Especially you know after the wet season we have got a huge amount of frogs in in the night time.

Mr DUNHAM: Sarah, how many parks belong to your jurisdiction?

Ms KERIN: At the moment, in my capacity, in the Katherine eight major ones.

Mr DUNHAM: And half of them would have been declared in the last decade or so?

Ms KERIN: I think so.

Mr DUNHAM: So this base line thing, have you been given too much to do, is I suppose what I am getting to. Should we be concentrating more locally and more intensively or is the park estate the inheritor, and with the resources you have got, is it a sort of fair compromise? Have we tried to preserve and conserve too much land, country, animals, to the detriment of the science, the base line, and the stuff that we are asking for now.

Ms KERIN: Possibly not. If you look at the focus of base line research for the Northern Territory over the last few years, most of our effort, or all of it has been resourced from Commonwealth funds, Grants of the NT government and the Commonwealth together. And I think a lot of it has been focussed towards inventories or looking at problems Populations, research and of those individual species to try and get a handle on what is happening there.

Mr DUNHAM: So not generic. You have gone in on a problem rather than

Ms KERIN: Well, it was very much a two pronged approach. I mean, priorities varied depending on what people considered were the main issues but it would be a classic species inventories

depending on what the problem was, and then looking at systemic problems like We have spent a lot of resources on feral animals in the Northern Territory in the last 20 years and we have still got feral animals But I think park management, and it does not matter where you are in Australia, you will always, there's always time and I think that is the environment in which we operate. But it is better to have it than not to have it, because at least if we have it, we can strive towards managing our assimilated Species The majority of the research of the wildlife section has been directed towards those bigger issues in the Northern Territory. The park estate has been very much focussed on doing the basics, which are fire, ferals, weeds, cultural Management, and biodiversity, which is last, unfortunately, but that is the way it is. What we do is the choice in legislation.

Mr DUNHAM: I suppose my curiosity is, Bill Freeland used to be the boss and he has written in this thing we have got, ERISS, he has written I don't know 15 to 20 papers on base line stuff, and we talked to one of your colleagues today at Borroloola who had done some of that work, as you had, in the 80s. Now, the number you are giving us of \$40,000 to do the base line survey

Ms KERIN: It is not enough.

Mr DUNHAM: Which is parks, I would have thought it was a high priority given the man's disposition towards this sort of science and research. Why didn't it happen?

Ms KERIN: I can't answer that. I guess there was probably a recognition that a to try and stop when you look at the way, their sort of biology, it was never going to be easy. We sort of went through a series of processes and I think there were other priorities, that basically did not The complete problem, what we were doing there.

Mr DUNHAM: Was it sort of an intractable problem, seen as well, there is nothing you can do about it anyway and there are more pressing issues of higher priority.

Ms KERIN: From my perspective I wouldn't necessarily say that was the case We are always trying to provide the best way that we can and there are always competing and conflicting interests so...

Mr ARNY: The other thing is also probably not only like you said, he has probably doubled our national parks, but also it is again visited much more. Like it is a gorge when I first led tours, say you had 4 – 5,000 in 1970 when I actually got, I think it was 11,000 people. We have got 130,000 people going by tours, you know. So in other words, the visitation is much higher so too and I just do not know is there money

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- actually for it. It is a problem, money is overly short. And yes you have a couple of more people but they have not got for staff since they had 1970.
- Madam CHAIR:** Katherine Town Council, any ideas as a town council about what your views are and any measures that you think you are trying to take? Where is the thinking on cane toads at the moment with the town council?
- Ms RYAN:** I couldn't answer that, I am afraid, I have worked for them for a month and I am not willing to the council's opinion because I do not know it. Sharon Hillen sent her apologies, she wanted to be here but she had to go to a meeting.
- Madam CHAIR:** If Sharon has any submission that she wants to make on behalf of the town council please encourage her to do so. We are taking written submissions as well as the oral. Any suggestions of how they would be wanting to participate, or where they think government should have on it.
- Ms RYAN:** Okay.
- Mr ARNY:** I think most of the people in Katherine including say, chamber and via tourist promotion association, we are talking about it but look, you know what they say, is people they are starting these things, they can not do anything because they have to live with it. I think it is very hard to do anything about it.
- Mr WOOD:** Do you think people in Katherine knew it was coming, before it came?
- Mr ARNY:** Yes we knew. 100%. I mean like I was down in Mataranka the year before, and we knew it was going to come the next year.
- Mr WOOD:** And did you know what the effects would be, like on domestic dogs?
- Mr ARNY:** No, not really.
- Mr WOOD:** Do you think there needs, I mean Darwin people are going to get it, do you think there should perhaps be a reasonable education campaign before it gets there?
- Mr ARNY:** I mean I only know people say that it can affect smaller dogs and you should not pick them up and make sure the kids don't pick them up, and dispose of them in other ways freezing is the best way
- Mr DUNHAM:** How many people freeze them? There are a lot of options, we've got them all.
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- Madam CHAIR:** We've received evidence that if a domestic pet has taken a bit of a lick or a chomp at a cane toad the best thing to do is flush the mouth out with a hose with water, are people in the community generally aware of that?
- Mr ARNY:** I haven't heard of anybody lost a dog in Katherine because of the cane toads.
- Mr PICKERING:** Do you get much of it Sarah?
- Ms KERIN:** Toads don't taste very nice. I've watched my dogs' behaviour, they'll poke them with their nose but
- Mr ARNY:** They want to play with it, but that's all
- Ms KERIN:** Yeah but they resented to mouth them but I guess you don't have to ingest to kill various species but they don't taste very nice so that's probably the biggest deterrent out, they probably don't smell very nice either
- Mr ARNY:** Did you taste them?
- Ms KERIN:** Yes I have. They're loaded with that chemical arsenal, which they are, I presume they wouldn't smell very nice.
- Ms RYAN:** My dog eats them, he's a medium sized dog and he just gets a bit foamy around the mouth
- Madam CHAIR:** What do you?
- Ms RYAN:** I make him drink water
- Mr WOOD:** So there's no effect on him
- Ms RYAN:** I don't know he might be trippin'
- Mr DUNHAM:** Has he killed a toad?
- Ms RYAN:** He eats them
- Mr DUNHAM:** He consumes them into his guts?
- Ms RYAN:** Yeah.
- Mr WOOD:** No there's a dog we've got to breed from.
- Madam CHAIR:** You have got a tough dog by the sounds of things
- Mr WOOD:** What about cats? There's a mention here that one of the beneficial effects of cane toads is it might kill feral cats, have you got feral cats in the park?
- Ms KERIN:** Not that I'm aware of, I haven't seen any cat carcasses
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- Mr BONSON:** The other one is Sarah has any of the local indigenous peoples complained about the effect on their food sources, goannas, snakes, that type of stuff, what's the feedback from there?
- Ms KERIN:** Yes. I couldn't comment on Katherine itself but certainly in the Gulf country when the toads first moved through there, there were lots and lots of comments and feedback from the local people down there, particularly in relation to the impact on goannas and blue tongues. When we did some work down there with some of the traditional owners, you find out on those big black soil plains outside Borrooloola a goanna or blue tongue for 20 minutes when you were searching with dogs. After the toads moved through that rocketed it up to about 3 - 3¹/₂ hours so there's a huge impact and goannas and blue tongues are fairly stable part of those people's diet down there particularly along the black soil plains and also the sand plains along the McArthur River.
- Madam CHAIR:** We've also had evidence that it was affecting their freshwater drinking, that basically their sources of fresh water became so toxic with the number of cane toads, they couldn't drink normal fresh water sources.
- Ms KERIN:** I have heard particularly on the smaller communities where they were drinking like the toads affecting the water generally.
- Mr BONSON:** The other one I suppose has anyone got any evidence of this swarming that has been mentioned that when toads come near. Has anyone filmed anything, has anyone made written accounts?
- Ms KERIN:** When they're coming for insects, lights at night?
- Mr BONSON:** No when they coming to new virgin territory, the evidence that we've been getting is that they swarm when they come to a virgin territory.
- Mr PICKERING:** Front wave, that sort of thing?
- Mr BONSON:** Yeah and their numbers go big, has anyone heard?
- Mr ARNY:** No it didn't, whereas in Mataranka I would not believe that first when you got out there in say night time, wherever you walk you can see hundreds of little frogs jumping all over the place, at the Manor, and I just under these we've got, he lifted it up and there were at least 50 and he said he gives the kids a few dollars and they are collecting it and they are freezing it, but it couldn't make a in that a small place like this in front of a billabong there would have been about twenty little tiny frogs hopping away when we walked over. One time I saw it, at the end of the wet season, it is

- unbelievable, I never have seen
- Mr BONSON:** When was this?
- Madam CHAIR:** Mataranka
- Mr ARNY:** I think it was last year, end of last year.
- Mr BONSON:** So you haven't been back to see if they've gone down as well?
- Mr ARNY:** I think they are down, I actually haven't asked, I've got a property down there and I would be the best one to, I haven't seen this here in our place, I saw more cane toads last year since this year but I never saw it swarming like down at Mataranka. Did you see Mataranka, how many there were?
- Ms KERIN:** No
- Mr ARNY:** Just unbelievable.
- Ms KERIN:** Last year?
- Mr ARNY:** I think it was last year, end of last year.
- Ms KERIN:** I went through Mataranka
- Mr ARNY:** The year before
- Madam CHAIR:** Now Andrew you say you've got property. One of the things we're interested in finding about it is the impact of fresh water sources on property for the stock. Would you be able to say anything in that regard?
- Mr PICKERING:** Not stock, but just something of interest you were talking about this mass of toads, the ... thing I have experience on the creek bed was some early wet season flushes that came through, filled puddles up and some of these puddles were five metres long. I witnessed it before they dried and they sort of tadpoles in the waterholes and I was putting my hand in there getting an idea of the mass, well they dried up and I went back there and the water had receded and it was a mass of dead tadpoles that deep, in strips five metres long down the creek bed system.
- Mr ARNY:** Good fertilisers wouldn't it?
- Mr PICKERING:** It stunk!
- Mr DUNHAM:** Were predators in there?
- Mr PICKERING:** Nothing was in there when I was there

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- Mr DUNHAM:** Must go with the avoidance theory
- Mr PICKERING:** It's possible yeah, certainly there weren't any eagles there, or hawks or crows.
- Mr DUNHAM:** Sarah your baseline data about diet, I'm interested because they're pretty non-discriminatory they seem to eat anything of a vegetative matter or anything else, is that going on, is that continuing?
- Ms KERIN:** No it was done as a once-off on the cane toads , the Northern Territory and that was basically done change see the waterholes stock control right through from about to outside Borroloola
- Mr DUNHAM:** That would be probably a good place to start to look at what they're choosing to
- Ms KERIN:** Certainly that data we still have that data obviously and in the terms of frog species and comparing now basically
- Mr DUNHAM:** We heard today at Borroloola a man on an outstation, you'll remember his name probably, and he said that the mosquito populations is way down, so it could be, apparently the tadpoles are pretty aggressive too and they eat their own eggs or up to 99% of their own eggs.
- Ms KERIN:** Voracious eaters
- Mr DUNHAM:** Perhaps the mosquito larvae are being taken out as well? But you could only test that through your laboratory, sampling of the
- Mr ARNY:** Look I just don't know if it's actually thing, but I don't that actually affected the barramundi so much you know like as I said before it doesn't affect the barramundi that we have got in our billabong in Territory Manor, barramundi feeding and we haven't lost one since toads came through.
- Mr DUNHAM:** You feed them too well
- Madam CHAIR:** We've heard evidence and it's only anecdotal evidence, that it's not so much the barramundi but the smaller more the mullets that the barramundi never feed on, so it's further down the food chain that it's affected, the barramundi we've heard in other evidence, spit it out, but the smaller fish the barramundi feed off are the ones hit by it.
- Mr DUNHAM:** Have any of you got a swimming pool? How many get in there at night?
- Mr ARNY:** I have never had one in there, never.
- Mr DUNHAM:** What keeps them out, is it
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- Mr ARNY:** I've got a bit of a thing on the side, I did it a long time ago 25 years ago, and I built it and I don't think they are coming in. I've never actually had one in there.
- Madam CHAIR:** So you've got a little barrier around the pool?
- Mr ARNY:** A step, and I've never had one in there but I've had other frogs in there but never a cane toad.
- Mr DUNHAM:** Is it salt water or chlorinated?
- Mr ARNY:** Chlorinated.
- Mr BONSON:** The other one is about this raw data, how old is it? What does it date back to, what year?
- Ms KERIN:** I suppose with that analysis that was done in '82/'83.
- Mr BONSON:** So when did it become outdated and when does that type of information become ?
- Ms KERIN:** Probably it's a snapshot of in time of that what's they were eating as they travelled through than Carpenteria and at that stage it was predominately obviously termites, ants, beetles, the majority termites though. It would be interesting to see what they eat as they progress north further into the tropics, see how their diet changes. stuff again that's a snapshot of on those areas the toads have colonised some of those waterholes and that's works garden and mounting the Northern Territory and they've also, I think we came as far north as Nitmiluk stairs, so that is useful in terms of species diversity, richness and all that sort of stuff with the frogs in terms of that's what was there at the time.
- Mr ARNY:** So there's whole of green frogs have disappeared, there are less eels than there were a year ago.
- Ms KERIN:** I've only been here 12 months last wet season I had no no green frogs at Nitmiluk and this year I've got a healthy population so I don't whether if it's a rainfall thing or it is
- Mr WOOD:** They've moved from your place to
- Ms KERIN:** Possibly.
- Mr BONSON:** The evidence from Borroloola is that they have been co-existing, that the green frogs and the cane toads have been leaving each other alone. That's what people are going to data isn't it
- Ms KERIN:** And from memory when we did the frog stuff in terms of the
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- composition in terms of were out-competing native frogs, the green tree frog was one of the really hard to do because they're not as abundant in the landscape down there as the other species are so we really didn't get that much information.
- Mr WOOD:** It was mentioned that one of the Aboriginal ladies down there mentioned that the honey wasn't as abundant and they thought that the bees, the sugarbag, the bees may have been, especially when they're foraging down low, they were also patch-prone. I don't how true that would be, I don't know if you've seen any bee carcasses.
- Ms KERIN:** No, I think in terms of, cane toads can't fly if so things were right down low, that's what they were talking about?
- Mr WOOD:** That's what they thought
- Madam CHAIR:** They were down low to the flowers
- Ms KERIN:** Yep possibly
- Mr ARNY:** in water
- Ms KERIN:** Toads are mainly things are sort of diurnal and toads are nocturnal so, not sure
- Mr WOOD:** Where do bees go at night? They go back up in the tree?
- Mr DUNHAM:** working bees
- Mr WOOD:** Oh it depends what shift you're on, now I can see it yeah
- Mr BONSON:** Just to mention about that problem that you had with the buds and insects and lavender beetles, did you ever notice also dead cane toads around those areas?
- Mr ARNY:** No, I can't remember, no.
- Mr BONSON:** Do they come there at all now?
- Mr ARNY:** We see them on the water, look I never thought anything about it but I actually tell my new people always oh you know we're going to get this, we're getting say flying ants and first we get the small ones and then we get the big things and we get the moths and the worst thing is the lavender beetles, you know, or stink beetles, and we had hardly any stink beetles this year, I mean that maybe just something what's unusual, next year they might come back again in abundance but it doesn't look like we did have very many.
- Mr McADAM:** Sarah can I just ask one question, you're probably aware that well they actually are at Dunmurra and further south at

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- Hayfield station, and have probably been there for at least two years or so, that I've seen, is there any information in respect how much further south they may go.
- Ms KERIN:** There was some modelling done in the 80s when they sort of realised, I'm not sure if it was by Queensland or the Northern Territory, they were actually colonising west out of Queensland. There's been a variation in terms of minimum temperature that they would be able to tolerate, some researchers say 10° some say 15°, so just depends on whether
- Mr DUNHAM:** That modelling said it wouldn't get past Mataranka
- Ms KERIN:** Well I've seen, I'm trying to remember what it looks like
- Mr DUNHAM:** It's at Dunmurra/Mataranka I think, if I recall.
- Ms KERIN:** Dunmurra/Mataranka, and they're down at Dunmurra at the moment?
- Mr DUNHAM:** Well what Elliot is worried about is you've got virtually a series of water courses that terminate into Lake Woods, which would seem to be an ideal habitat having set for temperatures.
- Ms KERIN:** I think probably like the situation down the eastern seaboard in mild year they'll probably extend their range further south, and in really bitter years further north, but I'm not quite sure what particular gap used for the Northern Territory but probably there's a potential to have a series of mild years for them to go further south.
- Mr WOOD:** You know how far south they've moved in Queensland? The Queensland coast, the New South Wales coast as distinct from inland Queensland.
- Ms KERIN:** I'm not sure how far west they've extended.
- Mr WOOD:** It gets very cold in
- Mr DUNHAM:** They can live in Camooweal, they live
- Mr WOOD:** Yeah Mt Isa and down south of Mt Isa it's freezing in winter time
- Mr PICKERING:** And they're there aren't they?
- Mr WOOD:** They're there? I'm not sure.
- Mr PICKERING:** Yeah I saw them
- Mr DUNHAM:** We had a bloke today tell us that he lived in a place called Collinsville and there were frosts there and there were frogs
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- there, he goes down and stays there and white frost on the ground and live toads. They're hardier than you think actually.
- Mr WOOD:** Their all wearing little beanies.
- Ms KERIN:** It might be they have to revise, obviously that was done probably not paying much attention to them in terms of specking different landscape it might be timely to revise it by the sound of it
- Madam CHAIR:** So do you think in terms of focus, you mentioned before getting the CRC, Parks and Wildlife, CSIRO and perhaps an indigenous organisation could be working collaboratively on a focus in terms of addressing them as well as perhaps specific funding to look at ongoing monitoring research, get more baseline data together, do you those are practical recommendations this enquiry could consider?
- Ms KERIN:** important, I think that certainly we have to do that otherwise what's the and I think as being as collaborative as possible involving any
- Madam CHAIR:** Some people have suggested that the Caring for Country networks for example, through the NLC would be a good practical method as well do you? To boost the range of programs?
- Ms KERIN:** Yes, I don't see there would be any issues in that, certainly if you've got good on the ground, yeah using effectively, but I think it does need to be a collaborative approach that way it's achievable, that way it's conclusive and all developments stay whole
- Madam CHAIR:** In terms of the range of relevant stakeholders, we've had those questions asked before, in your opinion, who do you think the relevant stakeholders are?
- Ms KERIN:** Well depends on how broad you want to go I guess. In terms of specifically be tertiary institutions, CRC, NPWS that's both the Northern Territory and across Western Australia and also
- Madam CHAIR:** Queensland
- Ms KERIN:** you're looking at government agencies, you could get the lands councils and in terms of their units, their affiliations, a means of bringing down to a community level looking at in the community relevant people who have, who either own the land or are stakeholders in terms , so a broad spectrum within reason and one that is structured obviously.
- Mr BONSON:** What about tourism Werner, would Tourism Council be
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- interested in getting involved looking at cane toads.
- Mr ARNY:** I don't know, we went a few times over the years out to the Gorge and did some frog study with different things, I don't really think so.
- Mr McADAM:** Werner from an economic perspective, and I understand that they have been here about two years
- Mr ARNY:** Yeah.
- Mr McADAM:** in this region, I guess the point that I am trying to get at is, and we really don't know what is going to happen in the future in terms of how they are going to fit into the environment around here or indeed up at Kakadu, we don't know that do we, so maybe we've learnt a little bit in respect to the Gulf region, ie Borroloola in terms of anecdotal evidence, but the point I am trying to come at is, from a business perspective if they, we're talking about goannas we're talking about other bush animals as well, is there a capacity to harm the.....
- Mr ARNY:** It definitely would be a negative aspect because some people especially come up here to see the wildlife, and of course, I mean frogs are not very nice to look at, not nice for the environment
- Mr WOOD:** They're not cuddly
- Mr ARNY:** Not cuddly.
- Madam CHAIR:** And there is anecdotal evidence about our iconic species like the freshwater crocodiles, the goannas, the quolls, and that you would assume would have a negative impact on the aesthetics in terms of tourism...
- Mr ARNY:** We've got a tour out on the river today, crocodile night adventure, with a meal, barbecue and if you go down there and don't see any crocodiles, it would be disastrous. Somebody was telling me that in the flowing river is much better than billabong, but I really don't know anymore, it's just what people say and everybody's got a different opinion and we haven't got enough evidence have we, that's the problem.
- Ms RYAN:** Also in regards to stakeholders would be Town Council is going to be interested in continuing their water monitoring in the river corridor.
- Madam CHAIR:** If they could put together a submission that would be useful, about what they're doing and what they're interested in doing.
- Mr RYAN:** When does that have to be done by?
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- Madam CHAIR:** Within the next four weeks would be really good. Like yesterday would have been great, but we'll cop the next four weeks.
- Mr ARNY:** What actually is evidence like in Queensland about crocodiles, are they less or does it effect their populations.
- Madam CHAIR:** No one's done the definitive study, the closest we have in the Top End of Australia is the current study of *McKinlay River - Our Freshwater Crocodile Species*. So the evidence isn't there, there is anecdotal evidence the ones that get stuck in the gullet and die, the freshwater crocodiles that manage to digest them through to their stomach survive. Sarah do you have any
- Ms KERIN:** That's certainly my understanding of it and interesting when we were doing the toad populations stuff and the frog surveys in the Gulf region we obviously went beside billabongs at night, crocodile being nocturnal and it was one of the occupation hazards turning the spotlight round in the water every ten or 15 seconds, and invariably there'd be a eye shine so obviously they do co-exist, doesn't pattern that first moves through but then crocodile
- Mr McADAM:** The other point too is that we've heard evidence today from an indigenous lady in terms of goannas, large goannas and blue tongues, and Borrooloola has been impacted by how long
- Ms KERIN:** 15 years?
- Madam CHAIR:** They were saying 1988, 1989 today in Borrooloola.
- Ms KERIN:** 1989, 1990
- Mr McADAM:** The point I am trying to make that anecdotal evidence would suggest that the large goannas have not come back, and blue tongues certainly, this is what we've been told, they are not there in the same numbers as they were previously. And yet other people are saying that after a period of four to five years, five to six years, there's a stabilisation, things come back into balance.
- Ms KERIN:** It would be interesting to go back and try and repeat the goanna, blue tongue stuff that we did at the 88/89/90 and just see
- Mr McADAM:** Sarah did you do that?
- Ms KERIN:** Yes I did that both as Parks and Wildlife but also on contract with the government of the day. Every 20 minutes we encountered either a blue tongue or a goanna and that would be over a period of something like four to five hours,

and that's a fairly high frequency when you think about it. So when we went back it was something like 3¹/₂ hours searching before we found a goanna or blue tongue, so some of those bigger goannas are certainly numerous but goannas on that black soil plain and also down near they're up around 6 - 6¹/₂ kgs and they're fairly old animals as well, so whether they're getting to that stage again now I don't know.

Mr BONSON: Just out of interest there was a show on *Imparja* at 7.30, 60 Minutes it was about cane toads, do you see it?

Ms KERIN: No.

Mr BONSON: I just wondered what your comment was on that. It was an interesting show on how cane toads are getting to Kakadu, Tyler I can't remember his first name.

Madam CHAIR: Mike Tyler.

Mr BONSON: Mike Tyler was there, he was giving expert evidence that what he thought could be happening.

Madam CHAIR: I'm conscious of the time Sarah and I know you've got a child outside. Is there anything else that anyone particularly thinks that this enquiry should be considering, or looking into, where we've not niched up all your work by any means, or anyone who you think we absolutely ought to be talking to? By all means, we take suggestions.

Ms KERIN: Particularly from our perspective certainly I think the public education unit is maintained as the toads move north is important. Obviously large communities live just near the toads, ie Townsville so we with toads but in terms of giving people there's sort of no preparedness for them and I think that's really important and it sort of tends to minimise exposure if you like when considering those sorts of things.

Mr McADAM: It is also important for tourists because they are fairly mobile too, fishermen were going to parks and jumping off vehicles

Mr DUNHAM: Don't mow the toad.

Ms KERIN: And most people are unaware of the fact there are toads there or that they are transporting. In Robinson years ago I remember saying to some tourists when I was doing some of the survey work, Have you seen toads? How long have you camped there? They'd camped there for three nights. No there's no toads here. And sure enough that night there were lots of toads, so if they don't have that awareness and these people from Victoria then the potential for them to actually unwittingly relocate is probably fairly high.

Madam CHAIR: Apart from the public awareness anything else? Andrew

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- anything else you want to add?
- Mr PICKERING:** No I think Sarah said it all pretty thoroughly.
- Madam CHAIR:** Werner?
- Mr ARNY:** No that's the only thing, if you can make something of them like using their leather.
- Madam CHAIR:** Handbags, shoes
- Mr WOOD:** They do mention it in here, in this report here, they actually talk about the toxins being used in China, for cardiovascular and they also have other
- Mr PICKERING:** ...and you don't have to go hunting for them
- Mr ARNY:** It would be minimising it wouldn't be things that you can send the kids out and collecting a bucket that you can actually sell it somewhere, but otherwise I think those people who study things have to come up with some firebug(?) of control
- Mr BONSON:** They're long dead Werner, they bought them in 1935 and they've all passed away those dudes. The people who bought them in in 1935.
- Mr WOOD:** We're thinking of putting a bounty on sugar.
- Mr ARNY:** Yeah I know but those people who bought them in they need to find something to get rid of it now.
- Mr BONSON:** Apparently the guy who brought it in his last famous words when we died were "I still think it was a good thing".
- Madam CHAIR:** Cathy.
- Ms RYAN:** Sorry I wasn't very prepared for this meeting everyone.
- Madam CHAIR:** If you could get back to Council for us and say that we'd be very interested in hearing from them about any suggestions they have or any programs they're undertaking or actions that we need to make sure that we are aware of, because one of the things we are trying not to do is duplicate work that people are already doing, but we rather would enhance the work and fill the gaps.
- Mr McADAM:** I was just going to ask Sarah is there any probably not appropriate for you to respond but, is there any capacity for you to have a look at going back to that Borroloola region in terms of the goannas and the blue tongues?
- Ms KERIN:** It would be difficult for me to respond in my present capacity and that would be a decision for Parks and Wildlife to make
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but certainly in terms of replicating it on a personal level I wouldn't have an issue with doing that.

Mr McADAM: Sorry

Ms KERIN: On a personal level I wouldn't have any issues in doing that but professionally obviously that's a decision is for Parks and Wildlife to make.

Mr DUNHAM: So if you can get Sarah a promotion

Ms KERIN: That's in fact a demotion

Mr ARNY: She's now acting Regional Manager

Ms KERIN: In terms of collating Parks and Wildlife work, in terms of monitoring and stuff being done on the Park network that all of these, not just being focussed on these toads, a lot of it is sort of focussed towards monitoring associated with our member practices but it may be worthwhile us collating the information. Do you think it's worthwhile? Alright we can do that and send it in, within four weeks.

Madam CHAIR: That would be great, it's very useful to have what you do have as part of our body of information that we give to parliament, if that's not adding too much in terms of your resources.

Ms KERIN: No, no it's fairly easy to do, in terms of what it is, how long it's been going for

Madam CHAIR: That would be fantastic. Thank you very much for coming along tonight. Thank you you've absolutely enhanced and added to our enquiry and hopefully we can meet some community expectations in terms of the outcomes, and if you think of anything else, Rick Gray's always available for submissions.

TRANSCRIPT NO. 3

Jabiru Public Hearing
Wednesday, 7 May 2003**PRESENT:**

Committee: Ms Delia Lawrie, MLA (Chair)
Mr Matthew Bonson, MLA
Mr Stephen Dunham, MLA
Mr Elliot McAdam, MLA
Mr Gerry Wood, MLA

Secretariat: Mr Rick Gray
Ms Maria Viegas

Attended by: Mr Sajidah Abdulah
Ms Jane Christophersen
Mr John Christophersen
Mr Brian Cooper
Mr Russell Cubillo
Ms Georgianna Fien
Dr Dan Holland
Dr Rod Kennett
Mr Dave Lindner
Mr Ian Murdoch
Mr Jonathan Nadji
Mr Margaret Rawlinson
Mr Johnny Reid
Mr Graeme Sawyer
Ms Beryl Smith
Mr Rodger Teague
Mr Steve Willika
Mr Brian Yambikbik

Note: *This transcript is a verbatim, edited proof of the proceedings.*

Madam CHAIR:

Members of the committee. Good morning. Thank you all for coming to the parliamentary inquiry into the incursion of cane toads into the Northern Territory. We understand you are living with cane toads, and one of the reasons why we wanted to leave the parliament house, come out, was to speak to people who have very real experiences of cane toads, and the sorts of work they are doing to combat the cane toads. My name is Delia Lawrie. I am Chair of the parliamentary committee and I am the member for Karama in the northern suburbs of Darwin. Other members of the committee are Mr Elliot McAdam, member for Barkly; Mr Matthew Bonson, member for Millner; Gerry Wood, member for Nelson; and Stephen Dunham, member for Drysdale. This committee, and I am just getting the terms of reference,

is tasked to inquire into, to identify the problems and risks associated with cane toads in the NT; the potential effect and extent cane toads will have in the Territory; the cultural, socio-economic and other factors associated with their encroachment; to identify the current level of understanding concerning cane toads to date and assess the need for public education and awareness programs; identify ways to manage the environmental impact of cane toads in the NT; and to look into community concerns and expectations in regards to the progressive entry of cane toads into the NT generally. It is not an exhaustive list. If there are any other matters regarding cane toads you want to raise here today, by all means feel free to.

We are being recorded for Hansard purposes, this is a parliamentary inquiry, so I ask you to assist our recorders, Maria, by when you speak, state your name, so Maria can keep track of who is speaking. Other than that, we are a fairly easy going and informal committee, where we invite people to make a submission to this inquiry, an oral submission, just talk to us about what you have found, what your issues are, what you want to see happen, those sorts of things. Members of the committee by nature are very inquisitive and so they will regularly interrupt people and ask them questions, but only because we are seeking answers and are seeking as much information as possible. We absolutely thank you all for coming here today and we hope that the information we gather will assist the Northern Territory government because we ultimately give recommendations back to parliament and back to the government about what they should be doing, what they could be doing, to minimise the impact of cane toads in the Territory. Who would like to start?

Mr MURDOCH:

Good morning. My name is Len Murdoch, and I address this public hearing as the public relations officer for Jabiru Town Council, and also as a concerned person who has a long history in contact with cane toads. Cane toads have already been located in Jabiru, the oxidisation of ponds on the roads into town and recently, on the roads on the fringes of the town. I am sure that at various stages during this hearing you will be advised by technical experts on all aspects of the cane toads, and as such, my submission is as we as a community have identified the position. While we in Jabiru understand and accept the view of the eminent scientists and environmentalists on the damage that toads do to the environment and fauna, we have looked at the issue of the cane toads invading from a different perspective. In all the public hysteria about the toads and their effects, it seems to us that one of the most important dangers associated with them has been disregarded or at least given minimal coverage. The danger is, one, of the effects of the toads on the young people who live in the bush. Anyone who has lived in a small, isolated Australian

communities would soon realise that the cane toads can and will present a serious health hazard for our younger citizens. Although with our modern media, we can communicate and educate a broad band of Australians on the associated dangers of the toads, how can we communicate this to young people who either are not old enough to understand the English language, or to whom English is a second, third or even fourth language.

In the mid-1970s when I was living in Townsville, Queensland, we took great delight in devising ways in which to summarily execute the numerous cane toads which invaded our back yards at night. The reason I relate this is simply that today's young people are really no different to the way we were then. For those who have no experience of the bush other than a quick weekend vacation, I can assure you that the kids in these areas have a totally different approach to life than your average suburban city child. Bush children from all origins are raised with a lot more personal freedom than those in the big smoke, and as such become a lot more inquisitive and adventurous at an earlier stage of life. The average children in our community were raised without the fear of, and I will use the term, 'stranger danger' and as a result they tended to explore a lot further from home or what would be considered normal in a larger town or city. Children as young as three and four wander around areas at will and occasionally get into mischief, but more often spend their time playing and exploring the local natural wildlife and features. Parents of these kids know that the other adults in the community will ensure that observable danger will be kept away from the children, and thus assist in keeping them safe.

However, the advent of the cane toads in our area now means that a lot of the old safety net measures will no longer apply. When the rainy season comes and cane toads place their eggs into the normal haunts of the native frogs, are the young children going to go up and differentiate? Of course not. A tadpole is a tadpole. When you are three or four years old, and want to collect some, it does not matter that they may be poisonous. A worse still scenario is where a group of young children will capture a live toad and start to play with it. Scientists and herpetologists tell us that the toads are capable of spraying the poison from their glands over a short distance when they are stressed. There would be nothing more stressful than being annoyed by a group of young children who do not know when to stop. The poison will be spread throughout the group, and possible even sprayed into the children's eyes, causing immediate temporary blindness which will of course require emergency medical treatment. The other children will also have poison on their hands and other body parts. Again, those who know children will be aware, they do not wash their hands unless directed to do so, and the

possibility of self transferal of toad poison to the mouth by the hand, is extremely real.

In the last 10 years, there have been numerous accounts in Queensland of children taken to hospital, suffering symptoms of poisoning, without anyone realising where the poison has come from. The consensus of the medical profession in these cases now, is that the young people were suffering from cane toad poison and had suffered through hand to mouth transferal. Although there is no reported case of death by cane toad poison in Australia at this stage, it is a real possibility in the future. We at Jabiru Council believe that it is time that this threat to the young people of the community is addressed. We would like it to go on record that we believe an immediate education and graphical advertising campaign is needed across the top of Australia to combat this situation. Maybe one day the experts will come up with solutions to controlling the cane toads, but in the interim we will have to live with them. Let us not compound the problem by ignoring facets of their coexistence that could possible lead to fatalities among the young in our communities. We implore you that when you sit down and consider the environmental and economical factors related to the cane toads, you also take time to think and work on solutions to protect the young innocents from the problem. We thank you for this opportunity to express our concerns about cane toads in our community. Thank you.

Madam CHAIR: Excellent submission. Members, any questions?

Mr BONSON: I suppose you are saying that cane toads in Jabiru, what numbers are they large numbers?

Mr MURDOCH: I am not a scientist and I can not tell you the exact numbers. I can tell you as a layman and as a public relations officer, we have had them located at the sewerage observation ponds, in front of the caravan park, and on the main road to the airstrip; and if you go as far out as Nourlangie, they actually are swarming out there. So they are here.

Mr McADAM: You mentioned about education programs, about schools and that, and you may have said this, I am not sure, but is there anything happening in the schools in Jabiru and places like that?

Mr MURDOCH: I can not speak on behalf of the schools. I write the local Jabiru rag, the community newspaper. We have brought it up with the aid of the scientists from parks, and made an issue of it and we are continuing to make it an issue. But whether it has been spread through the school, any other means at the moment, I do not know.

Mr BONSON: There is, we have been given evidence that in a place like

Borrooloola, is they put signs up, 'don't load a toad on your car or your boat,' something like that. Do you think that is a possibility, that people might be transferring them around in their cars and boats without knowing?

Mr MURDOCH: Hypothetical, I really can not tell you what other people are doing. I can assure you that the cane toads are moving on their own means and they seem to stop wherever they hit fast running water, at the moment, and just wait for the water to dry up a bit.

Madam CHAIR: Thanks Ian. Another submissions from anyone? Yep, Dave.

Mr LINDNER: Dave Lindner. I work out at the buffalo farm down near Cooinda. I have belted out a few pretty ad hoc ideas on toads which I have given to people, I have gone through some from Cobourg, which I will submit to you as a written submission later on, but there is some stuff overriding that. I only heard about this committee on Friday, I was advised from Rob Kennet, so I have summarised it in a badly written document.

Madam CHAIR: Dave, I might mention some of your expertise. You have been a ranger around these parts for how many years, in the past?

Mr LINDNER: I was a ranger for 14 years in the commission up until 1979 then I was an environmental advisor with the Gagadju Association up until about 1990, then I sort of specialised in maintaining a meat supply service once the Depac... program had wiped out the wild buffalo availability, and that has sort of kept me pretty quiet for the last 10 years more or less.

Madam CHAIR: I would believe that.

Mr LINDNER: What I was going to mention was that in 1962, I did a trip to Queensland looking for crocodiles with Trerrer Gwoll with the person Compton, 1962, and we spent a bit of time up on Russell Drysdale's property in Berrilea on the Barwon River, and it had a saturated toad occurrence there at the time. Rain was just starting to break, it was late in the year, and everywhere we looked, every burrow we looked, for snakes and lizards and things, were full of toads. The homestead at Berrilea had had major upgrading or mainly brand new, it was a show place for Drysdale, there were extensive carefully prepared lawns, watering type, going on and there was sort of a toad every metre, the typical north Queensland situation. That was in 1962. I was working stations at the time, I then worked for the Commission from 1965 through to 1979 and I went to Cobourg.

Sometime around 1969 I thought, well, there's really no

reason why toads won't make it into the Top End of the Territory and I put a submission into the Commission saying that Cobourg needed a barrier across the neck of it to stop control of vandang(?) and buffalo control in relation to environmental protection both ways from those animals and, at the same time, it should be envisaged in the siting of that barrier that it should be sited for future inclusion of a toad barrier. I've put this in writing and got no response because the break out in Queensland wasn't envisaged at that time.

Some years later in the John, may remember John Christophersen(?) may remember some time in the nineties, mid-90s, he stayed with me at the buff farm down near Cooina for a while and toads were on the move and I brought up this earlier proposition with him. I was very pleased a couple of years ago when he brought up the toad barrier proposition for protection in Cobourg and some of my old guard, right wing mates (?), who, there's no point hiding the fact, they hate John Christophersen, they made great derision out of it and got pretty embarrassed and I said: 'Well, John and I talked about it and I fully support it'. They laughed about the barrier. The original submission had no description of how the barrier across Cobourg should be built.

From then on when John came up with the idea I started to think pretty definitely about what would be required.

A couple of months ago with things really on the move here, toads coming into the buff farm and so on, I rang John and I said: 'Did you drop that idea on the barrier?'. He said: 'Yes, it wasn't because the barrier wouldn't be effective and because people laughed about it' he said, 'I don't give a damn about that'. He said it was because of the possibility of transport in by barge or car or other means and the cost of the barrier has been a waste of money. I said: 'Well, Cobourg historically biological research in the Top End goes back to the Port Essington settlements of 1839, which are the base areas for species identification collection in plant and animal life for the tropics of Australia in these latitudes, latitudes 11, 3 down to 14 degrees at Katherine'. Cobourg was the centre of that, not only in the 1839 and 1849 occupation period, Cobourg by its extremity status has been a collecting point for other unrelated visitors - French, everyone else, they called in at Cobourg because you can't miss it. So it's got a rich history of involvement in biological research in Australia.

That's very well summarised by John in a CSIRO report put out in 1974, and I have copied that for the Committee.

Getting back, is that all you need on credentials?

Madam CHAIR: Yeah, I know you've got more, Dave.

Mr LINDNER: So to the invasion happening and one priority stands out a mile in front for funding and implementation keeping substantially over the Top End toad free. So that's not emphasising quoll(?) protection, it's not emphasising goanna protection – emphasising total ecosystem protection.

The options that I see are: Cobourg Peninsula, Gurig National Park are the most important and urgent. Two large islands including Tiwi Islands and Croker Island the Wessels and Grootte, are second priority, nevertheless immediate priority, for reasons I'll give later.

Other islands closer to the mainland and closer to toad access, as community support indicates, includes for example Elcho and Milingimbi, and the people there are adamant they don't want toads and, of course, they deserve every support that can come from Federal and Territory government sources,

Cobourg can be protected by a barrier against overland toad invasion. As John commented, it wasn't the barrier he saw as the obstacle for the nominal success story, it was transport in in spite of the barrier.

The surveillance necessary for detection of transporting toads then becomes similar to that necessary to protect insular land areas from toads. In other words once you've got your barrier up Cobourg you're dealing with islands. It's got a three kilometre wide neck from sea to sea of fairly flat country and once that barrier is effectively installed you've then got the same flurry that you've got on Tiwi Islands, which have much bigger communities than Cobourg, much more traffic in and out by barge and so on.

The idea that got me going again on rethinking Cobourg was the amount of money and the amount interest that governments were placing on toad combat measures, the relocation program of quolls and, which I've found to my dismay is part and parcel of it because I've been very critical of for political reasons, and particularly research on toad impact, genetic impact of toads and things like that. We've got a problem now if we're going to save country we, save it now or we're going to lose it. You can't remove established toads.

The relocation of predators known to succumb to toadare quolls, goannas, snakes such as the King Brown and islands is the link in politeness and of questionable long term success prospect.

Toad protection for Cobourg will require a rare,

single-mindedness of intention and such not be dressed up for job opportunities for locals and other distractions. Already I have already alerted John, I will be a while about that because it's covered later on.

As with the mimosa program of Kakadu, good worker performance in a wide variety of field work situations, in surveillance and in maintenance work with the toad prevention will be required and people on site with aptitude will be valued.

The kids and adults of Cobourg, the people who live at Araroo and that sort of thing make the recovery of accidental drop(?) toad relatively easy. The difficult in Cobourg are not going to be the traditional owner communities, they're going to be places like the pearl farms, Seven Spirit and the larger public ranger of social areas. Kids will just be hypersensitive to toads once, well, not once they're informed over it, they'll know straightaway.

As is often the case in a crisis, science hasn't got the answers and current toad research is not looking for them. Technology, nervous reaction is designed, technology for toad attraction, trapping and detection at transport terminals, communities, pearl farms, tourist resorts and government stations essentially accidental toad release/retrieval technology needs to be researched without preconceptions as to which direction that research will take. If kids looking for them are the best way, forget about deeper ideas, research for deeper ideas on a scientific toad behaviour basis by all means, but be prepared for anything as to which is the best technology, but it needs to be researched and compared and quantified under different testing conditions.

The toad research priority, and it is extremely urgent, is for the foregoing requirement – that is location of toads at accidental release spots - not invading toads overland, but toads that are dropped off in containers, from vehicles, whatever means a small or singular toad can come to the high risk areas.

Quarantine, although important, it's something the Town Clerk didn't know about. Quarantine procedures need implementing now as toads are being transported between communities, I'm talking about Arnhem Land, Katherine, out of curiosity and as pets or, as happened in Jabiru, as cockroach eradicators. We had a real cry in(?) on toads and a bloke called Lucas got up and said: '..... will it work'. '..... what do you mean?' He said: 'Oh, he cleaned up cockroaches'. He said: 'I've got two in the camp now'. But when he got back it had eaten all the cockroaches and buzzed off.

This sort of carefree attitude can easily addressed. We

don't want toads.

The Maningrida people have got toads, they've got no goannas, they've got no quolls. That experience has got to be different, spelt out.

Talking about kids, everyone I think at Bamulia(?), one of those settlements down there, might well exist here, don't worry if I'm flippant about the rest of the Territory, it doesn't matter to me, the kids there, everyone, toads are coming, toads are coming, shock, horror. When they arrived the kids learnt within 24 hours to throw them with a power pole insulator and have a little mushroom cloud go up and it was great fun. Kids learn quick and they probably learn not to suck their fingers afterwards.

The attached statement on Cobourg, which I'll submit to the Committee, was based out overnight in March and sent to John Christophersen on Cobourg Board of Management. It's ad hoc origins and limitations are re-emphasised in the proposition and I said while I was writing it. This is not a proposition in finality, if someone laughs at you and says the whole thing's rubbish, say: 'This will work'. It needs upgrading in every aspect beyond the 24 hour self think tank.

Both Cobourg people and I have now additional ideas of implementation, already we find the barrier and other, but the basic concept is still relevant, that is stop them and set up procedures for locating flagrant accidental releases within the barrier.

Cobourg has unique significance in Australian plant and animal collecting history and in the tropics and currently has international wetland sites, but that's covered in a document

With federal and NT government requests, that is instead of the Board going, Board of Management going to you(?) and saying: 'Give us funding to do this'. You say: 'Cobourg must be saved, what do you think of it?' It takes a decision on expenditure out of the responsibility of the Board and gives them the option of fully supporting it and accepting that it will happen and authorising, which is important. But they are not going to be judged by the results, they're going to be judged by people who encouraged and saw the toad danger and acted responsibly.

For the federal and NT government request and combined government and local resident determination Cobourg can be kept toad free. I guess when I'm saying Cobourg here I'm emphasising its priority and I'm emphasising the fact that I was there for five years, and subsequently the resident ranger, the same comments can be can be written into

all the other islands, the Tiwi Islands, Croker, Groote Eylandt. Tiwi Islands and Groote Eylandt are magnificent habitat areas of substantial size on their own.

The Cobourg families are close knit, it's a small community overall and land bridge notwithstanding, I consider Board determination would help ensure this area has the best prospect of toad free status of the peninsula and larger island options. I still think regardless of its special status as a wetland its historical status as a scientific area, collecting area, its also the best one to go for. The time is short to act on Cobourg.

Details and that of how to go about it in plain details, propositions are here, they're just immediate ideas that would work, they can be refined and, certainly, improved on with appropriate scientific research and funding, of course.

Madam CHAIR:

Time is short. What's your estimation? Time is short on Cobourg. What's your estimation of that?

Mr LINDNER:

You want to that land bridge and true quarantine by next wet. Now you can build a cheap barrier as a contingency thing and go for the major structure, it's a big structure, it's not big when you're talking millions of dollars for research, it's not big at all. It's a big stake to throw away without a fight, a very big stake to throw away. And there are numbers of people who work on Cobourg, unfortunately a lot of them are dead, Harry Frith, John Callady(?), Harold is still alive, he's still involved in grant funding for research projects approval in retirement. There are a lot of people, John Mulvaney, Jim Allen, Campbell McKnight, people like that who worked up there in the sixties are still alive and can put in their weight behind a campaign to get federal recognition for international wetland.

But we have to get the decision now, more or less, and as I said, the initial protection can be out of the Jabiru clinics throwing away roofing iron and stuff like that, it's just as effective as the best stuff. It won't look real neat, but then you've got next year to do the job if it doesn't get down to a final development this time.

The other thing about doing a cheaper structure is that you can play around with the design. There are endless options. People have said toads will swim around it. Well, they're not going to swim around it by choice. Anyway, just to satisfy myself that I wasn't completely off my wife went to a religious convention in Katherine and I got to bring back a toad over the weekend. We shoved it in a dilute seawater mix, it was 27th up to 1000, below the 34 parts to a 1000, more commonly found out to sea. We did it last night, had a couple of looks at him - he seemed to be all right - and and and I said to

Patsy, 'I'll check him now', and was as dead as a maggot, and he had the most horrible look on his face. Boy, he died hard. He died in some period less than 15 minutes, probably about half an hour after we put him that mix. It was 10 litres of water, 10 litres of water and 270 grams of good, Jabiru Supermarket salt. Now, my mates and I often out by a factor of 10, so I would like someone to double check that figure. But he died, I've got him here. If you want to put him on the table I can go and get him for you.

Madam CHAIR:

Yes.

Mr LINDNER:

That's where it is.

Madam CHAIR:

Questions, ahh! there would be a few.

Mr DUNHAM:

Dave, look I admire you to drive to Cobourg I do not think anybody would deny that there is something cheeky going, even if it's a risk, a calculated risk I think you are right. Everywhere we go people talk about some barrier to hold them and Cobourg is probably the best because of that little skinny neck thing. Would you be surprised to know that they are at Centre Island, Vanderlin Island, North Island, off Borroloola, that is 15 km. People have seen them swimming in the McArthur.

Mr LINDNER:

They are on the Groote, are they? They are already on Groote.

Mr LINDNER:

No, not Groote, Centre.

Madam CHAIR:

Centre Island.

Mr DUNHAM:

So off Borroloola and - I mean, they've survived and have gone out in freshwater flood streams and whatever. But they have colonised all those islands. They are a fair way off the coast. We have also had evidence that the eggs are in the plumage of wading birds. One bloke in Katherine found one in his rainwater tank, which is, you know, 12 foot. I am not saying, 'Don't do it'. I agree with you; I think we should. But the design of this thing - you are talking about a pretty formidable invader here.

Mr LINDNER:

Yes. We are talking four barriers in two sets of sheet metal with stock fences each side, which is electric fences, very good stock barrier fences, fully electrified. We are talking a substantial area in between the two barriers, Dan the Goanna Man who is putting radios on goannas around Kakadu, has had experience in excluding toads using barriers in the United States species not necessarily the this one. In excluding toads and I am quite sure, if we wanted to have a toad at the Berry Springs Zoo, which is one way of keeping them in. The salt water question. I think the main thing is, John has already come up with an

idea which he will give to you, of enticing animals away from the salt water. This is why we need this urgent research. We need to get some research facility, not dealing with impacts and scientific stuff, dealing with the technology of toad detection and attraction and re-capture, and that detection and attraction thing can apply to the barrier on the outside, where there are toads, but to bring them to a central point. So you can have one barrier bent, so it funnels toads in and then they drop into seawater or something a little bit more exciting, and in a pitfall trap there is no end to the way you can refine that barrier and minimise the opportunity of them swimming around or eggs floating around.

The one thing which is also research priority - I have not read of it anywhere here and I will talk about it recurrently as I dwell on this. My mate, Frank Wiel(?) is a most person of our current management of Cobourg. So he is really the think tank, to me, about how people are thinking outside. 'Ah. You see this idea what they're talking about? That's rubbish.' So immediately I address that idea. That is stimulating, that sort of stuff, if you do not get too much of it. The one thing I have thought about is, what is the situation with offshore islands around toad infested Queensland? That is something we want Dave on for.

- Madam CHAIR:** Island drill.
- Mr LINDNER:** [inaudible]
- Mr DUNHAM:** We talked to a lady at Borroloola yesterday and she said she was at Mornington visiting relations, and she said, 'Nothing there', not a toad.
- Madam CHAIR:** Nothing there, hit and miss.
- Mr LINDNER:** There's not an island?
- Mr DUNHAM:** Pardon?
- Mr LINDNER:** There is not an island off Queensland with any toads on it?
- IDENTITY UNCLEAR** No. Mornington has not got them.
- Mr LINDNER:** Not a toad?
- Madam CHAIR:** No.
- Mr LINDNER:** This is the sort of thing we are looking for, because a toad presence does not mean the toad swam out there. It means they have probably come in someone's pocket or whatever. A toad absence means that seawater is an effective barrier, and we are going to give a seawater barrier status to Cobourg.

Mr WOOD: Is there any freshwater plumes in the wet that go along the coast?

Mr LINDNER: No. It is an interesting area. It is a high salinity area, it is pretty shallow and high evaporation. Your typical prevailing wind in the wet season at Cobourg is north-west, so you are getting offshore sea and turbulence in there, about - I do not know - what is it? Fifteen to 20 km at the mouth of McMurginow(?) Creek. The first feed freshwater inflow into Van Dieman Gulf in the Cobourg proximity of Murganella(?) Creek - but you have got to remember that the tide rises and falls about half or a third - about half in the Van Dieman Gulf of Darwin, but it is a very turbulent waterway the Van Dieman Gulf. It is surely the whirlpool of the mud hole - so the mixing process - what I am saying is, it is almost - in spite of calm water it is most unlikely that you will get areas of freshwater encapsulation by salt water on the outside from - from what land catchment, which is most unlikely. If you are looking at the map, the south and the east, you will be facing a totally different proposition, to Island, something like that. You would be in a hell of a position. But on Cobourg Peninsula it - there are no major inflows of freshwater at the immediate barrier barrier, none at all.

Mr BONSON: Dave, on the Cobourg Peninsula, is there a big goanna and blue tongue population?

Mr LINDNER: Yes. Yes, very good, yes.

Mr BONSON: Because a lot of the evidence we are hearing, particularly from Borroloola, is that cane toads have a major effect on the blue tongue around there.

Mr LINDNER: Yes. No, the goanna which is the flood plain goanna of this area is also on Cobourg one of the senior guys up there. In the 1960s we caught one 20 miles offshore, swimming strongly, and he got rewarded by being cooked, and - but that is also important, because it means that from Kakadu's point of view, any fauna in Kakadu, in lowland savannah country, is - has got no genetic isolation from the Cobourg, because it was only 8000 years ago - and animals like this, goannas, would be active, in fact the Van Diemen Gulf. So, when you are looking at protecting the woodland - the savannah woodland fauna of Cobourg, you are looking at protecting animals that would be lost in Kakadu - there is nothing you can do in Kakadu except find out a way of eradicating toads and then, a long time after I am dead, maybe re-establishing the - the fauna.

Madam CHAIR: Gerry?

Mr WOOD: We have heard marvellous reports about moving quolls to

the islands had exactly opposite can you tell us why?

Mr LINDNER:

The impact of quolls on toad free island environments has always been a concern to me. The main reason - up until about 10 months ago I have had a very vitriolic approach to the release of quolls on the islands, now I feel I am mellowing but the reason is, funding is always limited and I think the Cobourg funding, the Melville Island funding, the Groote Eylandt funding is important stuff, and any funding that's gone elsewhere, and elsewhere, is prejudicial to funding being low on the Cobourg and the islands, Croker Island and so on. That is the main reason. Possibly - I never heard of this committee until Friday, when Rob told me - it is possible that funding is not quite as hopeless as - proposition as I thought it was. It is more the commitment, the termination factor, and the single mindedness, where you pursue toad prevention and it provides jobs, that is great, because it inevitably will, but just keep your focus on stopping toads at any cost. That is what has been done in Kakadu on mimosa and it has worked, the mimosa in Kakadu, no establishment But, yes, so - what was your question, again?

Mr WOOD:

Why you didn't agree with quolls being released?

Mr LINDNER:

Yes. Yes, that was it. The last time it was. They are getting funding for this and I would have said 'pretending', but now I have said, you know, they are feeling that they are doing a good job and the Cobourg thing is not being addressed, and since then I have contacted John and now this is a sort of pretty hard thing of them to make. It is On an island - I know there are islands offshore on Cobourg. More islands and we will go over there and mash(?) nests on the ground - all right? - and they trample the young on the mainland on their backs. It is pretty impressive, when you think There are terns and that which always nest on islands. Now, if you put quolls out on an island with those attributes, you can kiss that goodbye. We have got pet quolls in our house, they are destroying the house, we have indulged them and in 2 years wipe them out and we sort wish the toads would bloody hurry up with the presentation.

If there is an elevated food source and a freedom from plight and predation on quolls, they will play, and if there regression between themselves and predation from parliament, the only thing that would impact on the toads in our house, they have got total disrespect for humans and they - those will go. That is the sort of thing you have to be very careful with in relocation is, that those islands - and the bigger they are - if they are quoll free, the greater the value of the quoll free attributes. There will be something different on that island. That wouldn't be there if there were quolls there. Quolls have an impact of their own.

The interesting thing about this preoccupation with quolls is, Aboriginal people hate them. When they jump on you, you know, and your wife says, 'Get rid of him. Kill him. He'll bite you. You'll go make him quiet you can't do anything with a quoll'. Everyone that's being bitten by quolls they come up, sniff you out and they - choom - you know, at night in camps the big loss down in Kakadu is going to be flood plain goannas. They - not so much now with and guns, but in the days of the Alderson(?) family, in the 1970s, when they spent the whole wet season and the later part of the dry season at spring peak, with just dogs and goannas were and bandicoots two prior items they hunted. Use to shoot buffalos they use to have pigs and they used to kill them, but the day to tucker of the Alderson family, pre-welfare days, subsistence days, with goannas and bandicoots. There would be excursions to flood plain - buffalo wiped out long neck turtles. Once buffalo are knocked out the long neck turtle came back. These were excursion hunting trips. The staple food source, day to day, which is endless, going out with dogs, hunting up goannas and bandicoots, and goanna are going to go. We have played around with them, had them the ones we have got there and they see a toad jump, they would chase it. so that is a big loss. The quolls have captured the public imagination, which is good, because you need public support. The goannas are going to be the big loss in the bush

Mr BONSON: Dave, just a question about Maningrida. You said that there are toads out there already. People have seen toads, is that correct?

Mr LINDNER: We talked with a person - Charlie, I think it was - from one of the communities on the Mann(?) River and he said there is nothing left, in terms of quolls and goannas. The goannas have been impacted for the reasons I have just given and we heard, before they - when they were sort of coming across people were trailing goannas back into the toad area, from this side of the road and back to the other. People were asking in their own country to get goannas. So there were - yes, it is pretty complete in the catchment of Maningrida, you might say. I do not know - Maningrida town must have them, because I heard the rangers are going around shooting them. We heard that from the same person.

Madam CHAIR: Has anyone here tried breeding goannas, encouraging them? Is there anything going on like that as a?

Mr LINDNER: Well, it is a great shame - I think it was a great shame, the fact that attacks their emu project, because the emu project was a bit of a fantasy - but if they were prepared to put that effort into a major - a really big goanna thing, it would not do any harm. I would like to muck around with

goannas because we have got names for them and they get scaled and they attack people going to the toilet and that sort of stuff, but, basically, we are going to miss them, because they are not nearly as dirty as much as a So, you know, I would be quite happy to see something done.

The paper I am going to give you privately deals with the quoll house proposition. It could be reworded as a goanna house proposition, the goannas, I think, having much more relevance to traditional owner - traditional usage of the country.

Madam CHAIR: Bless you, Dave. Thank you.

Mr LINDNER: Pardon?

Mr DUNHAM : She said bless you Dave

Madam CHAIR: We will stop grilling you now.

Next, can you just state your name.

Dr HOLLAND: Goodmorning ladies and gentlemen my name is Dr Dan Holland. I'm an evolutionary ecologist with over 25 years professional experience with fish and amphibian reptile species. In the States for the last five years I have designed and successfully implemented both and large and small scale projects involving the exclusion of a related species of toad in several areas and I have also been involved in related efforts involving the general control and/or eradication of exotic fishes, amphibians and reptiles. At present I am a voluntary researcher in Kakadu National Park working on examining the effects on cane toads on two of the largest goanna species in this area – Gala and Jon....., otherwise known as yellow-spotted monitor and Gould's Monitor. I'd like to stress right up front that the views and opinions I express here today are strictly my own and do not in any way shape or form necessarily reflect those of the Park or Environment Australia.

Today I'd like to briefly offer you some comments and suggestions on the cane toad situation. Based upon an accumulating amount of species-specific evidence well documented negative impacts from exotic species research throughout the world and the general principles of ecological science, there is little doubt that the invasion and establishment of cane toads has had and will continue to have very significant negative impacts to native biota wherever the species becomes established. I would stress here that there is no significant disagreement within the scientific community of whether or not these impacts occur or will occur, but that there are questions concerning the range and nature that remain at present unquantified. By

analogy there was no question by the captain and officers of the Titanic on that fateful night in 1912 that the ship was sinking, the only question was how long would it stay afloat and how many of the passengers could they save.

The argument has been made that on a landscape level very little can be done to deal with the establishments and spread of cane toads. In one limited sense I would say that this is a valid statement, depending on your definition of landscape. If we consider that one definition might be that an area large enough that the forces of nature can continue to maintain historical, ecological and evolutionary processes and patterns and maintain local species diversity, that is an operational definition that may work. If this is accepted as valid I would suggest that there things that can and should be done in prescribed areas that may have a moderate to high probability of excluding and/or preventing the establishment of cane toads, or at the very least significantly minimising their impact. These are not actions that require huge amounts of money, as yet to be developed technologies, or that require or rely upon hypothetical magic bullets. They are relatively low-expense, very low-tech and can, and in my professional opinion should be, implemented in very sure order.

First, the use of exclusion barriers and other devices in combination with intensive long-term local surveys designed to detect and eradicate all life history stages of the toad may very well prove to be a very cost effective means of excluding the species from significant areas such as the Cobourg Peninsula which you've just heard about from Mr Lindner, and some of the offshore islands which I'm sure Dr Kennett will discuss here in short order. These types of barriers and actions are known to work, they are known to be effective in excluding toads from areas, but will require proper design, installation and maintenance, as well as continuous survey and eradication efforts, to be effective. It is also critical to note that this is not going to be a one or two year effort, but that it will require long term commitment of resources and effort to maintain it's effectiveness. Are such barriers absolutely leakproof? No. No barrier is like that, but there is a world of difference in dealing from both a practical standpoint and an ecological standpoint, in dealing with ten toads in an area and dealing with 10 000 or 100 000 toads. I would point out that there is likely a very narrow window of time available to implement any of these measures with the hope of being effective.

Second, there is a great deal that we do not know at present about what the specific and general aspects of the negative impacts of toads. There is a significant amount of ongoing research in this regards and certainly more can and should be done. As a scientist, as an evolutionary ecologist, from a strictly academic standpoint the situation with cane toads is

absolutely fascinating, and it's an area that is near and dear to my heart. However, while I can see the value in support expanding research efforts I think it is absolutely critical to recall that the primary goal here should be focussed on the prevention of the further spread and establishment of cane toads.

Third, there is no guarantee of success in these proposed actions, however if they're not tried there is certainly a guarantee of failure with an estimable negative consequences for the citizens of the Northern Territory and Australia as a whole as well as (inaudible). Even if these measures fail, if they are properly designed, implemented and monitored there are or maybe valuable lessons that can be learned therein to help future control and eradication efforts. Cane toads clearly do not recognise political boundaries and will continue to spread. Actions taken here and now may well benefit other areas of the NT and Western Australia in the near future.

You know there's an old saying that nothing can do but everything is possible. In this situation I would suggest that many things are not currently possible but that there are also many things that can and should be tried, and if these measures may significantly help in slowing the spread of cane toads and maintaining this tremendous biological diversity of this area as part of the heritage of all Australians, indeed every person on this planet. This is undoubtedly a very large, difficult and seemingly intractable problem but it also offers some unique opportunities for positive change, however the time is short in which to act.

In conclusion I would like to say I have been a guest in your country for eight months, I'm very grateful for the friendship and the generosity the Australian people have shown me and I would have to say that many Americans, myself in particular, admire the aspects or an aspect of the Australian character, and that is that you're battlers. When you're faced with a huge problem you don't just roll over and play dead, you fight and you fight hard. In this situation I would like to express my sentiments I hope that spirit is alive and well. Thank you.

Mr BONSON:

Thank you Dan. You mentioned that exclusion barriers, you've seen them in use before, how long have exclusion barriers been tried around the world and where are the places that you have been successful.

Dr HOLLAND:

I spent five years in the United States working for various government agencies involved in research on an endangered toad which makes it all the more ironic that I'm here now working on a toad that is endangering other things. We spent five years erecting very low-tech areas to exclude a species called the *A? toad* which is a southern

Californian endemic that is listed as endangered by the United States Fish and Wildlife Service from construction sites because there was obviously a potential for causing brutality to them. And what I can tell you based upon my experiences, again on a large and small scale, is that if the barriers are properly installed and maintained, that is the contractors don't run over them with bulldozers every day, and you have an effort to search, focus-searches for and remove toads from inside that area and move them outside, they can be very, very effective in keeping toads out of areas where you don't want them. And the principle remains the same, although we're talking about a toad that's 50mm long as an adult, but where we're talking about a toad that 250mm long as an adult.

I've done a lot of work not just with toads but with reptiles and amphibians in general and we know that the use of exclusion fences, drift(?) fences are what we call them, and things like pitfall traps can be very very effective at picking up the vast majority of animals in a given area, and it is especially true for toads which in general tend to have relatively limited agility. And the point I made about are these things absolute barriers, no they're not but there exists the potential with the proper design and maintenance to have them remove enough toads to keep the invasion front from moving into an area to the point where it may possible with localised survey and eradication units to deal with the ones that do get around the barrier, whether that's the occasional salt water dispersal or whether it's from transport like humans into the area. The methodology has been used basically in herpetology, and environmental sciences for 15 or 20 years.

- Mr DUNHAM:** Have you trialed it here Dan?
- Dr HOLLAND:** No.
- Mr WOOD:** Simply put to stop them from getting out, you need a fence but you need a lot more than a fence, you need backup and a series of programs that will catch those who get through and just a simple management plan.
- Dr HOLLAND:** The fence alone is not going to be adequate, it's a very import part of the larger program but some of the things Rob will talk about today and other people, you are going to need localised survey efforts to detect and eradicate the toads that do get around the barriers, you're going to need public education programs and a number of other things but the point is that all of this is doable.
- Mr BONSON:** So Dan just with what Gerry's saying, there's a model possibly in America that you used which has already been in practice for 10-15 years that we could possibly transport this to be used within the Territory.

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- Dr HOLLAND:** Yep. You know a fence is a fence is a fence and Australian's have probably got more expenses with
- Mr BONSON:** I'm talking about the education program and all those type of
- Dr HOLLAND:** Australians know all about fences.
- Madam CHAIR:** Yes, we have got plenty, Gerry.
- Mr WOOD:** I'm just interested in ways of saving the goanna. I don't know whether the goanna can be farmed, but is it possible or we have areas on the mainland, excluding Cobourg, that could be fenced and could be habitat for them?
- Dr HOLLAND:** It's worth a try but I guess my feeling is I wouldn't put my faith in putting up 30 or 40 10ha goanna enclosures in this area when you have thousands of hectares which have significant populations of goannas now where you can prevent toads from occurring by the investment of the same amount of resources it would take to erect a series of goanna enclosures. Dave's made the point that realistically this problems is not about quolls, it's not about the goannas, it's about the biota, it's about the functional ecosystems and while certainly there is understandable focus on these charismatic medium sized vertebrates and they're no doubt important, the big picture here needs to be maintaining intact ecosystems and ecosystem structure and function.
- Madam CHAIR:** Dan, just a question on the US example you used, how do we locate that research overseas where ?
- Dr HOLLAND:** I can give you copies of my reports, it's basically I'm the person that's done it in southern California. There's just a bunch of grey literature on this.
- Madam CHAIR:** We'll get Rick Gray our committee secretary to talk to you afterwards to get that information.
- Mr BONSON:** Also Dan what we've been finding out since we've set up this committee is that people have sort of like given up about doing anything, that they're coming, it's inevitable, nothing to do. What we've found out since is there's actually a proposal being a large amount of scientific data has been collected in Queensland and the Northern Territory, for whatever reason, so what I'm trying to get at is our great approach as far as is to get all this information but this is very very interesting and I'm sure what we are intending to do is collate all this material and release it and with very fascinating stories like this about different things which happened in Cobourg, but one of the ones I wanted to know is we've had Frogwatch give evidence that there might be overseas, World Wildlife Fund

and places like that, might be interested in putting funds towards building this. Do you know of any world organisations like that?

Dr HOLLAND:

Yes, there is a large number of, you know, obviously I can not speak, but I can tell you that the interest is there. I have a colleague who is working in Fogg Dam right now who has received research funding from the National Geographic Society to examine the effects of cane toads on a number of species there. If I can kind of back up for a second and address your question about this sort of fatalistic attitude. We have a similar situation in the United States with a species called bullfrog which is native to the south eastern US but was imported into the west coast in the late 1800s as a food item. It turns out to replace the native frog, that is the native Californian ... frog which had been hunted to the point of commercial extinction. When bullfrogs came in, initially they were praised by some of the leading amphibian biologists at the time, and that was 1925. Well, 50 years later we knew that bullfrogs were bad news. I have been involved in control efforts with this species, this kind of, the Californian version of the cane toad. Same problems. They are toxic to most native species. They are incredibly They live in a wide variety of habitats. They are as hard as Hell, pardon my language, But the point is, after three years of control at a very localised area, we were actually able to make a very significant reduction, to the point of perfecting a relegation of bullfrogs.

That option is not open here, for cane toads, because you can not have people running all over Kakadu national park blowing them away with shotguns, which is what we did with the bullfrogs. But the point is, that if you do not try some of these things, you will never know whether or not something might have worked. Now, the work that CSIRO is doing, you know, talk about magic bullets, it is this type of thing, that holds... promise. Knowing what I know about amphibian developmental biology, I am not real optimistic that some of the stuff will work. But the point is, it is worth looking at because it may yield tremendous benefits 5 or 10 years down the road. In the same vein, here, very simple low tech type structures, very relatively simple types of effort, if conscientiously applied, may be able to be make a big enough difference, even in terms of keeping cane toads out of areas or minimising their numbers, to the point where if 5 years down the road, you have a magic bullet or series of magic bullets from the CSIRO research or other things, then what you have done is you have saved the bacon, so to speak, by maintaining significant populations of some of these species likely to be impacted in other areas. But if you do not do that, you are not going to be able to go back 10 years from now and recover what you have lost because you did not take these very elementary precautionary measures to begin with.

Madam CHAIR: Dan, just a question. We have had a series of meetings already in Darwin with key specialists in the area and one of them said to me that the good thing about the fact that the inquiry is actually occurring is we are now starting to talk to each other, and they were referring to Parks & Wildlife, NT key research centre for wildlife management, CSIRO. And certainly I know the Northern Land Council through its Care of Country program is very interested in this inquiry and some of its possible outcomes, for the traditional owners to actually have meaningful employment at the end of the day in the monitoring and protection of areas. Now, one of the ideas that have been suggested in the past is that at the end of the day, a possible put outs conference inquiry, the recommendation that there be a small number of key specialist people representing stakeholders, who come together as government, part of the task force, that drives, the attack on the cane toads or, if you like, we are a parliamentary inquiry and we will make our recommendations to parliament, and there ends our involvement. So one of the things we are obviously looking at in terms of the inquiry is what vehicle could drive this forward so that we are removing the silos of isolation between different sectors. What is your view on a role like that?

Dr HOLLAND: Well, there is an old saying that a camel is a horse designed by a committee. If these things are done right and the people are sufficiently motivated they can be very effective. I know Dr Kennett and I think addressed that in some of his comments because it is an idea that he has brought up in discussions before. I think in principle it is a good idea and I think it is, as Dave has was pointed out in some other situations, if you can get past the egos involved and everyone at least agrees that the first priority is to save as many passengers as we can and figure out what works in relation to cane toads, that is what needs to drive out this thing. Again, you know, the research aspects, I am all for more research, but not if it detracts significantly from the primary goal. We know what the problem is and we know what some possible solutions are and maybe that's what needs and that is where the focus needs to be I think it is a good idea, and having no expertise in Australian politics, I will certainly defer to my colleagues at parks who I am sure have far more than I do.

Madam CHAIR: Dan, how long have you been around for and how long will you continue to be around for?

Dr HOLLAND: I will defer that, I will be here until at least July and I am hoping to come back if research funding is available in August of this year until June 2004, an ongoing project.

Mr WOOD: I was wondering, when you were talking about committees,

whether a thing like or something urgently be best needs someone who says, 'There's the cheque, you do it straight away.'

Mr DUNHAM:

Contractor.

Mr WOOD:

Yeah, like Dave reckons, getting at it. Simple, and also the members putting in the ground work and doing it simple. And if you have to report back, the eagle thing could go on but it will be too late. You have got to get someone to say...

Dr HOLLAND:

If the United States Marines can do it, it has to be simple.

Mr BONSON:

Dan, I understand you are looking at goannas. Could you just give us a brief run down of what is happening here?

Dr HOLLAND:

Basically, I am working as a volunteer researcher with some assistance from parks and in cooperation with the key centre, and my research effort involves putting radio tags, small radio transmitters, they have a range of about 2 km, on Gallawan, and I am working on the buff farm, with Dave's help. And what I have been doing for the last couple of months is following these animals around and looking at their movements, looking at survivorship, looking at growth and the sort of condition of the animals; the idea being through a couple One is to get an idea of how many goannas there are out there now, so we have a population estimate, what their movements and activity patterns are, and then to look at what may change in that regard after cane toads become established in their numbers. We know that there are a few there now but as of yet, we have not seen any direct evidence of cane toad induced mortality. But the idea is to sort of have the smoking gun to say okay, a year from now we can say that out of 50 goannas that had radios on, x% have died within this period of time, once cane toads became established in the area. And I have a colleague in Fogg Dam, Tom Madison, who is doing a somewhat similar project with a slightly different emphasis, but of course the toads are not there yet and probably will not be there for a couple of years.

Mr DUNHAM:

So with the mortality will you be doing post mortems and checking their gut.

Dr HOLLAND:

Yes well I will be doing that but based upon the goannas that exists today, we probably will not have to do a lot of gut analysis, because a lot of them die once they get them in their mouth.

Madam CHAIR:

Any other submissions?

Ms FIEN:

I am Georgianna Fien, I am Kakadu National Park, the project manager. I might just kick off a sort of grouped

submission because there are a lot of traditional owners and board members and staff from Kakadu National Park here, each of whom can probably contribute a bit to the picture of cane toads moving through Kakadu and what we have been doing so far. I might mention that Environment Australia is also going to make a peoples' submission so they will provide more details about research projects so far.

Madam CHAIR: Thank you.

Ms FIEN: In Kakadu, the cane toads arrived at the southern end, early in 2001, so about two years ago, and as of this month, they have been seen as far north as Mudjinbiri outstation which is north of Jabiru, there have been sightings of them there, and westwards to Coinda, the Buff Farm and Whistleduck Dreaming, and their very well established, probably four generations, of them at Sandy Billabong by now. I have actually got a fairly good map that we can leave with you.

Madam CHAIR: That would be great

[Map opened to display]

Ms FIEN: It shows quite a few of our sightings of them so far, and people who can also tell you a bit about those sightings, where the stars are, are confirmed sightings but we are quite sure that they are well spread throughout that area up to as far as Jabiru. We had one report in the wet season, the ranger thought she heard one but it was not confirmed, and that was further north. So I am sure they will arrive before long. They are moving from that south eastern corner, moving north west, and they advance very rapidly in the wet season and more slowly in the dry season, which is what you would expect for an amphibian. Before they even arrived, there was a recent assessment done to look at what native species might be severely impacted by the cane toads, and that highlighted that Northern quolls, several goanna species and several snake species were most likely to be seriously affected, but it also showed that there would be more than a hundred other species that are quite likely to be affected too, that is our report there, and that is not even looking at prey species like insects and so on. So you would expect adverse impacts on a lot of the species. Also before the cane toads arrived, parks staff produced a photographic booklet which unfortunately, we can not give you a copy at the moment because this is our last file copy, but we are likely to do a new print run shortly and we can show it to you.

[Showing booklet to committee]

And that was used to educate people in the region and just let them know about cane toads, what they looked like, what they were going to be doing. And then the other thing we

have done since before the cane toads arrived, apart from keeping records of sightings as they spread through, is monitoring some of the species that we expect an impact on. We have done that jointly with Parks & Wildlife Commission, Northern Territory. In many cases, it has been Northern Territory commission scientists who have been actually doing the work, so they have been working jointly with us and also with traditional owners to do that monitoring. So that has covered small mammals, including projects specifically focused on quolls; reptiles including a couple of projects on goannas; terrestrial birds; and also frogs, which we have looked at or more, listened to, we have automated frog call recording stations. So these surveys are continuing as cane toads move through Kakadu.

Mr BONSON: Do we have a rough idea of how fast they are moving?

Ms FIEN: I guess in two years they have moved from the south eastern corner, about 120 km north.

Mr BONSON: So how far from there to Cobourg Peninsular?

Ms FIEN: I think it is about another 400 km north of Cobourg Peninsular. But the thing is, they are already further north over eastern Kakadu so I am not sure how far south of Cobourg they are at the moment. We also had some work already done that is continuing, on looking at what cane toads do. Do you want me to actually describe that work, how we are collecting those cane toads regularly and having a look at the gut contents and what we have been finding?

Ms SMITH: My name is Beryl Smith and I work in Mary River Ranger Station, it is on the southern part of Kakadu Kakadu National Park. Ann and I have been doing pump cane toad spray, like hitting cane toad and cutting them up to see what they eat. They have been eating a lot of insects, and most of them All different kinds of insects, And not last year, the year before, we found a, like that long, cane toad and it was and I got very shocked about it, because I thought and I have been going this for nearly two years and the next one I will be doing the same things again and a monthly - a lot people do not like doing that but enjoy doing it because it is good and I find it very interesting because I have never seen a cane toad. Because I was the first girl that found it near that creek. That was in 2001 My area has not got native animal now; I have got nothing at all. I have only got frilled neck lizard and a couple of snake but not goanna at all or blue tongue at all; nothing.

Mr BONSON: Did you say carpet snake there?

Ms SMITH: I have only got carpet snake. I have not got any animal at

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- all.
- Mr BONSON:** You have got frilled neck lizards there?
- Ms SMITH:** Yes.
- Mr BONSON:** We heard in Borroloola that some of the snakes, pythons are still around...
- Ms SMITH:** Yes.
- I love fishing, because I love my bush tucker. I love fishing but now I haven't got barramundi. I am used to eating long neck turtle, turtle and black and catfish.
- Mr DUNHAM:** Have you seen them dead, Beryl, the barramundi?
- Ms SMITH:** Yes.
- Mr DUNHAM:** So you have seen them washed up, dead?
- Ms SMITH:** Yes.
- Mr DUNHAM:** Right.
- Ms SMITH:** But some time I take them out and cut them up. They eat the cane toad.
- Mr DUNHAM:** Tadpoles or the toad?
- Ms SMITH:** No, just the toad. Because we did crocodile surveying one night and before we opened it. We seen a lot of cane toads swimming in the water.
- Mr DUNHAM:** The gut analysis you are doing, you are sending that to a lab, are you, doing - your finding what is in there?
- Ms SMITH:** Yes. And - I think so. Anne and I have been doing it.
- Mr DUNHAM:** Because we heard from Borroloola there is a fellow who reckons that there are hardly any mosquitos around, and he reckons it is the cane toad, so - the tadpoles are eating up all the larvae. We only heard then, but I was just wondering - less mosquitos this year?
- Ms SMITH:** No, more.
- Mr DUNHAM:** ...mosquito country out here, eh?
- Dr HOLLAND:** More.
- Mr DUNHAM:** More.
- Ms SMITH:** But on the Ranger Station where I live, I get cane toad all
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- the time.
- Dr HOLLAND:** Cane toad by the way.
- Mr DUNHAM:** They what ?
- Dr HOLLAND:** They on algae
- Mr DUNHAM:** Right.
- Mr WOOD:** They will not eat it. They will not eat mosquito larvae.
- Madam CHAIR:** No way.
- Dr HOLLAND:** No, it is not likely.
- Mr BONSON:** This is an interesting one too, about the barramundi - sorry, Gerry.
- Madam CHAIR:** Gerry, thanks.
- Mr BONSON:** We have heard that some of the barramundi have been eating the cane toad or the tadpole and spitting them out but then today...
- Ms SMITH:** I have found mine dead. I just cut it up but they eat it.
- Madam CHAIR:** Gerry?
- Mr WOOD:** I am back into the tadpole stage. Tadpoles, are they eating the in the water?
- Ms SMITH:** Yes.
- Mr WOOD:** Has any...
- Ms SMITH:** Where I live - that is my country like it is a very stubborn country and the cane toad can go in any hole, and when it is flooded it some little drain. Earlier this year I was talking - well, '60 Minutes' came down. You seen Mary and in '60 Minutes'?
- Mr WOOD:** Yes, I saw it. Only watch the ABC.
- Ms SMITH:** And we found a lot of cane toads. We did not go in their area tadpole. They like a little drain because in our area we have got a lot of a lot of go in there. We only just go swimming ourself, because our country is sort of and waterfall come down and we found a lot of different cane toads that breed in there every wet season.
- Madam CHAIR:** What about - we have heard elsewhere that people cannot do freshwater drinking at billabongs any more, too many cane toads or tadpoles at rockholes and things. Have you
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- found that same problem
- Ms SMITH:** No.
- Madam CHAIR:** a freshwater problem.
- Mr BONSON:** One story we heard, somebody bathed in the waterhole with the toads in it and they got sick afterwards.
- Ms SMITH:** No, because our country has got a spring and when the rain come down it flooded everything out, it was nice and clean.
- Madam CHAIR:** Right. But you would not drink from a more
- Ms SMITH:** No. We only drink the running water.
- Madam CHAIR:** Yes.
- Mr WOOD:** If you wouldn't mind just following up, the reason I am interested in macro invertebrates because if they start to eat large populations in small areas, that must affect the native frogs and small fish, I would imagine.
- Ms SMITH:** Yes.
- Mr WOOD:** Has anyone done macroinvertebrate counts? We used to at Water Watch. We would do some counts.
- Ms SMITH:** I do not know, because the girl that was doing it with me she is up in headquarters as well. And Joy Matteson(?) used to help me a lot but she has been on this weed for a couple of months now.
- Ms FIEN:** We have not been doing macroinvertebrate counts in Kakadu. Is there some happening at Fogg Dam?
- Dr HOLLAND:** No, but there is actually a fair amount of background in literature of diet of cane toads in Queensland and Fiji and Hawaii, and and, based upon the densities that they can achieve, up to 2000 animals per hectre, Tom Ansett(?) and I just did a quick calculation, based upon some gut contents analysis that we have looked at and we figured in the course of a year a population of cane toads you can say 500 animals per hectare is capable of moving a couple of hundred kilograms of invertebrate biomass from areas in a relatively short period - in a course of a year.
- There is also some concerns and some evidence that indicates that cane toads prey on small birds. The first two cane toads that Tom picked up, down near Pine Creek, a couple of months ago, first the two he opened up had in them and there was a great deal of concern that Tom has is, when they get in areas like Fogg Dam where there has

- been significant predation like cane toads on many small species of snakes, as well as, of course, direct toxicity.
- Mr BONSON:** Beryl, there is just one other one, green frogs. Has there been any influence on green frogs, the tree frog?
- Ms SMITH:** No.
- Mr BONSON:** Are they still around?
- Ms SMITH:** Yes. There is another frog that sounds like a cane toad. We went up to and there, and we camped overnight and we thought it was cane toad but that was one of them little frog; it sound like a cane toad.
- Mr BONSON:** What about catfish? I mean, have they been dying out?
- Ms SMITH:** No. I caught some yesterday.
- Ms FIEN:** Also, to the south of the park, Steve Willika and he
- Mr WILLIKA:** frogs get down
- Madam CHAIR:** Steve, what was your surname?
- Mr WILLIKA:** That green frog I – Willika, Steve Willika, yes. I live at yes, and, as a community there and we have got evidence. At my place we have several green frogs and – and, from what I have heard, after 2001 there is several green frogs - there were six or seven - and there is only two that I know of still hanging on the wall, because that is the best place for green frog to be, not on the ground, because after 2002 there is five more cane toads, small ones, and one sprinkler outside, because that sprinkler brings moisture
- Yes, and I see a big mob of them and I think it is that water bringing that - probably that moist
- Mr BONSON:** Yes, because we have been hearing - some places that they have not affected the green frogs, others they have, some places they infect the brown ones, the others they have not, so it has been interesting. One of them was that when the cane toad sweeps across saltwater creeks the rangers at Borroloola found them dead on the banks salty.
- Mr WILLIKA:** Yes.
- Mr BONSON:** What about Edith Falls? Have they invaded it?
- Mr WILLIKA:** Yes.

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- Mr BONSON:** They are all out there?
- Mr WILLIKA:** We have got plenty of them, little frogs and we also have all different sizes.
- Madam SPEAKER:** What are you doing with them?
- Mr WILLIKA:** I do not know. We have got no funding to kill them.
- Ms FIEN:** Have you seen some in areas too and down in ?
- Ms RAWLINSON:** My name is Margaret Rawlinson and I have only seen one cane toad on mother's place, just near Cooinda. That is all I have actually seen this year. I have not seen any at the South Alligator. I live out at the South Alligator. I have not seen any there as yet.
- Mr WOOD:** with the fire management experimental work in the park
- Sorry. They mentioned that there is quite a few species in the ant the area, the cane toad also like eating ants?
- Ms FIEN:** I guess I will refer to Rod Kennett and perhaps he can also talk a little bit about some of the research that is going on the park.
- Madam CHAIR:** Yes. Rod Kennett, is it?
- Dr KENNETT:** Yes. My name is Dr Rod Kennett. I am at the park, a project officer, and that is resource management. Just some background, if you like. My ecological Northern Territory goes back to 1985-86 when I started working on crocodiles, followed by some other work at the Parks and Wildlife Commission, a doctorate in freshwater and ecology and before I came to the park I was working at the Northern Territory University on...the use and Wildlife Management of sea turtles. Now I am the project officer in natural resource management. Part of my job is to oversee research in the park. Georgianna has mentioned some of the projects that we have either sponsoring or funding directly or supporting in the park. We have also - one of the things that I came - when I came to Kakadu I was charged with the cane toads, and one of the things that I found was, there was not very much co-ordination anywhere across the Northern Territory. What was being done was, there was a lot of work going on, it was being funded by individual researchers, it was being funded by universities down south, some of it was going on on various things and there was not much co-ordination across it, so then I started to put together just an informal table of who was doing what, with an idea of some sort of co-ordination, not that I seeking that role, just the support for us in that part of the region and what was going on.
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Madam CHAIR: Have you got that informal table that you can provide to the committee?

Dr KENNETT: We can provide that through the environment administrator in the submission. I will need to contact people, just to update on the

Madam CHAIR: That will be great.

Dr KENNETT: So I can provide that. The results - our studies so far - and you have heard about the quolls. We have a broad scale fauna surveys going across, which are the pitfall trapping that Diana has mentioned, surveys, mammal trapping and those sorts of things. They have definitely shown that quolls climb and that matches our radio tagging study out at the Mary River district. In fact, we found that even at very low densities of toads, where we were not seeing at night, the quolls still so there is no doubt of the impact on quolls.

Our impact on other species: we have been looking at reptiles, birds and mammals. We are starting to get reports in from - that is being conducted by John Winowski(?) of the Parks and Wildlife Commission, consultants to us. He noted the quoll decline. He reports that there are less substantial declines in other species, such as field rats and terrestrial geckoes, that there was in fact some increases in bird species and some frogs. It is not necessarily attributable to toads but, remember, if you are out there sampling 120-odd species and there could be even changes in those numbers anyway, so these are the results back but those increases, obviously, are not necessarily toads.

Madam CHAIR: We have heard this has been going on for three years, three years' worth of data, is that about right?

Dr KENNETT: Yes. We had something like 110 quad(?) rats prior to toads arriving, and then we have had about two-thirds of those now being invaded by toads, so we have got before and after and an impact that we have had, a non-impact of control So it is different. To my mind, I think it is the most comprehensive fauna survey of toad impact since being done in Northern Australia

Madam CHAIR: Yes.

Dr KENNETT: Some other things - and we can provide details of this in our written submission. One of the things to note is - and I guess a positive note, I suppose, is that John reports that no detectable change in some species that were originally listed as moderately at least in the risk assessment being referred to. That includes things like the brown ringed bandicoot, dingo, most of the frog species, blue winged

kookaburra and kingfishers - they were a species that we considered as they fly down and feed on half prey, you know - the pheasant rush magpie butcher birds – again, we provided this in more detail in our written submission.

So some bad news and good news about some of those species that are listed at risk. You're aware of our involvement in the quoll translocation project, I am happy to go into that.

I can, in our notes for the submission we had some other points we want to make about the future measures which I can go into

Madam CHAIR: Mmm, we're very keen on

DR KENNETT: We are, and this is based on our experience in the park service here in Kakadu, I guess it's stating the obvious to say that cane toads are spread in the Northern Territory and Western Australia, and we would see value in all relevant Northern Territory, Western Australia and Commonwealth research and management agencies collaborating on this ...

Madam CHAIR: What about Queensland?

DR KENNETT: We certainly don't exclude Queensland, I think there are lots of lessons to be learned by what's happened in Queensland. I guess that's one of the limitations that we've found when people ask us what's going to happen that there wasn't a lot of information come out of Queensland about toad impacts, and other people, I'm sure, are privy to that.

Mr McADAM: Can I just ask one question if I may? You referred to Western Australia. Are you aware of them doing any of this sort of work at all?

DR KENNETT: I personally am not aware of it, but that's just limited to my personal knowledge. I think that if I were I would be very interested in what's going on in the Northern Territory and I think it could be useful to invite them to participate or just keep them informed of what's going on.

We would see focusing on islands and other potential toad free areas as a high priority. We've talked about at this meeting about some islands have got them and some islands haven't. We would suggest some sort of risk assessment of toad invaded islands, how they got to the island they're on, if we could find that out, what island they're likely to get to unassisted, what islands they're likely to get to needing assistance and where are the places and how are they going to get there through assistance. Do we look at barge landings and airstrips and if people are

travelling in small boats. So risk assessment that perhaps even spans Queensland where they've already got to islands and across to Western Australia, to get a picture of what are the islands that are worth focusing on.

Then we'd also need to look at ecological considerations as Dave Lindner mentioned, about whether so that in terms of assessing the priorities.

We would advocate developing quarantine measures to prevent cane toads arriving on islands, that includes public education awareness programs about the dangers of transporting(?) the toad, particularly if we can identify islands that we believe toads won't get to under their own steam.

We referred to examining the mainland areas could be kept toad free, for example by patrolled fences across narrow peninsulas and

We would seek collaboration in things like promoting, coordinating, assessing and exchanging information about research and litigation(?) measures, for example by establishing a task force, this proposition put to us and subject to discussion by the community I am sure.

Madam CHAIR: Who would you have on a taskforce?

DR KENNETT: My experience in government, I haven't been involved in the public service and government probably hypothetical considerations. I think you'd need to have a relatively small number of people who are charged with the job, I think as Dan says certainly in terms of implementing some of the very, very important and urgent.

Madam CHAIR: Stakeholders, identified stakeholders was to assess beyond the taskforce. Delving into this. Or, if you don't want to answer it now, consider it for your submission.

ROD: Okay. Well, look

Mr DUNHAM: For instance the group that you assembled for this one, would you pretty much replicate that? You had Parks, Australia North, CSIRO and Commission of Wildlife, Ecology, Parks, Wildlife Commission of the Northern Territory, Earth Life Sciences formerly, Northern Land Council, Katherine Tourist Association, and you had people helping you from James Cook, World Life Science, Parks and Wildlife, NTU, University of Queensland, Parks, University of Sydney, University of Adelaide, Centre for Tropical Wildlife Management. Something of that ilk? Did that work?

DR KENNETT: I wasn't involved in that exercise, so I really can't comment

on how effectively that committee worked.

Our other points are obtaining more information about the long term as well as short term impacts of cane toads on many of the native species through biological surveys and obtaining information from Aboriginal people. Doubtless you've been collecting some of that information as you've moved around the Territory, anyway, and that's where some sort of coordination of the research that's going on, I believe there's a lot of research going on and it's been funded by other sources, coordinating role, some sort of coordination that would be invaluable, make sure there's no duplication and identify any or areas that aren't being addressed at the moment.

Also more work to assess the impact of cane toads on Aboriginal people and culture. We've heard some of it from here, but there's little about, little disagreement amongst most scientists that the greatest impacts are going to be on the and on the animals that Aboriginal rely on for food and for cultural reasons, things like goannas are doing to decline.

We would also see a role for engaging Aboriginal people to survey cane toads and involvement in preventing the spread to islands and other areas that could be kept totally free.

We also support further research into future biological control of cane toads.

Mr WOOD:

You didn't quite answer my question I just checked up this report which also spoke about seed gatherers and that. Has there been much more work done on, I see it as a long term effects because there's the micro side of life, people don't, they're not warm and cuddly, but you should know whether these things are going to have an effect on the micro biology, you might say, including changes to certain plants and their distribution. Is that sort of work being done?

DR KENNETT:

I'm not aware of any work specifically addressing those sorts of longer term cascade effects, if you like. I guess the question might be if you went to Queensland and determined whether those sorts of effects occurred, whether the data are available and whether they can be brought out of what peoples recollections, I don't know. I'm personally not aware of it, but that's something that if you have research that's going on that might be identified as an area that needs work.

But we wouldn't necessarily see this research into media control measures.

Mr BONSON:

Dr Rod Kennett have you done any sort of research on

.....?

- Madam CHAIR:** We've heard elsewhere that it's a killer, it kills cane toads.
- Mr BONSON:** Yes, we've heard in Katherine that the toads in, and killing them.
- Dr HOLLAND:** And the ones we've cut up were full of them as well as full of millipedes which are extremely noxious.
- Madam CHAIR:** Millipedes?
- Dr HOLLAND:** Millipedes and stink bugs.
- Mr DUNHAM:** Did it kill them though?
- Dr HOLLAND:** No. We did. We recovered, I think, 27 stink bugs out of one toad's stomach. So it seems there is very little they will not eat.
- Madam CHAIR:** That toad was alive? The toad was alive?
- Dr HOLLAND:** The toad was alive, yes, and we killed it and ...
- Mr BONSON:** If you had anecdotal evidence though that this was occurring and with people saying we've seen bugs been eating them and you cut one. How long would it take to dismiss that?
- Dr HOLLAND:** We're talking about a single toad with stink bugs in its stomach. These were animals that were picked up off the road down at Mary River and were kept cool over night and were sacrificed about 12 hours later, so that if stink bugs or millipedes were directly toxic to cane toads there would have been plenty of time for them not to have died. We're talking about other samples, 52 toads, stink bugs and millipedes can be present in probably at least a quarter to a third of the stomachs.
- Mr BONSON:** The other evidence we heard last night was that there has been a decrease in the toads in Katherine, but there's also been a decrease in lavender bugs.
- Dr HOLLAND:** One would expect, given certain dynamics of invasions and what we know about the population ecology of cane toads, that you're going to get a peak in population early on and it's going to decline, but that's not the real question, I mean does it make a lot of difference if there's 2000 cane toads per hectare or 1000 cane toads per hectare? My argument would be based upon general principles and what we know about the species already, it probably doesn't make a whole lot of difference whether there's 2000 or 1000 or 500, their still going to hammer the native iota.

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- Mr McADAM:** I was just going to ask. Are these distributed to schools? Are they readily available?
- MS FIEN:** We've actually run out now, but at the time when we produced them last year we distributed them to Aboriginal outstations and to local schools in Kakadu. But we think it's probably time to add some up-to-date information and do another print run.
- Madam CHAIR:** We'd be very interested in that because obviously the public awareness aspect, we have recommendations to go to essentially have to be there and this is a very useful piece of literature – big pictures, simple words – is exactly what we were looking at.
- Mr WOOD:** Would there be great problems in using that as a base for your design obviously at Kakadu traditional names, but if you were handing it over to some kids in Darwin or rural area schools or even just for general public because it's nice and simple, straightforward.
- MS FIEN:** We can certainly provide any elements of that that Northern Territory authorities want to use, so that you can do.....
- Madam CHAIR:** Who should we contact in that respect?
- MS FIEN:** Probably the Park Manager, Kakadu National Park in the first instance.
- Mr McADAM:** I was going to ask you one question if I can. You were talking about more indigenous involvement in the surveys or in the project or the subject you were referring to, more indigenous involvement in it.
- DR KENNETT:** Yes, there are multiple Aboriginal ranger programs around the Top End of the Northern Territory. They range from ones that have been running for several years to ones that literally just got the uniform in the last few months. It's probably one of the fastest growing growth areas in Australia. They have got extraordinary skill in these sorts of field surveys, and as Dan mentioned people generally have very good eyesight and Beryl was the one that picked up the cane toad in the middle of the day, I don't think anybody else would have seen it. I don't mean to belittle it, but if you're doing intensive ground surveys that's the kind of thing that they would be involved in.
- Those ranger programs already work with Quarantine, people on regular patrols and surveys, so they already have a role in these sorts of activities and that's not dissimilar to the sorts of things that you're proposing for cane toads.
- Mr McADAM:** Perhaps what you're suggesting is that it's not focused in respect to indigenous people. There can be an increase in
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terms of the focus?

Madam CHAIR: That existing park ranger programs providing indigenous employment aren't necessarily at the level that this intensive work would require. The requirement into the areas

DR KENNETT: Yes, absolutely, I mean it's a constant struggle for money to keep the doors open in Aboriginal ranger programs and they are usually relying on short term project funding, those that aren't lucky enough to have mining royalties, and it is a constant thing. So, yes, this is an extra responsibility for extra funding. But they will have a great role to play in the education programs and getting out to people on communities and identifying how toads might otherwise get to islands. They would know where people and moving boats around and those sorts of things. It's a readymade network that be involved and looking for things to do.

Mr McADAM: But quite apart from being a specific ranger type project, strategy, we are talking about communities, aren't we? The need to incorporate and involve communities in this process. Equally as much?

DR KENNETT: Umm.

Mr McADAM: What I'm saying is that you can have X amount of rangers who are disseminating information or accessing information or gathering information, but at the same time you've got have the mechanism which allows for that process to also incorporate community, people who live in communities, is what I'm saying. So it's just broader than a stream of rangers, if you know what I'm talking about.

DR KENNETT: Yes, I appreciate what you say and I haven't got experience with all the Aboriginal ranger programs taking place in the Northern Territory, but the ones that I do, generally they have a community committee. The rangers themselves are members of the community and do those sort of community outreach activities, anyway. Doubtless there will be some communities where the rangers may not be the only means of getting information to the broad community, that's true.

Mr McADAM: I was just wondering if there was any broader strategy, that's all, to incorporate more

DR KENNETT: Not that Parks Australia is aware of.

Madam CHAIR: Further submissions. John?

Mr CHRISTOPHERSEN: Yes. John Christophersen from Cobourg Peninsula. I am Chair of the Cobourg Peninsula Marine Park Board. The national park is known as Gurig National Park, which means the lands of the seas because it is a maritime park as well.

We're extremely concerned about the cane toads. We have been for many years and it's probably six or seven years ago when I was on the land council we started making noises about what's going to happen with the invasion of the cane toads.

I would just like to make a point here in relation to Kakadu. It's listed internationally for its natural and cultural heritage and because of the inaction by consecutive governments over many, many years we are now on the brink of the very listing of this park being undermined, and that is the natural environment is being degraded to an extent that nobody can tell when the end result is going to be known. So then from there it becomes an impact on the cultural environment, for which this park is listed.

Now we've talked about Cobourg, Dave has mentioned earlier on, that's also listed internationally for the and its wetlands conventions and the waterfowls and that sort of thing. If we get cane toads into Cobourg the detrimental effect is never going to be fully realised. It will never be fully realised.

It rather surprises me that we're sitting around here today discussing the impacts of cane toads and spending inordinate amounts of dollars on studying the effects and not a real lot of detail has been spent on dealing with the cane toad.

I noticed in the submission from Parks Australia, it was more or less an afterthought, support for biological research in getting rid of the cane toad. There's all this talk about the rangers looking at the cane toads and studying what they're eating. We know what's going to happen. It's similar to the SARS virus that's going around, it's similar to AIDS. You know what the end result is, but how do we deal with the problem? And that's where their dollar has got to be spent.

When it comes to Cobourg, we know what the result is going to be. It's going to be a negative impact on the environment. There may well be one good thing that could come out cane toads coming to Cobourg and that would be, we've talked about goannas getting wiped out, that might have a good impact in terms of the turtle nesting populations. But I don't think that is a plus in terms of the overall negative impacts.

Now, our desire, and we're going to be discussing it at our next board meeting, is to put a barrier across Cobourg Peninsula to restrict their movement north and, if we can, contain it at that barrier; and we want to do that for as long as possible. And we think that by doing that there may be an opportunity at some later stage where, if we can

establish a viable area where we are going to have goannas and king browns and quolls and all these other critters that are going to be effected, where we may be able to transplant back to environments where they have been impacted upon to the extent that they're nearly gone.

But this is going to take a big effort from a number of government agencies and, in particular, the government. Now we've seen, as I said before, a number of consecutive governments sit on their hands with this whole thing because it was in the too hard basket, you know. Then all of a sudden everyone's jumping in the bandwagon, let's research what happens when they get here. After they've got here then we'll go around and count the dead animals and count the dead toads and all these other sorts of things, and how many rangers are going to get employed. Like I said, it's not about employing rangers, it's about looking after the environment.

The main thing to look after the environment is to get rid of the bloody cane toads. Excuse me. Get rid of the cane toads. Now, if we're going to sit around and continuously talk about, you know, let's just look at the effect of this species will die out, that species will die out or they'll eventually come back and, you know. To me that is not going to solve the problem.

Most of the time and effort from my point of view, in terms of Cobourg, and that is what I'm here representing at the moment, is to protect Cobourg. We've already heard here this morning that the islands themselves are by no means isolated, except for the one in Queensland, the same could be said here in the Northern Territory, but Cobourg is an opportunity to ... that something can be done, but while we're putting up a barrier and we're holding the beast out at the gate something has got to be done to retrieve it back from there otherwise we're continuously patrolling the fence and holding the beast there, whether it's with water pistols filled with detol or whatever. But that's the story, so I think a lot of time and effort has now got to be spent on actually finding something that is going to get rid of the cane toad, rather than going around counting all the dead critters.

Mr WOOD:

I accept what you say but counting dead critters might be a way of actually saying to government relatively small particularly Western Australia, if you don't do something as well this is what is going to impact on you, in other words use it as a tool to say look, if we've got that information we could also use it to lobby, I'm not saying to wait around for all these things but I think, I agree that something has to be done straight away that you've got that longer term project running.

Mr

I understand that but what I'm saying is that for the millions

CHRISTOPHERSEN: of dollars that has been spent on the research of the water python at Fogg Dam and all these other things that are going on, that should be part of the research yes, but the major part of the research should be talking about, which is the last dot point on Parks and Wildlife thing, is a biological agent to get rid of cane toads.

Madam CHAIR: That's been studied in South Australia and they've identified the DNA that makes them fertile, they're now looking at the they've just received substantial funds from the Commonwealth government to pursue that research into the vector, so if you like the definitive biological control research is occurring and that's I guess the beauty of having an inquiry that's broad-ranging like ours where as we've heard from Dr Rod Kennett, there's actually a lot of things being done individually within a silos, you know listening to the work that's been done in Kakadu, I think that work is incredibly important, knowing the work that is being done in Fogg Dam, knowing the work that is being done in universities – James Cook, Adelaide. I think it is important to bring all of that knowledge of the various work being at the various places together so that we know that at some stage we ought to have a biological control, as you say, not just build a barrier but get something that will then start to kill them back and wipe them off and get them out of our land altogether, because they are an introduced species that are destroying our fauna. But the inquiry was brought about to look at exactly who is doing the work where and how meaningful that work is and what is the potential outcome of that work, but also what else has to be done. And we're hearing today from Dave, yourself, one of the other things that has to be done is to protect Cobourg, protect the islands.

Mr CHRISTOPHERSEN: I can't stress enough the way I feel about the Cobourg because that is going to be the last point, well Danger Point in the Cobourg Peninsula is the furthest point north of mainland Northern Territory, once they get there they can't get no further, except to the islands, now to protect that from the cane toads is like protecting the last frontier so to speak. Now to me and the families of Cobourg it is vitally important. I'm not saying that the other work isn't important, I understand that you have to have these studies but to put so much emphasis counting the dead critters is like counting horse turds in the paddock after shutting the gate after the horse has bolted.

Madam CHAIR: That's a damn good analogy John. Unfortunately if you get substantial Commonwealth dollars to tackle the problem you've got to count the horse turds.

Mr CHRISTOPHERSEN: That's right. What I want to do is once we've counted all that, let's work out, try to prevent why the horse bolted.

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- Madam CHAIR:** Try and stop the horse from bolting to the next paddock.
- Mr BONSON:** Some of the evidence we've heard also, is where originally come from that there's not really a natural predator, is that right.
- Dr HOLLAND:** There are actually significant numbers of natural predators
- Mr BONSON:** They don't wipe them out all they do is keep the numbers down, that's what we've heard.
- Dr HOLLAND:** Yeah there are a number of snake and other species in South America and Central America that prey on cane toads. There are snake species in Australia that can deal with small cane toads and deal the toxin but it's exceedingly uncommon for species to co-evolve together for one species to actually eliminate the other.
- Mr McADAM:** Can I just ask John and Dave what cost are you talking about in terms of this barrier.
- Mr CHRISTOPHERSEN:** Mate I couldn't put a dollar value on it, but as Dave's suggested it may well be that you put a couple of runs of galvanised iron, roofing iron buried into the ground. Plus we've got two fences there already, the first one was put up in the 60s when it was first identified as Aboriginal land as sacred and Cobourg Peninsular was sanctuary, the second fence was put up during the BTEC program to isolate the stock within Cobourg from the rest of Arnhemland in relation to de-stocking programs, we wanted to protect our banteng and buffalo herds up there. So we've got two fences there, it's a narrow stretch of
- Madam CHAIR:** 3 Ks
- Mr CHRISTOPHERSEN:** So you put galvanised iron end to end, you put it across and then that would be the temporary measure, I mean you'd have to deal with things like grids and what have you when you get vehicles in and out
- Mr McADAM:** Have you thought about that?
- Mr CHRISTOPHERSEN:** We've already discussed it, you know you've got visitors coming in, they'd be notified in terms of their permit application, what the restrictions will be. You spray them out at the gate and smoke bomb their car or whatever it takes but it's something that we're going to be discussing at the next board meeting to have a fair crack at it
- Madam CHAIR:** In the discussions in Darwin when we were talking to some specialists up there they said in terms of the Tiwi Islands for example, that you design your board loading and unloading areas, where there's a large empty area and rig up lights so that you're actually creating a quarantine zone on the island,
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so that whatever you're loading off, suspecting that there would be cane toads inside which we believe will become a common place event the more north they're headed so your Perkins barge is going across, wherever they dock, you've got a cane toad zone if you like, where there's lights set up, so you're physically creating an environment where if they are being transported you're able to detect that transportation and eradicate, so it could be that those sorts of mechanisms could work.

Mr LINDNER: With the document I gave John which I said was an incorporated that in relation to Paspaley Oil and aware that the Tiwi Islands and Cobourg, it looks like there's going to be a lot of commonality between island community protection measures sought by communities and the secondary but critical backup to the Cobourg thing, well it's got to eventuate

Madam CHAIR: Dave that wasn't actually something that was going ahead on the Tiwis, it was something that the Parks and Wildlife recommended as something to take onboard as a suggestion.

Mr LINDNER: Yeah it's going to be something, as I said research on cane toad have got a big gap on the fully scientific research and tested procedures to retrieve the ongoing arrival of toads by transport and that sort of methodology is critical too whether you adopt that in relation to an occupied community area or whether you rely on the eagle-eyed kids at as being sufficient to guarantee that Araluen is not going to be a release area but as the Paspaley insulations on Cobourg and possibly the Black Point area when most of the fuel and that comes in I would say that an isolation zone within Cobourg that is also kept toad-free, it's not going to be an for toads on Cobourg, it simply gives you a double chance of retrieving animals being dropped off by barge.

Mr WOOD: I think the other issue you're going to have is barges will be travelling between toad areas and non-toad areas You know they might be at Darwin they might be dropping off at some ... point in Maningrida then going to a place that hasn't got them

Mr LINDNER: That's all gotta be logged, you've got to know exactly what the toad situation is from day to day around the whole Top End of the Territory in relation to transport of goods.

Mr McADAM: That's where it comes back to more community involvement.

Mr CHRISTOPHERSEN: It comes down to, as Dave's suggesting, is the most likely areas that they are going to come in and at the moment for Cobourg it's overland in vehicles, barge services are fairly minimal maybe once every couple of months in relation to

fuels at the Ranger station, aircraft and vessels, but in relation to coming into Cobourg overland, we can control and monitor them, have a gate across the Peninsular, sterilising the vehicles and having access with a grid that's got yeah-deep or some solution or whatever. Along the perimeter fence it may well be we've talked about the idea of having some small solar lights that can monitor every evening. We're talking about having a full time ranger and this gate as well, that you monitor lights on the outside of the Peninsular and at the second fence as well, so you can determine whether you have any intrusion. There's a whole range of things that we've thought about, that we're going to our next board meeting next month to discuss all these options and then we would then be seeking the support of the government to make sure that we protect this area that is jointly managed by the Northern Territory government and the Aboriginal people of Cobourg, as a national park for everybody, and as a marine park as well.

Madam CHAIR: We would welcome a submission into this inquiry John.

Mr CHRISTOPHERSEN: Well I'm like Dave it's just lucky Dave rang me on Saturday to let me know this was on today, so we packed up and drove in with my brother yesterday, to be here, we didn't know about it.

Mr WOOD: Just how long before your submission, it's a bit like the fence you need quickly, would the submission be quick. I know the bureaucracy that goes on sometimes .

Mr CHRISTOPHERSEN: Well there is bureaucracy but there could be one that we could write up ourselves in terms of Aboriginal members of the board with some collaboration from Dave I guess in terms of just building a temporary structure to start with which will be simply roofing iron across the peninsular

Madam CHAIR: You gotta do it this dry by what we're hearing

Mr LINDNER: It will be on edge too it would be like

Mr CHRISTOPHERSEN: Ideally before this wet season.

Madam CHAIR: Dave do you have something else to add to that?

Mr LINDNER: There is a second point about Cobourg and there is an even shorter division within Cobourg and there is a barrier up the Cape Don which is not critical because the Cape Don area is a very small area but at the bottom of Port Essington is about two kilometres barrier. I think initially we'd be seeking, now I don't represent the Cobourg people on this one, I represent Australia, and God help Australia if I'm ever president for a day, but I'm saying Australia should be asking the Cobourg people and the Cobourg people I'm

sure that they've already responded favourably to the context of the thing, but once that initial barrier as I say in three years time, protected Cobourg from toads and they'll be in Murganella this year of course, but not as a breeding species, in three years they'll be up toward the Cobourg neck, you have to start it this year you've got no time to sleep.

Then the scope of work I think which will fall into place with a much, not more lavish design, they're designed in this bash up paper I've got here which is the quality of the material you put in and further subdivision I think will be acceptable, I think we've got to get across this threshold, accepting that Cobourg is not negotiable, I think that what the two of us are trying to put to you today, I'm putting it for Australia, he's putting it for the Cobourg, it's not negotiable and we're trying to emphasise that can be done and initially the design will be complex and the material is going to be salvaged, the success of that will make it easier to get a good structure.

In 1981 we found mimosa at Yellow Water and Parks and Wildlife went beserk ... control it after the wet season and went in and took it out and Cobourg had a very good Association, that terribly wasteful association, put enormous amount of money to the good effect of controlling mimosa and once it became something of a claim that hadn't been duplicated by the Territory Government, the Parks Service just grabbed it and they've got this model of what determinations and procedures in an exotic enemy, but initially we had to prove our point, and we did that more or less with private funding. Now we can't do that with Cobourg, there's no chance of doing it at Cobourg

Madam CHAIR: You've got the Paspaleys up there

Mr CHRISTOPHERSEN: The Paspaleys, their landing facilities, their transfer of personnel is by sea plane so you can control any cane toad activities when they first leave base in Darwin and when they land at Cobourg Peninsula, in terms of their suppliers and foods and what have you they're brought up by ship, that's all transferred from the ship onto pontoons and then from there onto smaller vessels at the shore, so you can manage cane toads in that process as well.

But I'd like to say to Dave as the rep for Australia, and myself as a rep from Cobourg, we are now, our representative because the constituency that we represent is now dependant on you guys who are representing the people who have voted for you, who are now in government to do something that hasn't been done, and should have been done a long time ago.

Madam CHAIR: We are a bipartisan committee, we have government and

opposition here.

Mr CHRISTOPHERSEN: I understand that and I might suggest that what we're talking about here is beyond politics.

Madam CHAIR: That's right.

Mr WOOD: Can I just ask one another question. I'm looking at a dual role looking at a Ranger Station there, does Cobourg have gamba grass and mission grass?

Mr CHRISTOPHERSEN: Mission grass was a big infestation at Murganella it has been wiped out by the good work of one ranger that was there. There is some grasses in Cobourg Peninsula, in actual fact I've just spend three days weeding my own outstation for mission grass which I've probably infected from Murganella but there are some other grasses in there.

It's interesting that you ask that question Gerry because we did have a former director of Parks and Wildlife who said to us at a board meeting that weeds are a bigger problem than cane toads. And at the same time that that was being said, Murganella was being infested by mission grass. So it's rather funny that that sort of thing, what goes around comes around, and that we now find that the grass has been wiped out of Murganella, you can't just say well it's not there it's gone, it has to be an ongoing monitoring and that's a continuous process.

Mr WOOD: I Suppose I'm saying to you that if you have a ranger station there you could use if for a dual purpose.

Mr CHRISTOPHERSEN: Exactly yes.

Mr LINDNER: Good rangers are a quality necessary for that work available for any Cobourg region, it's just refocusses the accommodation, a general management

[Adjourned for lunch]

LUNCH BREAK

[Re-commenced 13:12:47]

Madam CHAIR: All right, thank you very much for reconvening after our short lunch break and sorry for the under catering, we are absolutely wrapped, I have to say, about the number of people taking time out of their busy schedules to come here today to assist us with this inquiry. Now we last heard before we broke for lunch, from John Christophersen, talking about Cobourg and the importance of the land there and the terrific submission regarding fencing.

Now, anyone else here want to kick off discussions now that

has not had a chance to say anything?

Mr CUBILLO:

Yeah, my name is Russell Cubillo, I am the deputy Chair for Kakadu National Park for the board, Kakadu Board. I suppose my concerns are more so affiliated with the three plans for the south, the Kakadu Stage Three My general concern and a big worry about cane toads coming into Kakadu and of course through the top end of Australia is basically the culture aspect. Now, I have heard a lot about scientific views, I suppose they are well explained and very important indeed but Aboriginal people have a significant culture in the northern part of Australia and it is quite common throughout Kakadu, just about wherever you go you will find Aboriginal culture up there and probably in your face wherever you go and the important thing about that is that the animals that we are talking about – the goannas and snakes and barramundi and all these things, they are quite significant to Aboriginal people's culture and indeed it means and that is quite serious to think that a lot of Aboriginal people have which is celebration of these particular animals. They are part of our culture because through our skin system, the moieties that make us part of the country and with the, if you like, endangering or disappearing of most of these animals, it is a quite big worry about you know, where does the culture go from here? And the serious one I am thinking about, if we have an eradication of animals that we have very strong stories about and we talk about that and Aboriginal people practice their culture. Aboriginal people not only eat these things for bush tucker but very serious parts of our culture, our tradition and it all. And all these things are embedded (?) here. An important part of Kakadu is that I am also employed by Parks Australia North as an interpreter for Kakadu and about 200 000 people more or less come through the park and they are very interested in Aboriginal culture. They want to know about these fundamental things about how Aboriginal think, their society everything to do with how they have maintained and looked after country for many, many thousands of years.

So the important thing about this serious way is that if we have most of our animals which are quite significant value, if you like, to our meaning of being Aboriginal people, may disappear – I can reflect on old people remembering animals back in the fifties and forties that are already endangered but still talk about those animals and the way that they move and lived on country and very important bush tucker at that time. And of course those old people might not know that through their age that these things have been endangered or disappeared off the face of the planet. But the important thing is they retained them stories. Now the connection between stories and the animals, if you take the animals away, the understanding is that Aboriginal people are looking now probably at detrimental effect, if you

like, on cultural aspects with these animals that may be endangered or may be lost through the cane toad. The understanding is that cane toad, we do not have a scientific way of eradicating them and so the measure, if you like, you can't put a measure on when you are going to get rid of them and how much effect did those have on the animals, plants and the environment.

So my, I think I have stressed it a lot that it will have a very much drastic, if you like, impact on Aboriginal people's very (?) existence, that history, that understanding of how things evolve, being strong on country and learning that. In Kakadu we push to promote Aboriginal culture and this is a place for Aboriginal people and not only that, we give, if you like, information about that, which, if you like, opens the door for a lot of people to understand about that culture and not just here in Kakadu but it gives a better view about how Aboriginal people in general live and associate with country.

So with the cane toads coming through, I think it's very important the way that Aboriginal culture will learn to deal with this issue or how does it actually affect the stories, the songs and the connection, if you like, which is really a very strong aspect of what Kakadu is. There is an international understanding that this is a very cultural place and with that, I am very worried about and I know a lot of families from my side are very worried about where does this lead to, you know, the detrimental effect. Do we dance about crocodiles when crocodiles die from you know, cane toads. King Browns, all these things have a significant view (?) between Yiddija the moiety system, which means you belong, you look after something. And if you are looking after something, you have interest in that to make sure that particular animal is around. Where do we see this ongoing invasion of frog, a species of frog that comes from another country, introduced to Australia to maintain the cane field, looking after a cane beetle, to eradicate that, that has emerged and went straight across. We are looking at it now coming to a place internationally recognised for its cultural aspects, very valuable here, it has a detrimental effect on how we interpret it, our culture and the way that we see our culture going and our interest, our genuine interest about the animals and the plant life and the environment, Aboriginal people – they would like to highlight that.

Mr WOOD:

It was mentioned before, briefly by John, that Kakadu is a world heritage national park and part of that is the culture of the people who live here. Is there a threat, in the sense that that world heritage listing could disappear, which, of course, could have an affect on tourism anyway, so there would be a less number of people coming here, and I understand the same about changes to the cultures, and evidence of certain creatures disappearing, but in the park as a whole is there a real risk that it could our world heritage listing?

Mr CUBILLO:

I really cannot sort of comment on that sort of thing. You can see the way things are moving. If you have got an animal set up quite prominent and a view to visitors coming and seeing and the responsibility for Aboriginal people to make sure that those animals are maintained and looked after. Certainly, you might find people that come to look for crocodiles, when you find crocodiles are dying or other species of animals, it does not have that quite much of an attraction. They do come here because of the values which we have in the world heritage, if you like, listing and I suppose that can be a bit detrimental to the actual tourism coming back. My real, if you like, feelings are about how we interpret our homes, our country, our land, to visitors who come to see the very aspects of why it is listed as a heritage place and how do we, as Aboriginal people, carry on, really exercising and practising and celebrating our culture with the land and the animals that we look after when they are all dying. That is really my worry. I do value visitors, because they give a great aspect and they take away with them a good feeling in their heart because they have come and seen something very nice, very beautiful. Part of that is Aboriginal culture and giving people this understanding about the background of Aboriginal cultures gives them a better view of how Australia - or Kakadu and its origins and how it is, the essence of it. I strongly believe that if you are going to have Aboriginal people feeling good about the country, then you have got to feel good about the animals that are in it, in the park life. That is part of your culture and if something like a species of frog, that may be very detrimental to those particular animals, it is very detrimental to Aboriginal culture.

Madam CHAIR:

Do you think that the strength and association culturally between the people and animals of do you think that that could have a spin off, in terms of the health, the sickness not just are they losing the animals that they normally hunt, that seeing what is happening to animals that they have a very strong connection to being killed, do you think that that is also going to have a feeling of sickness amongst the people in the area?

Mr CUBILLO:

Aboriginal people are probably very good, adaptable people and will probably be right. When you are talking about crocodiles, barramundi, king brown, they are very strong in essence within culture. We look to those particular symbols of animals that give us strength. It is embedded in there it is like when you see animals that - it is just like that - you know, the horse when it was introduced and used as saddle naked(?), bringing in a lot of supplies and used in cavalries and what have you and armies and that, people generally have a very strong connection with the horse. No-one would like to see a horse go down. They like to keep that horse around. It is a remembrance, it is an embodied spirit,

that you like to see that horse being around. It is the same with those particular animals that we have that are very strong in culture here, and that we do not want to see crocodiles and king browns and pythons and barramundi, all of these very significant animals, really being sick in country. We like to think that we have got healthy country and it is all part of us looking after the country and making sure it is healthy. So if you see things that are dying around you, that it has an adverse effect on you. Maybe you think, how strong are you if the animals you see are quite symbolic and keep you strong are very sick.

And I suppose when we talk about looking for bush tucker, you only go and get bush tucker at the right time, right season, when it is nice and fat. But if you have got animals continually dying around you, it has a detrimental effect, whether you eat that animal at this time, because you do not know it, because that animal is dying – probably had a good season when he is nice and fat but he is dying. So I suppose, for a lot of us, when we see this sort of thing, it makes you feel no good inside.

Mr BONSON: I suppose Russell did not - problems. No-one really has an answer to what the cultural what he expects it is going to be but, obviously, something is going to be facing Aboriginal people right across the top half of the Territory and it is just another one of the ill-effects of this introduced species, I suppose. I am not sure that I qualify enough on this.... real answer to that one. It is a very difficult one but, obviously, a very important when you think about it.

Mr CUBILLO: Yes. I just thought I would raise it, because I do not know if it had been raised at all, but if it has

Madam CHAIR: ... and it is important, very important, very important.

Mr BONSON: There is some evidence, that in Borroloola they spoke about and cultural, blue tongue, etc etc. This initiative has been raised before

Mr CUBILLO: I thought I would raise it on behalf of, you know, the meeting ...in the park. It is a serious thing and I would like to just put that forward, so that we can be heard, that we have an interest and we have been worried about that thing.

Madam CHAIR: It would very much be a point that we would have to report back to parliament on, so your words are important. Thank you.

Is there anyone else who wants to say anything at this point?

Ms SMITH: I would like to say on behalf of my sister, who is at college, she is not here, I really think - that is my brother, that one.

Madam CHAIR: People have raised previously that they are worried about the children, the young ones. Does anyone want to elaborate further on any ways you think our inquiry could recommend to parliament about how to work with the young children, in terms of making them aware of the dangers and also be aware of the role they could play in, basically, killing the cane toad? Has anyone got any ideas or suggestions? Dave?

Mr LINDNER: I read an article in the Jabiru rag about the children knowing that it is important. It didn't address all issues. I was talking to a parent, a lady who works at the police station, and she said her kids had got a toad, 'What do you do?'. I said I would be inclined to just walk up and grab that child by the hand and drop the toad and not say much, get the hands under the tap and then discuss it properly with them afterwards. And she said, 'Yeah. We had a child, a three year old, with two tubes and a Araldite, emptied on the both hands and rubbing it together, and that is exactly what she did. I think, when you are dealing a hand grenade or a cane toad or something like and the kid is playing with it, a bit of commonsense material is all you need, because you do not counsel a kid, the first aid starts with not allowing - arousing the kid to what it is doing. It is not as though it is going to tip hot water on itself, it has already got the pot it it's handy you go over and the kid and then you hold the kid At most child who comes into contact with a toad the result is discomfort and a lot of crying, you know, permanent damage. You can't do much about the problem in Queensland, but I think a lot of the commonsense stuff and then it is just a learning process after that. I mean, people live with toads, a lot of Australians, a lot of kids in Queensland, and in contrast to perhaps looking at having your kids - have - require first aid, because look at how many kids do not require first aid or sort their problems out themselves, you know what kids are like. It can't be ignored the problem but I think the steps of dealing with it when you're confronted with it need to be explained and at some stage it's got to be a learning process.

Dr HOLLAND: I'd just like to somewhat related but some of my tangential note here, two things, I don't know if this has come up in Darwin but it's fairly common knowledge, it's a fairly widespread problem in Florida, United States where cane toads were also introduced that there is a significant frequency of poisoning dogs, so people in Darwin are probably aware that on some level it probably wouldn't hurt to re-emphasise the idea.

Another problem that's less annoying, you kind of have to treat this one as a double-edged sword is that there a potential for basically substance abuse with cane toads. It's kind of self limiting because people who smoke dried cane

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- toads usually end up dead, but people need to be aware of the potential for that problem.
- Mr BONSON:** So that's happened in America with they've smoked it and died?
- Dr HOLLAND:** No, no in America there's a slightly different problem but there are incidences in Fiji and American Samoa of people drying toad skins and attempting to smoke them and winding up dead in a very short order.
- Madam CHAIR:** So it's the getting that message across that it's lethal
- Mr DUNHAM:** It's hallucinogenic is it? What's the in it? What would prompt someone to
- Dr HOLLAND:** Well there's all sorts of strange things that you want in the States. The practice apparently started in two-fold situation, there are some hallucinogenic alkaloids are very common in a many amphibians and there are some sort of quasi-medicinal religious use in South America native tribes of toad skins but it's very carefully prepared. In the beginning doctors buried on the stakes, well that's sort of what's happened here.
- Dr HOLLAND:** There are a number of species of smaller toads in the States that are not quite as toxic and for a while there was a minor cult following, people going out collecting toads and licking them to get a buzz off these alkaloids. I have a friend that has personal one-to-one experience with cane toad poisoning and according to him it is not what you would consider a hallucinogenic experience unless you have a very weird definition of hallucinogenic.
- Mr DUNHAM:** Is it something that you go and do once and either die or never repeat or is it something you might do five or six times?
- Dr HOLLAND:** Well I don't know, the anecdotal evidence that exists, this is kind of like this is my anti-tiger rattle
- Mr DUNHAM:** So if they're naive and adventurous sort of did it once?
- Dr HOLLAND:** Presumably there are people that have done this kind of thing and are still alive but are not talking about. So you only find one get it and didn't survive.
- Mr WOOD:** Instead of lighting up a Camel you light up a cane toad.
- Madam CHAIR:** John
- Dr HOLLAND:** A once in a lifetime experience.
- Mr** I was just going to suggest in relation to children. Children
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CHRISTOPHERSEN: are very astute when it comes to telling them when you explain that something is poison. And that's how people have survived with this country for 50 000 years, from an early age being told that something is poison and not to be mucked around with. If we can get that message across to people succinctly people will understand. But by the same tone to say that something is poison, don't touch it, kids can understand that, but to try and get rid of them, I know with my young son I just went to Mt Si, unfortunately for a funeral, but it was a chance for him to come into contact with cane toads because we've talked about them since he's been born, and the first thing I did was buy him a water pistol and a bottle of detol. So he had great fun, but then that wasn't enough fun at the end of the day, so he ended up with a golf club, but that was an education process for him to deal with cane toads because we know they're going to head up in Palmerston, but at the same time he was understanding that you don't muck around with a toad, it's poison, you kill it, ok that's fair enough it's dead, that's one less cane toad. And kids will understand that, but because they're everywhere, they're going to be exposed to them, you've got to make it a situation where they can deal with it but responsibly, understand that's it's poison, you can kill it in this manner, but get rid of it in a certain way.

Madam CHAIR: I might add that we've had submissions from Parks and Wildlife who say that the humane way of killing a cane toad is freezer bag into the fridge and then into freezer.

Mr CHRISTOPHERSEN: I mean that's fair enough, they're an environmental group they can't be seen to be cruel.

Madam CHAIR: We'll all have cane toad freezer.

Dr HOLLAND: If you look on the Australian National Museum's website and look for cane toad facts they also recommend freezing and it's probably the realistic way to do it. The other thing to be aware of, while there are pros and cons of killing cane toads, very few cons from my point of view, one of things I think you want to emphasise is you don't want to leave carcasses lying around because they're still toxic, for things like goannas and other scavengers and birds can pick them up and still end up dead. So you want to clean up your garden.

Madam CHAIR: That is great advice.

Mr CHRISTOPHERSEN: We weren't just killing them and leaving them laying around, they were going in the bin. That was a way to educate the young bloke and is fairly harmful and in the water pistol there's detol and water. That water pistol I tell you what mate it makes them cane toads buck properly I tell you. But it's in the river and it's unreal

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- Mr KENNETT:** Can I just suggest a point on the public education awareness campaign (inaudible) quite successful you don't need power you can just flip the pages and the messages are all there. My personal experience with the communication stuff is videos are exceptionally useful for communities to play them over and over again so I'm happy to take advice from meeting here and people who work in communities some educational videos that about the health risks and the environmental risks might be a way to get, at least part of it, the
- Madam CHAIR:** What about posters has anyone tried posters in schools?
.... clean your hands
- Mr KENNETT:** I under the NLC Caring for Country Unit has commissioned or had produced posters about stopping cane toads being transported, I'm not aware of any work on
- Mr CHRISTOPHERSEN:** The question that was raised here whether we are going to have recycling bins for cane toads.
- Mr CHRISTOPHERSEN:** It might well be that on the corner of every street that you have a cane toad bin or something that is emptied daily.
- Mr KENNETT:** It's probably a bloody good idea you know. Certainly in Darwin because all you'd need is a little shallow thing of detol or something down the bottom, they'd never climb out.
- Mr McADAM:** They're using the European Carp as a fertiliser, so why not cane toads?
- Madam CHAIR:** Do they lose their toxicity after a certain period of death?
- Dr HOLLAND:** If they get dried out enough.
- Mr NADJI:** Just that the information thing I'm looking at broad sort of thing where you've got visitors from overseas that can't understand English and stuff like that and we usually have visits from overseas coming here and they might think they're a native or something like that, which we need to have a better education system, and educating people about it. If they get it in their eye that'd be it they're gonna be stuffed.
- Madam CHAIR:** So information in language
- Mr NADJI:** Yeah basically in a language
- Madam CHAIR:** And indigenous languages too is something we've had suggested in the past.
- Mr NADJI:** Basically that's going to be too much to read up on these pretty easy to read and stuff, basically our overseas visitors which we usually get them mob might think it's a
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native to here and might pick it up and start mucking around with it.

Mr CHRISTOPHERSEN: One thing that is a misleading is those two toads you've got in the front there, is every time you go somewhere and they bring out this is a cane toad, they bring the big ones. But quite often the little tiny ones are quite similar to a number of other little frogs that are around too, so the information should show perhaps their whole life cycle including tadpoles, where you've got kids playing with tadpoles and whatever it is. Then there's small ones and this is what they eventually grow into.

Mr WOOD: That book has got

Mr BONSON: I think that about the life cycle stuff, that's the first time that has been brought up.

Mr NADIJ: Also with that cane toad, we have got very small, look like cane toads, so I think kids or people might get mixed up with small when they get to a certain size they start changing might need to do something like that

Madam CHAIR: Especially with kids at school. Move out the front?

Mr Steve WILLIKA: Steve Willika.

Madam CHAIR: Steve, what is your surname, sorry?

Mr WILLIKA: Steve Willika. I just want to get back on culture and about that culture, we have got that structure on family kinship and the family kinship is based on ceremony where we have got that YirrdijaDhuwa, where you have got native animals that the cane toads can wipe out inside every, mostly the Top End that we sing about and dance and songs like that, those things are wiped out native animals and the birds, that means we have no culture after that. That is what my concern is.

Madam CHAIR: Dave.

Mr LINDNER: With the poster material on toads and general precautionary measures being handed out about toads, I think one message wants to be given priority where it is applicable and that is toad free area and maybe the standard smoke free zone type sign to warn people that toads do not exist in an area and that includes Darwin in the short term, put a red dash across it and don't bring toads here, do not take a toad home, or something like that, in short language so that someone who does not understand language can turn to a companion with them, can't read language and ask them what the sign means but basically the toad with a red slash through it, 'Toad Free Zone' and 'Do Not Bring Toads In'

sort of message. No more than that and in the standard format, the red line format, diagonal line might be worthwhile – would be particularly relevant in communities that have some prospect of keeping toad free on the islands indefinitely.

Madam CHAIR: Good suggestions. Anyone else want to add to anything? Any other questions from the members of the committee?

Madam CHAIR: Well on behalf of the parliamentary inquiry, we whole heartedly thank you all for coming here today. This has been an incredible session for our inquiry, where we have had extremely valuable information provided to us, both on the scientific, the practical and the cultural impacts and suggestions that we can take back to parliament. We very much thank you for your time today and we hope that we can meet your expectations. Thank you.

Mr NADJI: I would like to say something. On behalf of the Kakadu Board of Management, I would like to thank you for letting some of us talk and I would like to thank and families for coming up. Thank you very much.

TRANSCRIPT NO. 4

Darwin Public Hearing

Monday 12 May 2003

PRESENT:

Committee: Ms Delia Lawrie MLA (Chair)
Mr Tim Baldwin MLA
Mr Matthew Bonson MLA
Mr Stephen Dunham MLA
Mr Elliot McAdam MLA
Mr Gerry Wood MLA

Secretariat: Mr Rick Gray
Ms Maria Viegas

Attended by: Mr Richard Austin
Ms Anne Barker
Mr Dan Baschiera
Mr Terrence Bayly
Ms Kirsten Blair
Dr Greg Brown
Ms Kerralee Chambers
Ms Lorraine Davies
Ms Angela Estbergs
Mr Jeff Farey
Dr Max Finlayson
Ms Amy Fletcher
Mr Alan Kerr
Ms Camilla Michie
Ms Donna Moraney
Mr Mark Noonan
Mr Stan Orchard
Ms Holly Pither
Mr Matthew Shields
Mr Ray Smith
Mr Jock Somerville
Mr Ray Taylor
Mr Thomas Taylor
Mr Dave Walden
Mr Rohan Wilkinson
Ms Faith Woodford
Ms Lorna Woods

Note: *This transcript is a verbatim, edited proof of the proceedings.*

Madam CHAIR: Good afternoon ladies and gentlemen. My name is Delia Lawrie and I am the Chair of the Parliamentary, Environment and Sustainable Development Committee. I declare open this meeting of the sessional Committee on

Environment and Sustainable Development and welcome all participants appearing before the committee today to provide evidence in respect of the committee's inquiry on issues associated with the progressive entry of cane toads into the Northern Territory. Copies of the committee's terms of reference and background papers can be obtained from the committee secretary Mr Rick Gray

This meeting is open to the public and is being recorded. A transcript will be produced and will eventually be tabled in parliament.

I welcome to appear before the committee today: Mr Finlayson and Mr Walden from the Environmental Research Institute of the Supervising Scientist, Darwin – Dr Finlayson, my apologies; Dr Greg Brown undertaking research at Fogg Dam; Mr Dan Baschiera; Ms Kirsten Blair from the Northern Territory Environment Centre; Dr Mike Tyler from the University of Adelaide; Mr Mick Denigan; Mr Graeme Sawyer and Mr Stan Orchard, Frog Watch NT and Mr Orchard is co-ordinator of WWF Frogs Program; and Ms Robin Knox from the Northern Land Council Caring for Country.

These people appearing before the committee today are here to provide evidence in respect of the committee's inquiry. Please advise us if you want any part of your evidence to be in-camera –confidential. The decision regarding this will be at the discretion of the committee. You are reminded that evidence given to a committee is protected by parliamentary privilege. For the purposes of the Hansard record, I ask that you state your full name and the capacity in which you appear today.

Dr Max Finlayson will commence with a submission from yourself and Mr Walden.

Dr FINLAYSON:

Max Finlayson and Dave Walden from the Environmental Research Institute of the Supervising Scientist. I am the Director of the Institute and Dave was one of the key authors in a report which I believe you have, which we sent in, which we did on behalf or in collaboration with Parks Australia North. The report was published in 2002, the work was done over the previous 12 to 18 months.

What we want to do here is run through some of the key aspects of that report but I would just like to highlight two things before. The extent of the cane toads problem has been noted, not widely appreciated perhaps, in the Territory, I think the first time I heard it mentioned was in 1983 and that is some of the history you will hear about anyway. But even in 1995 in Kakadu when we held a wetland workshop and got people from around the Northern Territory and Queensland mainly, to talk about threats to wetlands – in

1995, the cane toads was not highlighted by the scientists and their land managers at that workshop as a major issue. That was despite a scientist from Queensland giving a talk on the cane toad. So I think, as we go through this talk, there has not been an appreciation of the importance of the cane toads, or people were playing it down or did not believe it was important. So we have this information dearth or gap in a fact. Now people are far more worried about the cane toad, it is here and what we are sort of looking at is that the information sources are not as adequate as we would have hoped given that the toad has been in Australia for so long.

Now the second key point to start with is that we have adopted, through our institute, a risk assessment based approach for looking at environmental problems and we are encouraging other people, helping other people to actually look at the actual risk, the hazard which but the actual risk to change and therefore bring into account what do people like or don't like, which actually challenges our value statements I suppose is the best way of putting it, of what we like in the environment and what we do not like and it is really obvious that people do not like ugly looking cane toads. But our knowledge base, to look at what the effect is, we are stating as you shall see through this presentation, we are concerned about that actual knowledge base as much as the outcomes that we will put forward.

So I have this power point presentation, that is just the first slide of our titles and institutional representation. I will point out as well that the risk assessment model that we are looking at has come from international sources, we are trying to promote best practice environmental management and to make sure that the best information is assessed and made available to those on the ground. We are looking to international models, obviously applying them to actually suit here though, not just being driven by external models of assessment.

So this is the actual title of the report. It is a preliminary risk assessment of cane toads. It is preliminary because we felt, in the time period we had available, we could not get all the information – we tried to get information from scientific experts, people who had seen the advance of the cane toad through the Territory, Aboriginal communities where it had already been established for some years and the people who had to actually manage the problem or who may have to manage the problem. We did not feel we had enough time, when you can spend forever looking at these issues. So we are not saying we have all the information that was available up until this date. We are fairly confident, we are confident that we have a good appraisal though.

The work was done primarily for Kakadu National Park

because we are working with them on the problem. Kakadu has been the centre of attention for the toad but the information we have can apply to all these habitats across northern Australia. So while the report is focused on the Kakadu issue, the information is applicable to elsewhere.

And there's our friend.

Dr FINLAYSON:

No comment. I lived in Townsville, I got used to cane toads in 1970, so they just become a part of life. The aims of the risk assessment were to predict the likely extent of impacts of cane toads within Kakadu but also elsewhere and to use this information to identify the key vulnerable species and habitats that could form the basis of a monitoring program, that is we are trying to get the information in a form where the land management agencies, or people who own or manage land, could actually use it to monitor the change.

This is just quickly, I will not go through all the detail here but this is the sort of international model for risk assessment that we have used and go through a structured approach to looking at problems and that we are trying to make sure that from the research side, we get our information through a structured approach that land managers can actually see where we are coming from. There has been some difficulty in the past, as you may be aware, of research information not being taken up by managers partly because it is not transferred in a manner or a time where the managers can actually use it. But this approach, we feel, helps us overcome some of those issues and in this case I think the outcome has been quite good in terms of the management, in this case – Parks Australia North – picking up the recommendations and going further. So we go through looking at, to actually state what is the problem. To really sit down and try and say 'this is the problem' and look at the analysis side, which is the identification of the effects and the extent, that is, what is likely to happen, what is happening and how widespread is it in both time and also area?

And then the important part is to identify the risk. You can have change but what is the risk of further adverse change? And then to pass that information through to the management agency so they can take action to reduce the risk and then importantly to monitor the outcomes, which then feeds back through that process again, so it is not a static process, we encourage and are pushing (?) through this exercise, those feedback loops.

So the problem: the cane toads possesses highly toxic chemicals, animals that eat the cane toads die – it is a fairly well known fact. With the next three points: the actual breeding cycle of the cane toad enables it to spread fast and to establish quickly; the diet and habitat – it can eat a large

number of organisms and can survive in many different types of habitats but all use different habitats for at least part of the year; they can tolerate a broad range of environmental conditions, which is almost the same point; it can compete variably for resources from many native species. That point there is one where we feel there is not enough information as to how they can compete, how much they do compete and most importantly perhaps, there is no effective control method.

So with that sort of background, we move quickly into: what are the effects, what organisms are affected? Animals that prey on the cane toads are affected. We looked at information for 151 native species, these three categories here show that for 11 species only, do we have good information, where we can say there is a definite effect. So we have felt comfortable with the information and it actually stated that there was a definite effect but again, within that actually, the Northern Quoll was one that stood out the most. There was more information and it was a very sort of clear outcome and no-one has argued about that information source.

As we go through it though, you can see the probable16 species to the last figure – 124 species possible. This is where there is some information available, some is documented, some is from people who have seen the cane toad in the field and it is thought likely that this will occur but there is not enough information for us to have been totally sure that there was a major effect. I think that is an important point, is that our knowledge source is still, for many species, not quite there.

This is just some of the animals, the cynics might say this is the only way you'll see these animals in the future, whereas strong counterclaims though that there will not be total extinction of at least all these animals. But the evidence for that, I think, needs to be questioned further. We have not gone into it but there needs to be more work done on some these animals, to actually see if they will be lost or if there will be a short term loss and then it comes back again. I think that is a major issue. At least we are certain on the evidence that we could get over those period, that that would occur, but there are strong advocates saying they will go and some are saying that they will only go for a short period and they will come back. I think that is a major difficulty in our arguments on this issue.

Will anything eat cane toads? Seemingly, at times, yes, but there is a large number of organisms, that cane toads at different stages of their lifecycle. You must remember, from the tadpole size through to the large adult there is a different organisms that - organisms that do eat it. Some of these we are more worried about than others. People do

not tend to worry about the centipedes and spiders as much as the birds, for example. The potential effects on prey is what does the cane toad eat itself? Again, they eat mainly ants, termites and beetles; that is, the smaller organisms. There are no studies that specifically investigate the impacts upon ground dwelling arthropods, the other smaller animals. They also eat small birds, mammals, reptiles and frogs, but generally in small numbers. But there is an effect there. So both issues are related to what eats the cane toad and what the cane toad eats.

The competition. Again, the information sources are not as good as we would have liked to have found, but the resources - sorry, the competition between cane toads and native animals. The resource issues are what they actually eat but also where they live. The sort of habitat issue and what sort of places they like to occupy. The cane toad's heavy reliance on ground dwelling arthropods generally excludes them from competition from some of these other animals, so it is not as strong on these smaller organisms as you may think. There are reports that suggest there is segregation of breeding sites between cane toads and native frogs. That is, they are actually in different places when they are breeding, so the effect on them may not be as clear. You have a cane toad, you will lose the frog type of example - but, again, the information, that statement, is written there reports - suggests that they do not actually prove it one way or the other.

The more interesting one perhaps is that the timing of arrival of tadpoles of native frogs or the toads in a certain habitat can affect the actual interrelation and whether there is an effect. So, who gets there first, who actually breeds there first and what stage of their lifecycle they are at, will have an effect upon what the impact is. So, really, we are saying here is, while there are animals that the cane toad eats, and we know that, there is competition between cane toads and some of the frogs. It is not as clear cut as saying there is total competition and there will be one outcome. It depends upon the actual lifecycle and the habitats that are involved.

The cultural issue. I think people's attitude towards cane toads. I think it is pretty clear people do not like cane toads. Aboriginal people have reported - and are upset about in some cases - a decline in the actual animals that they eat as the cane toads come into their area. The south-east part of the Territory, or the south-east coast part, that is where it has been shown, that people are quite annoyed about this aspect. Traditional ceremonies: there are claims which we have not looked at fully at the cane toads, the presence of the cane toads, has affected those issues as well, partly because they are in the habitats and eating certain animals, etcetera.

On a wider basis, waterholes and springs that are regarded as sacred sites, you have the cane toads and you have dead cane toads, etcetera, and, again, same as it comes into your backyard, you do not like dead cane toads being in your pool, for example, as much as out in the bush. Urban areas: we expect fully, based on evidence elsewhere, there are high numbers of toads in urban areas and they will impact on various recreational activities in urban areas, and there is a strong likelihood of pets being poisoned and the toads being in your house. You can imagine the sort of uproar, the sort of unsocial response, is quite strong in those things.

Mr DUNHAM: Can we ask some questions on , Madam Chair?

Madam CHAIR: Certainly.

Mr DUNHAM : That pet poisoning. We asked that in Katherine and they could not recall one dog dying, but the literature seems to be awash with it, that dogs will mouth them and there can be some fatalities. In Borroloola, apparently, there were a couple. Have you investigated that?

Dr FINLAYSON: I will ask Dave to answer. He actually did a lot of the work in the report.

Mr WALDEN: Yes, what you say is correct. What we have found is, that there have been reports of feral cats dying in general. Dogs tend to get sick and if they are treated, if they are washed out, washed the mouths out or something like that, they tend to recover fairly quickly. Dingoes have been reported in the literature as being affected. So, yes, it is another grey area but, certainly, cats could be an issue. It comes into often the body mass size, which we will get on to a bit later. A smaller animal is going to get exposed to more toxin; a large dog has got a chance of recovery. So, yes, it

Mr DUNHAM: The reason I ask it is, it is becoming more and more obvious that there is very little that we can do to hold or even stem the flow of the invasion but there is a fair bit to do with education, particularly in the naïve urban areas about it.

Mr WALDEN: Certainly.

Mr DUNHAM: And would appear that that is one of the things we have got focus on pretty quickly, and that is the toxic effect on pets. So, in our literature we would like to be accurate, I guess, and it would appear that there is some divergence of opinion, of just what that impact is, from almost zero, apart from a couple of episodes with a dog, right through to taking out, you know, maybe hundreds of them. So what is your opinion on that?

Mr WALDEN: I do not think there will be - there might be a few mortalities.

I do not think there will be hundreds. I do not think it will be a large, broad scale problem. I think, with education, certainly, if you see a pet attempting to eat a cane toad or even show interest in it, you would use whatever disciplinary measures you would use to discourage that and, certainly, if they appear sick, quite violently ill, especially foaming around the mouth, things like that, get a garden hose into them as quickly as possible, wash away that toxin and they seem to recover.

Mr DUNHAM: So the urban effects with aesthetics, the fact that this ugly thing's invaded us...

Mr WALDEN: Yes.

Mr DUNHAM: Some danger for pets and danger for small children and other people that handle them

Mr WALDEN: Quite likely, yes.

Mr DUNHAM: Anything else or just those three?

Mr WALDEN: They are the major ones. Human health we will get on to a bit later. They do spread disease. They eat human faeces, so you have got salmonella and parasites which can be spread through toad faeces as well, and you have also got rotting carcasses lying around, especially if you have got vigilante gangs out with golf clubs and stuff, you can have them hanging off fences and that could be quite a problem. Anyone who has lived in Queensland will know how many you get on the roads. So there will be possibly - it is sort of an aesthetic thing, but it could be a human health thing as well. There will be smell and flies and that sort of gear, yes. Okay?

Mr DUNHAM: OK Thank you.

Madam CHAIR: Thank you, Dave.

Mr FINLAYSON: Thanks for that.

Mr TAYLOR: Can I speak? Because I grew up with cane toads. I remember before they came to Queensland and then when they...

Madam CHAIR: Sorry. You missed it earlier. You have to state your name.

Mr TAYLOR: Ray Taylor. Ray Taylor. I am just here as a concerned citizen. Talking about animals, they will - they - fowls go paralysed from drinking water that they have been in. In was a common practice over there to turn the fowl water bowl over of an evening and fill it with fresh water in the morning.

Madam CHAIR: Thank you for that, Ray.

Dr Finlayson, if you want to continue.

Dr FINLAYSON: We looked at the effects, the economic effects, and despite people making claims that there would be a decline in tourism, we have been unable to locate any actual evidence, so we really cannot say - we do not want to say too much more about that. We think it is an area that may need to be investigated, in terms of the actual effect the - the tourism trade is an important industry and people are worried about the effect it will take and that is really not what we want to say at the moment.

We turn it around though, the effects may not all be bad. You look at these issues here. How important these effects are you can judge yourself. I think overall a lot of people would say they do not outweigh the disadvantage but there are still there. If you have there is a strong argument by at least some parts, that can you actually use it, make a use of it? These are some of the uses that we have found: laboratory dissections are still going on - we did this at high school and university many years ago. One of the dangers there though is, that they actually export live toads to many areas, for dissection. I recall when I was a student in Perth in the early 1970s, that live toads escaped from the airport. So, there is a back side to this sort of issue as well. There may be a benefit to have students dissecting them but if they get out you have got another problem perhaps. A leather industry has been raised, paperweights, etcetera. And medicinal value from the Asian aspect. And um I misread that last one. I thought I said: consume household pets, to get back to what we were just talking about. Sorry. Eating other things you don't like around your house. So we have these issues.

This slide here , I believe, Dave, do you want to tell the story on that one? Someone has made an industry from this.

Mr WALDEN: Yes. There is a guy in Queensland - there are a few industries, a few leather - actual companies involved in the leather industry - and this chap, his first - he got into the industry by - a bikie requested a female and male cane toad for his wedding cake and he thought, 'Well, that's a good idea', so he got a couple and he did various things to them and it was such a hit with all these people that the ceremony thought it was a hoot, so his industry does about 7000 objects a year in various unmentionable poses and all sorts of things. They dress them up in football jumpers and all sorts of things. So, yes, a bit of novelty value there. And there are paperweights, those ones, full of plaster, waiting to adorn someone's desk.

Dr FINLAYSON: You can place your orders through Dave.

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- Mr WALDEN:** No, no.
- Mr DUNHAM:** The medicinal value, apart from the fact that they are highly toxic, what would you actually use them for?
- Dr FINLAYSON:** Dave will look at the details of this
- Mr WALDEN:** There's not a lot of detail on it - and I do not know how good the research is - but in China it has been used to treat cardiovascular disorders. I am not...
- Mr DUNHAM:** Successfully?
- Mr WALDEN:** I am not sure, no. The...
- Mr BALDWIN:** In China
- Mr WALDEN:** It was one area that we did not want to spend too much time looking into, but it has been reported that the toxin can be beneficial but I think there were conflicting reports. They have had people die and what-not so I think it would be something - I do not think it would be an industry but we were just reporting everything that was reported in the literature.
- Mr DUNHAM:** Okay.'
- Dr FINLAYSON:** Really what we are saying here is that people do use these things in some areas. How important that is in relation to the adverse effects, the ecological effects, I do not think it would have actually balanced out but you cannot do anything else about the cane toads, someone to make something out of it somewhere.
- Mr BONSON:** Dr Finlayson, is it? I would not mind asking you some questions after presentation. How long to you have to go before....
- Dr FINLAYSON:** We are about - more than half way through.
- Mr WALDEN:** Yes, not far.
- Mr BONSON:** Okay. I was noticing the time, that's all. We just...
- Dr FINLAYSON:** Yes, okay.
- The potential effects, again. The contamination of water and water supplies. You just heard an example from Queensland. They do get into the bowls of water around a house; they do get into people's pools; and outside of urban areas they could cause a localised toxic effect or just have a large number of dead animals in a waterhole. Human health...

Madam CHAIR: We have heard - just on that point, we have, in submission from Borroloola, that freshwater billabongs were no longer good for drinking water as a result of cane toad infestation. So, obviously, that could have an effect around our rural areas.

Dr FINLAYSON: Yes, yes.

Mr WALDEN: I used to think, from my time in Townsville and north Queensland, that is a key issue but again, the amount of information and published information is not that good.

Human health, the second one is an interesting one, which we - we tried to find out more about who actually smoked toads.

Madam CHAIR: We have heard a bit.

Mr WALDEN: The ecological benefits. This is an interesting one as well. If you have your feral cats and little bit pigs eating the toads and dying, there will be the pressure on other organisms which are currently under threat from those ferals will also be less. So there could be a balance there, not that we are advocating we should be feeding toads to the pigs, etcetera.

Key habitats: really here, in the Kakadu sense, we sort of say that most of the habitats, if not all the habitats in Kakadu, could be occupied or used by cane toads at least at one stage of the year. They can spread across a large number of areas. They may not stay in all areas all year, and that will change depending on how much water is around, obviously.

There is a preference for disturbed areas in urban environments in particular, and they may occur in saline areas as well, so this have may not actually have them there, depending on how much salt is there.

Madam CHAIR: You heard that at the primary school, well watered lawns, there being

Dr FINLAYSON: Yes that's I think here. So that's basically showing you the natural habitats or the urban habitat where you've actually got the gardening etc, the active management of those landscape is an important issue.

This is from the Borroloola pool, the swimming pool pulling toads and a natural billabong where toads are causing effects as well.

Mr WALDEN: It's our sewerage treatment.

Dr FINLAYSON: Sorry an unnatural billabong called a sewerage pond.

Other considerations at looking at the effect of the cane toad if you took this other information into account, the current rate and potential distribution obviously has an influence on the effects or the extent, invasion rates, densities and a different stage of the life cycle and how they get from one place to another. Whether they actually do hop across or go down stream or they hitch on the trucks, etc. And the bio-climatic conditions, the actual localised conditions are very important.

This map here shown Kakadu National Park, shows where the cane toads first came into the Kakadu area from the south east corner on these rivers which drain back into Arnhemland and the rivers from the south west, but on these dates here you've got March 2000 at Beswick, Upper King River June 2000, south east of Nitmiluk in July 2000, they're now and other people can tell you how much down over the escarpment country onto the lowlands and the streams etc. So in that very short period they were actually moving quite rapidly across that pretty inhospitable country.

The risks. We actually looked at this here to try and out work out what risk would mean and really we're saying that if an organism is susceptible to the it does not actually construe to Large matter of diet the risk is less. So really it's the contact between the different species to a risk analysis and that applies to all aspects of looking at all aspects of the actual risk it would take rather than the effect or the unlikely effect.

So we're really moving into that risk assessment, here, without going into detail the left hand column in the risk category we have allocated on the available information, whether it be the effect was likely, was possible, uncertain or unlikely, that's just to show the process we go through to get those species which we mentioned earlier.

This is important and I realise there is research going on at the moment which is closing some of these gaps, but the information gaps covering these issues, the actual density of cane toads, how many cane toads are there, how fast are they spreading, the effects of fire is an interesting one and can that be used to control or limit the spread of the toad, the degree of land disturbance, how does other land disturbance affect the toad distribution and the escarpment as a barrier, they're over the escarpment now, they've come across the escarpment and come over so we can perhaps comment a bit on that one. And it carries on, general cane toad impacts, the published information there are few quantitative studies, there's few real studies that really have good data in them, there are some I won't say there's not.

And the effect of the toad on the actual size of the animals

that they're preying on, the actual body mass issue, like small and big individuals. The effects on Kakadu and again, sticking to our report, this does apply elsewhere as well. This is, we felt we needed more information, well the land managers needed to seek more information on species population distribution to diet and various organisms that were effected by the toad or the toad effected directly. And the actual impact on endemic species is not as clear as some people may have expected, we don't know a lot of the endemic species, there's a lot of species we have not even got to describe or know how much vulnerable they are to other impacts or pressures let alone enclosing the cane toad. That is very much a biodiversity argument. And what can we do in our area. This is just some practical issues at the top, swimming pools, spas, fish ponds, etc, you can limit the intrusion of cane toads into these areas, putting up low mesh screen etc, familiarise ourselves with the appearance and call of toads that people actually can identify the toad when it comes into an area and not to mistake with some of the native frogs that are around, which is the next point here. There have been cases as you may have heard of people going out and finding native frogs and killing them. Our awareness campaign about the occurrence and the likely impacts of the toad we do support strongly, not only that you have different communities want different information perhaps, but also we discourage any activity which is showing cruelty towards the toads, people walking around with golf clubs and cricket bats ... we think is not a good outcome for our society. We think we should be above that in how we actually handle the matters itself. Having said that, we used to do that in Townsville but I've grown up since then. Thank you , that's the presentation.

Mr BONSON: I understand this Richard done a correlation of all the materials that were out there floating around, is that correct?

Dr FINLAYSON: As much as we could allocate yeah, we're pretty sure we got a lot of it, but I wouldn't say we got 100%.

Mr BONSON: So how much was it in views of persons being affected in the Northern Territory like at Borroloola and Katherine, was there much interview processes like that?

Dr FINLAYSON: Dave perhaps can tell a bit further, we did conduct with Parks Australia and through Northern Land Council some interviews down towards Borroloola, we did not conduct a comprehensive survey of a lot of people though. Have you more to add to that?

Mr WALDEN: That the other report that we send in the submission is this one separate to that, and they go together this information was used in that risk assessment, so basically they were interviews with individuals and group sessions and the idea was to get an idea of people who had, communities who

had experienced toads for some years, communities who had just experienced them and communities who were about to experience them and at that time around Mataranka region, Borroloola obviously goes back more than ten years, we were able to get a rough idea of people's perceptions.

Madam CHAIR: Now Dave I've got a question on previous public inquiries we've had elsewhere in the Territory on this subject, certainly the question of protection measures has come up, I note you've got some of your comments in terms of low mesh screens, familiarising with the call, some people have talked about the opportunity of protecting islands, the Tiwi islands, Groote Eylandt, protective fencing across the Cobourg, what would your view given the amount research and study you've done on this subject be towards those protection measures?

Mr WALDEN: I think it is certainly a good idea, obviously with the amount of boat traffic going across to the islands you'd have to have some procedure in place at each port.

Madam CHAIR: Talking loading bays, lights,

Mr WALDEN: Yes that examined, it would be difficult because you've got so many nooks and crannies on barges and things like that, so whether you excluded them from the port area, doesn't have to be a large area, just say where the docking occurred, that might be an option, but I haven't researched it they're all just ideas that would be on the top of my head.

Dr FINLAYSON: I saying do we actually need that, and I'm certain that we need it and perhaps that's a case for doing it. I'm certain it should apply both ways, you don't do anything or you do something and the uncertainty of it, the increasing evidence which haven't got but other people have got in the last one or two years that there is maybe a fence and makes it sure that cane toads don't get to certain islands etc, I think is a good process, but at the end day is highlighting it could be more difficult than just saying we're not going to have a boat going there, can you keep the toads out of your boats, etc.

Mr BONSON: One of the things different again, it's mentioned in the material that there's evidence that some of the native animals come back from not extinction but numbers drop off, they come back, can you point to any examples because the evidence we heard from Borroloola is they're still waiting 15 years after the event for blue tongues and goannas to come back. The other one is all the evidence is that they're going north-west, has there been contact or relationship with the West Australian government about it's going to the Kimberleys here it comes, can we build a partnership on how we can deal with it.

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- Mr WALDEN:** To answer your first question which was
- Madam CHAIR:** The species.
- Mr WALDEN:** Most of that evidence is anecdotal, again comes back to the fact that there's no hard data on these things it's people's perception. In terms of specific examples, the references are in the report, it would be best to go to those to get the original reference, I can't remember because I haven't dealt with this for over a year now, which areas and which people reported that happening but I certainly know that it has been reported and what you say is Borroloola people are concerned because they're not getting recovery. So it would depend on the level of population decline obviously, if it were not so severe that population would recover fairly quickly, if it was very severe and you were down to a few dozen individuals left you could be looking at decades before you get back to where you were before.
- Mr BONSON:** If ever
- Mr WALDEN:** That's possible if ever, that's what we're saying there's not enough data to say that there will be return of some populations. You've also got to take into account other factors, Borroloola's probably not too bad an example, but if you've got other pressures like habitat alteration, weeds not necessarily in relation to fauna much, but any other stressor on the environment in a local area could either ensure that that population doesn't come back or determine the level of population decline, so looking at toads in isolation on a species is not always a good idea, to take in all the other factors.
- And second question. We've sent all our reports and information across to various agencies and we met with a woman Jane Rapkins?? last week from the WA Water and Rivers Commission, she's very limited on resources but is very keen on making all people aware, communities and urban areas and basically the scientific community whoever, of the scale of the problem and they're using our information and other information for that and basically getting a bit of an early start on the problem. Mainly awareness and some monitoring but they're very very pushed, it's not even being addressed by CALM apparently which is their major environmental body, the nearest office for CALM is Port Hedland and they're not too worried about it. Certainly in the Kimberley the locals are showing quite a bit of interest but other than that I couldn't say much more.
- Dr FINLAYSON:** The kind of key issues we're facing, one measure that we found frustrating when looking at the information source was the quality of baseline information. Baseline data which could actually show you what the populations were in areas

that have been affected, and that's one of our recommendations to other areas where the toads haven't got yet, if they have the opportunity to get in there and get some targets and monitoring if would be very worthwhile for them as well for everyone else looking at the issue.

Mr BONSON:

So this type of information should have been done in the early 80s for some of these areas, but also we've missed the boat on that, but with this obvious opportunity in the future with virgin territory.

Dr FINLAYSON:

We had the issue of like I said earlier on the toad was not recognised as an important a threat perhaps as other issues up until 1995, 1996 I think in the Mary River wetland workshop which I think was published in 1996 so it was probably held in 1995, 1995. I don't think it was a major issue then either, and yet we had had these warnings back to 83 that the toad was hopping it then, I think they were saying 27km per year.

Mr BONSON:

And what is the reason behind it do you think? Was it the inevitability or ...

Dr FINLAYSON:

I don't know how you prioritise, how land management agencies prioritise threats when they're dealing with a whole range of threats, I think it's quite difficult and it you've got enough, you're handling a lot of issues, how do you handle a new one. There's enough examples in Australia and around the world where invasive species tend not to become important until it's become a major problem, like we as humans and how we govern and manage ourselves we tend to want to see the whole lot there before we react, and there's enough examples of that and it's not just us to consider, things that problems we just don't get on top of worldwide.

Mr WALDEN:

Mimosa's a good example

Dr FINLAYSON:

And mimosa's a good example of that one yes, that was in either the late 60s early 70s I can't recall now when the efforts we there and it stopped and then boom the weeds spread.

Madam CHAIR:

In your research did you consider any traps or did anyone give you any evidence about useful ways of trapping cane toad, we've heard some submissions on people trying to develop can toad traps.

Mr WALDEN:

Certainly they're catchable in large numbers, the problem is the rate at which they breed, the numbers that you are dealing with. For every toad you take out it will be replaced by another toad, which is a bit of a philosophy behind people killing them or even killing them humanely in urban areas, it really wouldn't matter how many people are out

there collecting toads if it makes you feel better around your house by all means, but population-wise it's not going to make any difference I don't think. I'm not saying don't do it but that's I think that's the reality.

Traps, certainly in areas of Queensland, it's interesting where the floodplains have been pock-marked by cattle, there's these deep holes left in the mud, cylinder hoofprints quite deep and they've literally trapped thousands and thousands of toads, because toads are lazy they don't climb, they don't jump, and they come across these areas where there's literally skeletons upon skeletons over generations of these things dying, so pitfall traps all that sort of thing conceivable could work but I think the numbers would be far too great to make much impact.

Madam CHAIR:

We've heard submissions too that they lay their eggs in a long thick gel rope and you can literally with a stick just wind them up. How do you think would be effective in terms of groups of people taking care of particular waterways around the urban area, we've got the distinctive fresh waterways here, would that be useful.

Mr WALDEN:

Dave Walden. Yeah I think that's probably the best time to attack them because you get the numbers. There's a lady on television from Queensland a grandmother I think, and that's been her mission for the last 20 years, she's in her 70s or 80s and I think if people know what they're doing that's a good idea, if they don't they're going to potentially, even though the cane toad egg is distinctive like you say with the string, I think there could be potential for misidentification for native species but certainly trained people, that could have an impact on numbers.

Mr DUNHAM:

Do you think the inevitability gave scientists a sense of futility about trying to stop them which is why they put greater investment into other areas rather than attempt to ... the tide, like to turn back the sea. Is that the phenomenon because the literature I've read goes back to the late 80s and they were certainly discussing the inevitable encroachment, the impact on animals, all they things you've put up there, but it's pretty silent on eradication because even today nobody really know how you could possibly do that. Is that why science shrugged it's shoulders?

Dr FINLAYSON:

I can't talk for all scientists but it's a matter of scientists have to convince governments to fund the science and I don't know how much effort individual scientist or organisations put into these issues, and I think that there's a process behind the science, say we always want more money for something else, we've got to justify in terms of outputs and you've got to balance your budgets in the end, so that the choice so illustrating the actual importance of some of the issues I think is the key there and there is a lot of

competition that people are saying that this is more important than that. But my personal view in having dealt with invasive species for 20 or 30 years now, I don't think we really, the agency approached, and the community which drives the agencies in many cases, really understand the process of invasion and how you can handle it.

So the awareness and education issue behind it I think has to be highlighted as well as having good systematic survey based on data on the state of environments.

Mr DUNHAM:

Yeah but the most frequently sighted referee in your stuff is a bloke who went on to head up the very agency that decided priorities and I mean ERISS and it's predecessor OSS was funded to look at all sorts of species right throughout. What I'm asking is how come this didn't hit the top of the priority list and if it didn't because the conclusions were inevitable is that the answer?

Dr FINLAYSON:

I think the individual you are talking about felt that, that's from certainly the information that he gave us and a person in charge of an agency obviously has to make those choices, now a lot of other people argue against that. In our own case as a research organisation we were limited in what we could do, particularly in those areas under our Act, we're not allowed to look at these other issues. Was only in the mid 90s was our Act changed and then we had to get funding to do this other business from other agencies. So, in ourselves, I can say we didn't look at it because we weren't in a situation to look at it, it wasn't our prime business, it's extra business if we could get funding to do it.

Mr DUNHAM:

Yes, but, I mean, we're not talking about the invasive species, we're talking about baseline data, aren't we? With native species? So when you say you weren't funded to do it, you actually where, weren't you? You were funded to do baseline surveys for the various native populations throughout your area of

Dr FINLAYSON:

No, no. Parks Services or other land management or environment groups maybe. The Supervising Scientist was confined to looking at the mining issues and a lot of information, I'm not saying we actually ducked the issue, but a lot of the information that we have could be used for certain other issues and we looked at that in relation to climate change, weed invasion etc. But a lot of our information was not directly applicable to the cane toad, and what we were monitoring in relation to the mining issues.

We do, however, have some programs now which are done by biodiversity reasons after the World Heritage enquiry two or three years ago, or the outcome of the World Heritage enquiry, which can be used in the escarpment areas etc for effects up there. But the prime purpose for us doing it is as

biodiversity and cumulative effect in relation to the mining. But we are happy to make the information available. It's public information. So, in that sense, yes.

Mr BONSON:

Well, I suppose, Matthew Bonson here. Dr Max Finlayson, I think what we're finding out is that obviously there was a decision made in the past that there was essentially an inevitability and there's people angry about that. You know, the fact is, well, that shouldn't have been the attitude taken, that possibly there should be an investigation into the science of things.

I suppose one of the, at the Jabiru committee during the lunch period there I got the opportunity to speak to one of the traditional owners and he was quite angry with the fact that his lifestyle was going to be changed in Kakadu with food, flora, you know, the animals going to be extinct and all this type of business.

So the way I see this committee here is that we're really trying to clarify what has been done in the past, what steps we can do in the future, the education side of things and what maybe the science is.

So I suppose my question is what do you think the science side of things can be done?

Dr FINLAYSON:

Max Finlayson. Just clarify the science in relation to...

Mr BONSON:

Or the science about maybe trying to minimise numbers or eradicate the frog, or toad, I should say.

Dr FINLAYSON:

To be honest, myself, I haven't looked at the control options. CSIRO, there was a program in the early 1990s, I wasn't here in the area then, I was working elsewhere, and that was stopped for various reasons. I don't know why it was stopped and the current CSIRO program obviously made a decision that the approach they're going is probably to be the most likely, one of the best returns. But we didn't assess that, and we have had no real contact with that.

In terms of the actual issue of how to manage this and look at people's lifestyle and certainly a degree of indigenous people who are really quite upset about this because they are getting a lot of invasive species, not just the cane toad, the weeds for example, we've got pigs, we've had buffalo expanding into Arnhem Land in some of the swamps there. Pigs and weeds, we know about all of those.

What we don't have is the baseline biodiversity information, not that we can sample everything forever, no one can afford that, but it's the targeted state of the environment or the baseline condition of at least some areas, reference areas or areas that we value the most and it's really how we

get that information, keeping in mind that we have to have some idea of what the likely impacts will be because it's very difficult to set up one monitoring program which will give you answers for all the pressures that occur in the future.

So even if you have that sort of reference condition set up and had high quality sampling going on for a long period, something else could come which you've missed. So that assessment at the start, then I'd actually recommend that a variation of this type of assessment we did for this, the actual risk on a larger scale or the risk should be taken into account when setting out your monitoring programs. And then you've got to have some really clever thinking about what actually are the early indicators.

Mr BALDWIN:

So, Doctor, there's an opportunity to put some baseline data, collect some baseline data in places that haven't been invaded yet, say out in the west moving towards Western Australia, Keep River National Park or those sorts of places? And you, I think, are saying you would strongly recommend that happening, fairly quickly?

Dr FINLAYSON:

Max Finlayson. If people make that a priority against some of the other pressures, and the thing about the cane toad and keeping that in isolation at other costs that have to come into account. I'd say there is an opportunity and if we have that it will be worthwhile in relation to this problem. I'm not prepared to say it's the most important problem.

Mr BALDWIN:

Oh no, I'm not saying that either, but I'm saying if the opportunity is there and the resources were available, you would ...

Dr FINLAYSON:

Some of the areas where the cane toad has already occurred they're not large numbers, there's still opportunity for monitoring there as well. It's an issue of how much baseline data you need. In some areas you'll get arguments that you need years of baseline data. You don't need that in all cases if you get really good targeted data, but you can also miss if you don't get it right then. So you're leaving it until the last minute is dangerous to get your baseline information. But there are sampling ways etc where you can do that and have inference from other sites as well.

Mr BALDWIN:

So just going back then to Kakadu, how good has the baseline data been, collated over the years since its formation with all of the agencies involved. I'm not targeting your agency, Parks Australia and all the rest of them that have worked in there, how good is it? There's obviously some spots where it's been done specifically, but generally across the boundaries of Kakadu.

Dr FINLAYSON: I can't answer that because I haven't looked at. You can hear a lot of stories and I'm not going to just repeat the actual gossip. But from the actual mining side, which is what I've worked on in two different periods. I was here in the 80s, I left and came back in the 90s again.

We have what we consider to be a world class level of monitoring data and monitoring approaches, which is what we put to the World Heritage Commission several years ago, and we are trying to improve that and change that all the time.

The advantage we had, which I don't think some of the other agencies involved, whether it's Kakadu or in Arnhem Land or elsewhere, we were there to target that issue, to make sure it was done right in terms of the environmental outcomes. We were put onto that issue and had the opportunity to do it in advance. Many of the issues were there before, just before the mine started, the mining started on different sites, so you had an opportunity to get the information.

What I would like to think is that our knowledge base, our data, could be applied to a lot of these other problems. Now that then is really a challenge to us as to how we do our core business and apply it to the other problems and work with the other agencies.

But really I haven't looked at what other agencies have done on all these other issues etc and baseline. In Australia, on the whole, I think we could do better

Mr BALDWIN: Oh that's fairly obvious, yeah

Dr FINLAYSON: If we had the resources, allocated resources. I mean you can go into that argument forever.

Mr DUNHAM: So there's the collaboration and the resource, isn't there? They're the two issues you just talking about?

Madam CHAIR: The member for Nelson wants a go at some stage.

Mr BALDWIN: I just want to follow up on that one to finish it off. Just to finish off on that. So that Kakadu in general it's hard to say what the baseline data studies have produced. I mean from your point of view, because it's ...

Dr FINLAYSON: I really can't say.

Mr BALDWIN: ... right across the board. But, say, specifically in some areas and OSS in the old days were particularly on mining, as you are now. You would have studied areas like the Magella, for instance?

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- Dr FINLAYSON:** Yes.
- Mr BALDWIN:** So your baseline data on species there would be, what? Good? Very good? Excellent?
- Dr FINLAYSON:** I think, Max Finlayson, the data resource we have for the Magella in particular is probably unparalleled on a tropical sub-plain anywhere in the world. I mightn't be totally right, but I would be shocked to find something more. If it was, if we'd sampled. I'll start again there. A lot of the information we have got could be applied looking at other problems. We're actually doing that now.
- Dave referred to before looking at the cumulative effects of impacts or pressures on the habitat, not just one in isolation. What we're doing now is a slow process, there's a lot of issues. We're looking at the cumulative effects on the Magella, for example and, from our point of view, determine how important the mining is in relation to the single issues or the total issue of change on that flood plain. In that we'll be looking at invasive species, we've started already, we're looking at invasive species and we're not looking at fire but we're talking to some of the Aboriginal people about their management of fire elsewhere so we can infer from other sites in the park onto the Magella. Climate change issues, we're trying to add all these things together to get a bigger picture and that therefore making multiple uses of the data source.
- So you don't need to have an individual data source if it's planned for those purposes, or it's applicable for those purposes or it is applicable for those purposes.
- Mr BALDWIN:** Because of your intensive monitoring into the future you will pick up on things like in basic
- Dr FINLAYSON:** We can pick up on a lot of other things than just what we started out to look at. In fact, some of our sampling design has to be to ensure that, to be confident, if there is an effect to the mining, or there is an effect downstream in the mine - put it that way - we have got to be sure and be able to demonstrate it is coming from the mine or not some other course. So we have a multiple catchment approach. We do not just monitor up side the stream, for example, upstream and downstream of the mine or a mine, we go to other catchments and sampling in similar habitats, because there could be effects that going across the entire area or it could fire effects or something like that, which disguise the effects or the outcomes you do not really know. So we are chugging over that problem; we are sampling elsewhere as well, as we can, again.
- Mr BALDWIN:** Righto, Gerry, jump in mate.
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Mr WOOD: No. I was listening. Gotta remember all of me questions? You spoke about tourism before with question marks. Is there a danger that, by having cane toads in Kakadu, that could lose its world heritage listing and therefore perhaps have an effect on tourism?

Dr FINLAYSON: You have asked a particularly curly one there, in terms of legal issues. Cane toads was raised by the World Heritage Commission when they came, and a lot of people thought the original - the world heritage investigation of several years ago was just about the mining effects in the leases alongside the park. They also looked at some of the other issues, which is why ourselves, with other agencies, have been asked to look at the multiple pressures from the Supervising Scientist point of view we have got to relate it back to the mining. We have been told that is what we do. Now we are sampling our interpretation and references back to the mining industry. At the same time that information is available for other people. The cane toad was raised - I do not know if it was on this information source, which we have gone through, whether it would so change Kakadu that it would not qualify, to choose my words very very carefully there. I am not qualified for world heritage status. I think it still would, because there are a lot of areas in Kakadu, not just ones that would be directly affected by cane toads; that is just my personal opinion. But the legal situation is, there is an issue about who says it qualifies and who says it does not. I am not going into that one. That is what I am trying to avoid.

Mr WOOD: The issue of fire. Has there been much work done on the affect to cane toads through fire? I mean, most of the Top End tends to burn. Has that been a limiting factor at all?

Mr WALDEN: Again, it comes down to inconclusive evidence. There has been, to my knowledge, certainly the literature that we have searched, there has been no direct research on the effect of fire on the distribution and/or density of cane toads. You can have two things, I think we outlined. It could be beneficial to keep fire away, keeping the grass levels up could impede the movement of cane toads. They do not like grasses or trees. They tend to like open areas. So the absence of fire could be a benefit but then, again, it could also give them more shelter sites, get more dew held in the moisture at the surface of the ground, so that comes into it. Toads have certainly been observed moving away from a fire front - that goes without saying - and given their preference for disturbed areas, you would think that after a fire went through they would be more of them and they could move around faster, and I guess that comes back to where I started. We do not know whether the presence or absence of fire has really had any effect.

Mr WOOD: My last question is, the humane destruction of the cane

toad. I am not one that would particularly like cane toads in my freezer, which is not all that big anyway. Is there any...

Madam CHAIR: It is fridge and then freezer.

Mr WOOD: I do not want them in my fridge at all. I mean, someone might pull them out in the middle of the night and...

Mr BONSON: Eat them.

Mr WOOD: But I just do not like the idea of having a poisonous animal sitting in my fridge. So is there any other methods that one can use that is going to be regarded as humane besides those other methods you have mentioned, plus Domestos and those things?

Mr WALDEN: I do not think so. There are all sorts of chemicals. Dettol is paraded as a cane toad killer but, at \$2 or \$3 a bottle, I think it is a bit of a silly way of getting rid of a few toads. Really, yes, there is no alternative. If you bagged them up in heavy plastic or something, obviously - well, the toxin is not going to leak out generally. If you handle them with gloves and what not, you are quite safe. You are probably quite safe without gloves, as long as you do not suck your fingers for half an hour. But, yes, really there is no alternative. You could conceivably drown them; they will drown in water quite easily. It just comes down to where humane sort of kicks in and does not.

Mr BONSON: Just one, and it might sound a bit of a silly question. We have heard evidence that if the frogs get in or the tadpoles get into the water supply and people have drank from them, then a person possibly could get sick, and we mentioned about the flowers. What do they do in Queensland with the dam borders and water supplies and things like that? I would have thought that toads and wood got into it, like the Darwin River Dam, for instance. They will get into there. We can be drinking that water. What effect could it have on the general population?

Mr WALDEN: It comes down to - again, I have no evidence on this; this is sort of things that I have read. If a toad can get access to and from the water it is not going to die in the water and it is certainly not going to spend much time there. This is adult toads or small toads we are talking about. So that is not a problem. So a place like Darwin River Dam is going to have tadpoles and eggs in the shoreline. That volume water would not even be an issue. Most of the cases, where there has been some poisoning of poultry or pets, has been small isolated water, like a fishpond, a watering bowl. There is a concern for perhaps rural bores and watering troughs, things like that, where they are steep sided, toads get in and they cannot get out, so they drown, and then you have either got the problem of the rotting carcass and/or secretion

of the toxin, which, in enough concentration, as we have heard, can kill some animals. I am not familiar with the construction of, say, the Darwin water treatments plants. I know the shed is out there at the 19 mile. They look enclosed. I think, if you were concerned about rotting toads or poison in that water, it seems, from what I have seen, easy to exclude, but I would, certainly for that sort of area, yes, make sure that toads were excluded. But a large dam or something, yes, if they have got access to and from the water I do not think it will be an issue.

Madam CHAIR: Members of the committee, I am just conscious of the time. We're 10 minutes over already. Are there any other questions?

Mr BALDWIN: Yes, one very simple question. There is a lot of data around – whether it is good or not and anecdotal and whether it is scientific enough, and a lot of organisations that have been involved in collating that data and working on this issue, whether it is yourselves, your organisation, Parks Australia, Parks and Wildlife, CSIRO - do you think there would be any benefit in some way of formally co-ordinating those agencies in relation to the cane toad problem and the efforts they are making? So sharing resources and information more than anything, but some sort of a group or a...

Madam CHAIR: A big taskforce?

Mr BALDWIN: Yeah, yeah.

Dr FINLAYSON: Yes. I am, obviously, quite in favour of getting - we have different agencies in different jurisdictions as a matter of course, it is part of our system, and any process which can bring it together and make value of the knowledge and wisdom in data that all of these organisations have, I think it is valuable. I do not know in this area how much that has been done though. That is why I was sort of thinking quite serious about that. If it has occurred, I am not sure.

Mr BALDWIN: No. Well, I am just thinking in terms of the monitoring, that, say, you guys are doing in that Mageela system, if Parks and Wildlife went off to do some base line studies and then monitoring the impact as toads come through, surely it would be nice to have an avenue that formalised the sharing of that information, the comparing of it and

Dr FINLAYSON: I do not think it is done as formally as you are raising there, but as a consequence of our work, Parks Australia picked out the key recommendations and discussed it with, through their board of management, etc, that they have to work through and discussed it with the Parks and Wildlife Commission to get the expertise to do the targeted monitoring that has been going on. There are some other people being brought into that as well. So, in effect, that is

curve but in such a formal structure as you were raising.

Mr BALDWIN: Yeah, yeah. OK Thanks

Mr DUNHAM: One of the impacts in Darwin, like I said the aesthetic one is toads in your swimming pool and we saw your slide up there about Borroloola where it is reputed they pulled out 30 a night and we took evidence in Katherine from a person who never found one in his pool ever, even though they had been there for 18 months. I was just wondering whether there is a difference between salt water and chlorine or whether they prefer some pools to others or whether, he claimed it was a small step this big that excluded them, is there any work that is done like that on domestic swimming pools and attractiveness to frogs, toads?

Mr WALDEN: No, there is not. Certainly a small step would exclude them. They really do not jump, you know, they walk basically. They climb along an incline but they will not climb vertically, so if that was the case – but there has been no work done. I think they would sense the water and probably fall in, rather than choose to actually go swimming. If it was, particularly in the dry season they will be looking for the sound of water or the smell of it, I do not know how they best do it but, yeah, there has been no work done on that but because of that fact that they do not jump, if you have got isolation fencing around your pool, obviously you have got big gaps in it but a simple bit of shade cloth a couple of feet high at the most would keep them out of your pool.

Mr BONSON: There is one question I would like to ask, we have heard – contrary to evidence – about the lavender bug, about some people finding cane toads in Katherine that have eaten the lavender bug and they are dying. Then we have had someone in Jabiru say to us, 'Look, you know, we cut open a live cane toads and have had 25 of these lavender bugs inside them'. Then we have had other evidence in Katherine saying, 'Well, we have noticed a decrease in cane toads but we have also noticed a decrease in these lavender bugs'. Have you guys done any information, any anecdotal stuff on the lavender bug?

Dr FINLAYSON: The answer is no, we don't know, we haven't looked at it. We haven't actually looked at the control or management beyond doing this report for the managers and no information has come to myself on that issue.

Mr BONSON: Would it be worth investigating though on that anecdotal evidence?

Dr FINLAYSON: I think there is a lot of anecdotal evidence, teasing the good stuff out and doing something, I don't just rely on scientific knowledge and a lot of local people have had expert knowledge and getting the right bit out is the issue there. I

mean, I don't know on this issue you are raising at all.

Madam CHAIR: Ok, thank you very much for your submission today Dr Finlayson and Mr Walden and we really appreciate the written submission as well as the oral submission that you have provided to us.

Mr DUNHAM: Really good, has really been good reading.

Dr FINLAYSON: Thanks very much.

[Re-commenced 13:33:17]

Madam CHAIR: The next submission to the inquiry will be from Dr Greg Brown, oral presentation based on work he has undertaking at Fogg Dam.

Dr BROWN: Can I just sit here?

Madam CHAIR: Certainly. Near the microphone. Wherever you feel comfortable.

Banter

[Re-commenced: 13:35:01]

Madam CHAIR: All right, we'll just proceed with the public hearing. We are on a tight schedule, I'm sorry. All right. Dr Brown, thank you for coming here to provide information into the inquiry into the incursion of the cane toads into the Territory and we look forward to hearing what you have to say.

Dr BROWN: My name is Greg Brown and I am a post-doctoral research fellow at the University of Sydney, the School of Biological Sciences and the research group that I'm associated with, headed by Professor Rick Shine has just been awarded a five year grant from the Australian Research Council to study the effect of cane toads on reptile populations in the Top End. And our goal in the research is not to find the means of controlling toads but rather to document the ecological effects that they have on native populations.

Now over several decades, cane toads had spread over hundreds of kilometres of Australia. Now biologists said in 2003, with little idea of what to expect when the cane toads arrive, now as we heard there is anecdotal reports abound, and they suggest that predator populations such as snakes, quolls, lizards become noticeably rare or even disappear after cane toads arrive. Now we hope to carefully document what happens to the reptile populations that we study following the cane toads invasion and detail for the first time the ecological impact that a novel (?) toxic prey item has on its predators. And as the toads continue to expand to any localities, hopefully we will be able to use the information we provide to get some idea of what to expect.

Now we received Commonwealth funding for this study – because we'd been conducting a long term mark recapture studies on various reptile populations: mainly water pythons; death adders; keel back snakes; slaty grey snakes; Macleay's water snakes; file snakes; and snake neck turtles, at Fogg Dam for the last five to ten years. And these studies have provided detailed information on the sizes of the populations, their rates of reproduction, their age structure, their growth rates and the kind of information that ecologists are interested in. And because these studies have been going on for such a long period of time, we can also document natural variation from season to season and from year to year in these populations. So we have a good deal of background information on a lot of potential toad predators at Fogg Dam and we can compare this with any observed changes that occur after the cane toads arrive. At present there's tens of thousands of individually marked snakes at Fogg Dam – many of them have been marked from the day they've hatched and they've been followed and recaptured and measured and followed around for most of their lives. And we have information of their movements and their growth rates and their reproduction and you know, for some of them, for three generations, who their family members are, who their parents are, who their brothers and sisters are and so on.

And now we are waiting to see what will happen to them when the cane toads arrive. Now in addition to the populations, the reptiles that we study intensively, where we actually go out and individually mark and measure individuals, over the last five years we've also been conducting nightly surveys, where we go out at the same time, follow the same route and count every frog and snake that we see. And although simply counting animals isn't as robust a method of monitoring the population as actually marking and measuring individuals, because you out several different nights and count the same individuals But nonetheless, because we've been carrying out these standardised survey for such a long period of time, they'll allow us to detect and measure any population declines or changes in a large range of species.

Now although cane toads have been spreading through numerous Australia communities, as been mentioned before, there is no detailed information on how they effect populations of animals that are likely to try and eat them. Most commonly though, anecdotal reports say that there's either long term or short term reductions in predator populations: quolls, snakes, lizards and so on. And we can look in Queensland today and see that there's still snakes etc there and lizards, but because we don't have the background information to know what was there before the toads arrived in any detail, all we can say for sure is that the toads didn't kill everything that was there.

But now we have the opportunity to see what happens to a well steady population of predators after the cane toads arrive. It offers a unique opportunity to study their impact in real detail. Now as we wait for the arrival of cane toads. We continue our studies and surveys but in the meantime, we are also carrying out studies on captive animals to allow us to make some preliminary assessments of what to expect when cane toads get here. Now first of all, we want to determine which species of reptiles are going to try and eat a cane toads when they come across them. Secondly, we want to see how badly different species react to cane toad toxin, once they ingest it. Preliminary results of this so far, this is all ongoing stuff, but the preliminary results so far are not encouraging for reptiles. Almost every species of snake that we have tested will try and eat a cane toad when it sees it and furthermore, all the lizards and snakes and turtles that we have tested were badly affected by toad toxin With two exceptions.

Mr DUNHAM: pythons?

Dr BROWN: Yes, pythons was a species that we actually thought wouldn't be likely to eat cane toads, the mammal specialists most of them and in some populations there are individuals that will try and eat cane toads but in some populations it seems that they won't go after cane toads. That is something we want to look at further, this geographic variation and populations and how likely they are to try and eat toads. But the two exceptions, notable exceptions are keel back snakes and slaty grey snakes and both of these species are head and shoulders above other Australian snakes in terms of being tolerant to toad toxins. But taken together, these preliminary data lead us to the expectation that several populations at least of local predatory reptiles are at risk from cane toads.

Madam CHAIR: When you say, 'at risk', degree of risk?

Dr BROWN: That is something we will not know until they get here. We know that they will try and eat toads, we know that most of them will probably be killed by eating toads but we have to find out when they get here. If there are some individuals, what it really comes down to is – how much individual variation there is in these things, how many individuals will try and eat toads and how many will not.

Mr BONSON: Because there is some evidence that some of the pythons and file snakes, I think around Borroloola, they are eating the cane toads and they are going all right. You know, they are surviving but some of the other reptiles well, they are not being seen any more.

Dr BROWN: And that could be a matter of, it is possible that they could

locally go extinct but there is also a chance that there is a few individuals left, so you have got these decimated populations with just a few hangers on, that maybe in some ways resistant to either trying to eat a cane toad or happen to be a bit more resistant to the toxin. And so what can happen is that gradually the populations can rebuild from these small number of individuals and hopefully the offspring will have the characteristics that inferred some sort of capacity of resistances in the adults. But, you know, we can come up with all kinds of theoretical ideas about that but we will not actually know until the cane toads are actually here and we see what happens.

Mr WOOD: Excuse me. Can a snake for instance learn? I mean there is talk that crows for instance have learnt to turn a cane toads upside down, is there any of that initiative in a snake?

Dr BROWN: It is possible. Snakes do not have a big brain and they are also hampered by the fact that they actually do not have any arms and legs to capture something and strangle it and then pull off a piece of it, they actually have to get the whole thing in their mouth. So, because they are so sensitive to cane toad toxin, that is usually enough to kill them. They usually do not have a second chance, they do not have a chance to say, that tastes terrible, I'm going to spit it out and not go after one of those again, we think. We think that it is going to be awfully hard for snakes to learn but if some individuals can grab hold of it, recognising it is something toxic or unpleasant, spit it out right away, they probably will learn – because snakes can learn about food sources and the problem is, just how toxic this prey source is. They may not have a chance to learn even though they do have the capacity to learn things.

Madam CHAIR: What about turtles, you say you've done some research on turtles? We've looked at how tolerant they are to toad toxins and they are not very tolerant. They rank below some of the snake species.

Mr BONSON: This is the freshwater?

Dr BROWN: Snake neck turtle, yeah.

Mr BONSON: Because it is, again in Borrooloola the Aboriginal traditional owners around there were saying that they are still catching these fresh water turtles.

Dr BROWN: Yep and that is very possible because first of all, they are not going to be eating the adult toads. They may eat toad eggs or tadpoles and become intoxicated by them. You know, these turtles are in large areas of flood plain and they may not encounter toxic tadpoles or eggs to kill them all right away, some that do eat too many tadpoles may die but there are still going to be lots left over if they have got other

prey sources.

Mr DUNHAM: I found in the readings and I now can't put my hand on it but there is actually a toxic native frog isn't there? Is the distribution of that within your study area, that frog?

Dr BROWN: Yes.

Mr DUNHAM: And is there a natural avoidance by some species or they eat it and tolerate it?

Dr BROWN: They seem, it looks like that's actually it maybe a seasonal toxic frog, so some times of the year it's not toxic, some times it is. But some snakes are able to identify, a lot of snakes that

MR DUNHAM: And avoid?

Dr BROWN: Yes, they won't actually turn away from it but they'll just

Mr DUNHAM: So that would be an acquired trait wouldn't it?

Dr BROWN: Yes, over thousands of years, that's not just something they learn right away, that's the species they've evolved with in Australia for thousands of years so the ones that did try and eat it in the past presumably died, the ones that learnt not to think of it as a prey in order to survive.

Madam CHAIR: Dr Brown, before you go on I just want clarify at the outset said you have received a research grant from the Commonwealth to study the ecological effects, is that the \$500 000 over five years grant?

Dr BROWN: It's a bit more than that over five years, yes.

Madam CHAIR: Thank you. Continue on.

Dr BROWN: So put them together the preliminary results from the studies we've been doing in captive animals suggests that populations of reptiles are going to be at risk, but it's not clear how these lab studies are going to carry over in the field exactly.

A good example is common tree snakes, they're specialised frog eaters, they'll readily eat cane toads and they're extremely sensitive to cane toad toxin but as the name suggests they spend most of their time up in trees and they're not going to come across any cane toads up there. So their habitat preference may act as some sort of mitigating factor whereas otherwise they're susceptible to the presence of cane toads.

There are even species that aren't directly by the toads

themselves, populations could be detrimentally affected by the presence of toads, through things like you've heard before competition for prey species or competition for shelter sites, but again as we said before we have no information on how these higher order ecologically interactions are going to play out here.

But in addition to studying the effects of cane toads on reptile populations, we also plan to study the populations of cane toads themselves when they arrive. The coastal floodplain habitats which surround Fogg Dam we expect will provide excellent conditions for toads and we want to monitor how rapidly the populations build up, how often they can reproduce, what they're eating on, and so on. We also plan to radio-track a large number of those to look at what sorts of micro-habitat sites they're choosing on the floodplain and also what sort of things they're eating in the field, we expect to find a lot of animals that are dead, with radio-collared cane toads in their jaws. And by closely monitoring the populations of toads and part recapture we also potentially could come across natural mortalities on toads which may prove some value in looking at potentially finding some things that affect toad populations, natural things.

So at this point our expectation is that many species of snakes and other large reptiles in the Top End will be detrimentally affected by the arrival of cane toads. Populations have keeled back since slatey grey snake an exception, I mentioned before two of the species that we're studying intensively at Fogg Dam. They're likely to be less affected than other species, and although the impacts on most species is likely to be severe we can't say how severe until the toads actually get here.

As I mentioned it depends on how much variation there is among the individuals and their readiness to eat toads and how much variation in the individuals there is in their sensitivity to the toad toxin, and if there's any individuals left over that survive the initial toad impact, the populations can presumably be built from there and the offspring from these survivors will hopefully have the same attributes that the parents have, much them less likely to eat cane toads. Populations can then be able to rebuild over time.

So my submission here is mainly to identify possible ecological effects in the animals that I'm working with, but the real extent of what will happen when cane toads get here won't be know until they arrive. But when they do arrive our research hopefully will be able to give a good indication and good careful precise measurements of exactly what the impact they have at least on selective predator populations, reptiles in this case. And although the world is unlikely to end when the cane toads reach the

Darwin and rural area, it is possible that there is going to be impacts that people notice. And that will depend mainly on how much association individuals have with the outdoors. Biologists, naturalists, people who spend a lot of time in the bush are probably going to notice declines in reptile populations, say someone who lends their outdoor activities to the occasional backyard barbecue isn't going to notice a decline in the number of death adders or ornate frogs in the bush. What people will likely notice though is the cane toads themselves. They're probably going to reach incredibly high populations in the rural area and probably Darwin itself, they're large, conspicuous animals and people find them unpleasant, so in that sense probably going to have some sort of at least initial impact on people's enjoyment of the outdoors, until they get used to them.

But the other impacts carry-on impacts of the ecological are going to be equal tourism, bush tucker things, they've been mentioned before and I can't really comment on that, that's outside my expertise, but we can expect there will be some ecological changes and presumably some human flow on effects.

Mr WOOD: Have you done counts with saltwater and freshwater crocs in Fogg Dam?

Dr BROWN: Yes, but there's not enough crocodiles there to be really a worthwhile sample size. Parks and Wildlife has much better records on surveys of the crocodiles than I do, I just keep track of them.

Mr WOOD: I used to collect water samples there and used to have signs up basically saying there were crocs in there.

Dr BROWN: There are crocs in there.

Mr BONSON: No salt water though.

Dr BROWN: Yep.

Mr BONSON: Saltwater as well?

Dr BROWN: There was one they just tried to trap it a couple of months ago, a four metre that was in there.

Mr BONSON: What about magpie geese, a lot of people go down there hunting magpie geese during the season, what effect, what do you know their dogs?

Dr BROWN: That's sort of what I would consider a higher ecological impact. Magpie geese aren't going to try and eat cane toads, they're vegetarians. Cane toads aren't going to try and eat magpie geese.

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- Madam CHAIR:** Less snakes eating their eggs.
- Dr BROWN:** Snakes don't eat many magpie eggs. Most of the snakes eat frogs, which is a problem, small lizards and small mammals. Birds are fairly safe from the snake, they get the odd one. Birds tend to be fairly safe from snakes, but magpie geese probably should be safer I would think, safer than things are directly going to be affected by cane toads, but ecological relationships are notoriously complicated, there could be some unforeseen thing the toads may for instance eat a lot insects that are necessary for germinating some sort of plant on the floodplains that magpie geese really like or something. That's unlikely but that's the sort of higher ecological effect that we just don't know.
- Mr WOOD:** If some food sources can survive the toxin, is the toxin going to stay in the body of the animal and therefore be a risk because somebody may want to eat it?
- Dr BROWN:** No, as far as I know it's not this sort of thing, bio accumulates, no. So keelback snakes for instance can eat cane toads and not be affected by the toxins themselves but we're not sure exactly do that, cane toad toxin affects heart muscle. We're not sure if keelbacks have some sort of heart muscle that is particularly immune to this toxin or if they somehow have something in their digestive system or somewhere that they're actually metabolising and rendering ... toxin somewhere between their intestine and their heart. We don't know exactly how that works but it seems unlikely that eats a keelback is going to get intoxicated by cane toad toxin unless the cane toad is still in the As far as I know there is no bio accumulation towards toxins through the food chain.
- Mr BONSON:** Greg have you done this type of work elsewhere in the world or just within Australia.
- Dr BROWN:** I have done research in Canada and some in the United States and in the Top End in Australia here. I have been working in the Top End on these snakes at Fogg Dam for the last five years.
- Madam CHAIR:** Any other questions. Dr Brown I thank you very much for your submission to our inquiry today and I wish you all the very best of luck with research at Fogg Dam. Is Mr Dan Baschiera here? No.
- Madam CHAIR:** Next up the Environment Centre. Anyone here from the Environment Centre. No, we're a bit ahead of time.
- Mr TAYLOR:** Can I have five minutes of your time, I've got to leave but I grew up in the toad era before and after.
- Madam CHAIR:** Yes, great, come forward.
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Mr TAYLOR: Ray Taylor's my name. I grew up in a rural area north of Townsville and I remember before the toads and after the toads. Before the toads when I was quite young the swamps used to throb with frogs and the wet season came you could hear the frogs for miles, it was just alive with all different frogs.

As I grew older and we used to go up there night time with the dogs pig hunting and all this sort of thing, the only frogs you ever heard was the toads. So I believe the toads cleaned out the native frogs from those swamps and waterholes. Jack Taylor told me that when he first opened a cane farm up in the area the place was alive with death adder snakes, he said now when the toads come you'll never find another death adder. So I think the toads are going to be very destructive to the birds and animals.

Mr DUNHAM: Have you been back Ray?

Mr TAYLOR: Yeah on and off.

Mr DUNHAM: Is that still the case now?

Mr TAYLOR: I hadn't been back for 20 years to this place, to where I grew up. But the only thing that I know, you talk about the Commonwealth government was funding a scientist or scientists to try and find a way to eradicate the toads and I believe the funding was withdrawn because they didn't see the sense in it, wasting money on cane toads.

Mr DUNHAM: No they're still doing biological stuff Ray, it's been going for five years.

Mr TAYLOR: Uh huh. This is maybe going back before then. I did read a report once where the doctors or scientists were doing studies they'd come across these toads that were very emaciate, the scientists were studying these toads to see what was affecting them, to see what was killing them off. And I have seen dogs frothing at the mouth from the effects of biting toads.

Mr DUNHAM: Did you ever lose one?

Mr TAYLOR: No I've never had a dog die from them, but the fowls would get paralysed.

Mr DUNHAM: Why didn't you put the water bowl up that high, on top of a bucket?

Mr TAYLOR: Never thought of it. There is another thing that toads will wipe out beehives. You know where they used to have the beehive entrance about so far above the ground, the toads will actually stack up one on top of the other and they'll just

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- sit there and eat a beehive out.
- Mr BONSON:** That's what we heard with the bush tucker honey, the bees, the sugarbags, that they can't find them anymore in Borroloola.
- Mr TAYLOR:** Yes, well they actually stack up and they'll sit at the mouth of a hive and they'll eat a beehive out.
- Mr BONSON:** And you've actually seen it.
- Mr TAYLOR:** I haven't seen it, but I've been told about it.
- Mr BONSON:** That is very interesting because a lot of people were thinking that must be when the bees are coming down to the ground, they must be getting eaten then, but obviously they might be using ...
- Mr TAYLOR:** No, they'll stack up, they'll just sit on top of one another and just sit there, so you've got to put the beehive entrances higher above the ground.
- Mr WOOD:** You'll have to get pretty high for a sugarbag
- Mr BONSON:** The other thing is, you grew up with before and after effects, so all the people that came after you, born after you, never knew what is was before they just accept cane toads as part of it?
- Mr TAYLOR:** Yes, I was born in 1937 and I think the toads were introduced in 1937 in Innisfail and I was north of Townsville so they hadn't reached us at that time when I was young and in the bush. I had a horse and dog and we used to live in the bush, we'd camp out and fish and crab.
- Mr BONSON:** The evidence that we got is that they'd come into an area, they'd swarm
- Mr TAYLOR:** They're millions of them, they just got millions of them. And they get big too some of them you see they're like that. Ugly big things.
- Mr BONSON:** How do you think it's going to affect real estate out in the rural area.
- Mr TAYLOR:** Don't worry me, anyway folks that's all I've got say, I just thought I'd share with you my experience.
- Madam CHAIR:** Ray thank you very much for coming in, we appreciate it. Is there anyone else here who wants to make a submission at this stage
- Ms WOODS:** I got a query Delia is that alright?
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- Madam CHAIR:** Lorna come to the microphone.
- Ms WOODS:** I won't do that if that's alright, I really just wanted to know whether any of the technical people here have got any information or whether you've heard already about whether any work genetics to try to interrupt the breeding process.
- Madam CHAIR:** Lorna if you come to the microphone
- Ms WOODS:** I need to that do I?
- Madam CHAIR:** Yes sorry, we're on Hansard it just makes it easier.
- [Hearing resumes 14.22.33]
- Madam CHAIR:** Okay, we'll resume the public inquiry into the incursion of cane toads into the Northern Territory
- I welcome the submission from Mr Dan Baschiera, a private citizen of the Northern Territory, into this inquiry. Dan, welcome and pick up (?) your submission to the Committee.
- Mr BASCHIERA:** Thank you for listening to me. The submission I have is fairly brief, it's not going to take too much of your time. I did have a little article published a while ago which basically sets out, I guess, most of my concerns in regard to the cane toad and its incursion into the Northern Territory.
- Just to give you some brief background. I first become quite concerned about this issue back in the very early 1990s, around 1990-91. At the time I was running ecotourism safaris into Kakadu National Park under the name of Territory Photo Sport. The company philosophy essentially was one where we were endeavouring to use business expertise to promote Aboriginal community development, particularly in the context of ecotourism and using that as a platform for development.
- I was quite concerned right in the early stages of tourism because essentially the Tourist Commission and company who were going on about the fact that we didn't have enough hotel beds and that we didn't have enough airlines coming into the Northern Territory, whereas what I was saying was the fact that we really didn't have enough product on the ground in terms of what was going to attract tourists. By product on the ground I mean essentially wildlife.
- I think it was Ludwig Leichhardt or McKinley who stated in their journals: 'I stood in the shadow of the geese for 10 minutes'. These days we don't have that, I think we're very lucky if we see a couple of hundred geese if we go across the Adelaide River flood plains. The tourists really want to come up and see a lot of wildlife.
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Why I say that is because my background is from East Africa, northern Tanzania in Kenya. I had a lot of experience with wildlife over there, very much on a one to one type basis and I know how powerful wildlife can be. So my great concern was that, okay, we really didn't have much in the way of wildlife up here in the Northern Territory. Why? Was primarily because during the Second World War we had something like 150 000 troops stationed up here, they're armed with Jeep and 303 rifle and they've nothing to do and anything that moved got shot.

After the Second World War we were quite complacent about the numbers of wildlife that we did have. I mean there were records of emu running across the plains from here to Kakadu, the Aboriginal people have got drawings of them up in their caves, yet we can't really seem to get emus coming back, main reason why is because they can't form together as blocks to protect their chicks from the dingoes etc etc.

On top of this dearth of wildlife started, I could say, come the concern of the cane toad and the potential damage it can do. I looked into this at the time, I read as much material as I could. My biggest concern was simply the fact that there really wasn't enough hard research material on the cane toad as such. A lot of the research was based on, what do you call it? Research by association, research based in environments different to the Northern Territory, particularly different to the South Alligator flood plain basin and the like which, in my view, in terms of my comparisons with my studies in Venezuela, or my studies of Venezuela should I say, the South Alligator flood plain basis is probably absolutely ideal conditions for the cane toad as such.

When you're looking at ideal conditions you're looking at potential multiple breeding rates, and this fact has not been covered in any of the research that I came across. Yes, there was research that indicated that after the cane toad had, what do you call it? Swarmed and the like. Then you would have the wildlife returning post the cane toad invasion and the deaths caused by the cane toad.

Whilst I agree with that viewpoint, I also was really, really quite concerned about the potential for multiple breeding rate and I hope that I'm very wrong with my assessment of this, but if we do have multiple breeding rate then the chances of seeing some huge swarmings coming through Kakadu and the Top End are very significant and as that potential could actually do significant damage in the initial impact right across the board with pretty much everything.

There's lead-ons from that in that we all know that the cane toad is essentially omnivorous, anything that fits into its

mouth that it can eat it will eat, this will impact the level of insectivore on the flood plains, which in turn will impact on the birds.

There has been very little research into the impact of the cane toad on the barramundi fishing industry, and there is an interesting correlation between the fact that the barramundi industry in Queensland started to drop off significantly at the period of time that the cane toad was starting to surge forward. So we may well be looking at a very significant impact on the barramundi industry here.

Overall I think the biggest concern relating to the cane toad is twofold here in the Northern Territory. Firstly, the cane toad has been classified as essentially just a pest, not a menace, and this has allowed governments to primarily not see it as such a serious concern. That may well have been the case back in the 1930s, 1940s and 1950s in Queensland as the cane toad was expanding its way through that state.

It is now a different kettle of fish, we're now in the 21st century, the wilderness areas, wildlife areas in the world are going to become very, very significant real estate in the years to come, particularly with future generations and we're here and now at risk with actually doing some significant damage to our wildlife environment in the Northern Territory.

So, in that context I think we should really seriously examine whether we should continue classifying the cane toad as a pest or now start really talking about it as a menace.

In the context of it as being a menace, there are a number of additional concerns. Here in the Northern Territory, as we're all very well aware, there are lots of Indigenous people living on the fringes of our towns and our cities, and the what do you call it, level of hygiene in the long grass can not be the best. We do know that the cane toad does enjoy a meal of human faeces, and we do know that the cane toad can transmit any form of human parasite. The issue here of course is if a cane toad should happen to hop into the swimming pool of the Novotel Hotel and infect 30 to 40 tourists with salmonella we will have a very serious problems in terms of our tourist industry. The other issue here is one of health. The cane toad may well impact on the loadings of our health infrastructure, particularly if we start getting parasites transmitted throughout the community as a result of this. It is somewhat different from Queensland because here we have a high intensification of fringe dwelling as such and the hygiene situation associated with that. This has not raised its head yet. I have spoken to my good friend Jim, the mayor of Katherine, and he is keeping an eye on the situation down there. I have had some feedback that also the bush tucker element in regards to the

cane toad is diminishing in some areas now. I guess we are well aware that in some of the Aboriginal outstations the first week of the fortnight cycle is social security funding, the second week is often bush tucker, and the bush tucker is seemingly disappearing. This is the feedback I have had, it is anecdotal at the moment but I think it is well worth having a closer look at. If we have that situation occurring, again we have got further community and social stress coming into the Northern Territory community as a whole and no doubt a larger impact on our larger towns and communities as these people come in because of lack of food.

So the issue of the cane toad being classified either as a pest or a menace or something, I would certainly like to table before... the committee in front of me here. The second concern I have is one related to the experimentation of self government in the Northern Territory in that we do not have a Senate here, we do not have a way and a means to monitor resource use and resource distortion as such. The newspapers over the last 10 to 15 years have indicated that there is lots of money being spent in all sorts of different places. However, we still have a condition of third world Australia which is a bit of a disgrace to the majority of Australian democracy and I put that down to the fact that we really do not have a Senate to monitor what is exactly happening to the self government of the Northern Territory. In that context, a lot of resources obviously have not been spent in the right place. One of the reasons why I state that is because we do have a cane toad incursion into the Northern Territory. Had we had more resourcing, I daresay we could probably have spent a lot more money on trying to do something about the cane toad before it even got here. So those are the two main points I want to raise with the committee here.

The third one which is not significant, but is in the publication that I have provided you, is a psychological one. Basically, the greatest defence mechanism of the cane toad is not its poison. The greatest defence mechanism is something in psychology that we call cognitive dissonance. Cognitive dissonance occurs when somebody is exposed to a situation that they can not manage and so they make a joke of it and they make light of it, and subsequently that is the case with the cane toad. We have done nothing but make a joke of the cane toad the whole time it has been here simply because we can not manage it. Essentially, the cane toad is going to manage us, we are not going to manage the cane toad. It is going to control our environment and it is going to do substantial damage to our tourism industry. If we start, for example, getting outbreaks of salmonella in Litchfield Park and places like that, what is it going to do to our industry. So this is a consequence of some concern. Cognitive dissonance is a natural human reaction to a situation that we can not manage and we can

not manage the cane toad. I am also a little angry with the, what do you call it, the green body in Australia, the green powers that be, the green parties and the like, for continuously making a lot of noise about uranium mining in Kakadu. The situation, the bottom line is, we can manage uranium mining, we can stop it tomorrow if we wanted to. We can not stop the cane toad and the cane toad is going to do significant damage, moreso than what, I think, any uranium mine is going to do. And I think the green party of Australia should well and truly been jumping on this case a long time ago.

Now, just to give you some other little bits and pieces in terms of my research. I did a probe into the Gulf Country back in 1991 and 1992, to study this particular problem.

Mr BONSON:

Dan, can I just jump in here to ask a question if that is alright. I just notice on your written material here that you said that you were a prior ecotourism operator, lecturer and research consultant to the NT government, so this was work that you had done there with the NT government, was it?

Mr BASCHIERA:

I was actually doing some ecotourism research for the Northern Territory government when I did the probe into the Gulf Country.

Madam CHAIR:

What time was it, the early nineties?

Mr BASCHIERA:

This would be 1991, 1992. At that time the cane toad was coming across the Gulf Country. I went out with the savannah guides, we were essentially assessing an ecotourism product out there, how they were managing it, and I provided a short report to the Northern Territory Tourist Commission, and at the same time I explored any impact of the cane toad. While I was out there...

Madam CHAIR:

Do you have a copy of that report, could you provide it to the committee?

Mr BASCHIERA:

I could have it somewhere, I could give it out. I did not indicate much in terms of the cane toad at the time, just basically what was happening with ecotourism. However, one of the reasons why I did not provide much in terms of the cane toad at the time was, just a few months beforehand, a year beforehand, I had actually stood for a position on the Darwin Regional Tourism Association and as my platform I was going to look at seeing what we could do about the cane toad, and I was laughed at and laughed out of the election. So it was a big joke at that time. Going back to the Gulf Country, I saw billabongs just swarming with toadlets. They were all over the place. It was horrific to see. It was an ideal opportunity because I could also see the aftermath going further east, 50 to 10 km and you then saw just decimated waterholes, maybe with the odd bird

here and there, but that is basically about it. The tragedy also was the frillneck lizard. All the savannah guides were telling me that the frillneck lizards disappeared in the path of the cane toad. Apparently the cane toad eats the baby frillneck lizards. The baby frillneck lizards live in hollows and under rocks and stuff like that, exactly the places where the cane toad goes to in the day, so its meal is supplied. I am very fearful that we will lose the frillneck lizard, on top of the quoll, on top of a few others. Another disaster that is pending is Fogg Dam. We have the highest biomass of python in the world and that is going to be an absolute disaster. Yes, the frillneck lizard is a concern. The loss of the frillneck I think will probably have a very big impact on the Northern Territory.

Mr BONSON:

What about goannas and bluetongue lizards?

Mr BASCHIERA:

Yes, they are going to go. Pretty much anything that can fit into the mouth of a cane toad will disappear, either if it is a baby, or small, or whatever. The other thing I wanted to raise was, I saw a photograph in the newspaper a few weeks back, it made the front page, huge great big cane toad found at Pine Creek. The estimates were that it had probably been there for a couple of weeks. That is a possibility. The other thing we also need to bear in mind is that what if that cane toad has not been there for two years, and has only been there for a couple of months or six months and it has grown to that size. That is an indication of *the el paradiso* that the cane toad is coming into in terms of the positive environment for it. So if we are seeing that massive amount of acceleration on growth that is a concern.

I did a probe into Motorcar Falls last year when the first reports of the cane toad were coming through in the southern part of the park. Indications at the time were that the cane toads were just swarming, they were still toadlets. I came in about two or four weeks after that first report came out, and went in on my motorcycle. I did a fairly detailed survey in there, and coming back out of it on one of the nights, I saw a couple of cane toads on the road. I stopped and I was quite surprised. These were no longer toadlets, they were the size of my hand, and as I was looking at them and assessing them I could hear the speargrass rustling as it does in the breeze, but there was no breeze. There were literally thousands of cane toads moving through the grass, hunting away as they usually do. So in that context, once the cane toad hits the South Alligator river system it will be in Yellow Waters by the end of this wet season, I would suspect, and probably the next two years are the last two years we will see Kakadu as it used to be, because that is how we are going to have to start referring to it now. And sadly, if we do not put a stop to this, all we can do for our grandchildren is show them pictures of frillneck lizards.

Once the cane toad hits Darwin I have other concerns. Yes, it is going to be very painful for pets that die from it. In some of my readings I have also come across some mysterious deaths of children in Queensland that the doctors have not been able to put a finger on. Again, lack of research, lack of linking, we do not know whether there might be a cane toad link to that as well, in terms of children over exposed to cane toads or whatever. Certainly, we know that the cane toad poison is very, very painful to the eye and it is deadly if you do consume it. The other thing too, is if we do start getting huge swarmings of cane toads through Darwin as a tropical city in the middle of the build up of the heat, what is that going to do to the general hygiene of the city. As hundreds of cars squash millions of cane toads, we may well have a large eruption of bluebottle flies etc. I mean, what is that going to do to the quality of life in Darwin? So I guess my concern, as I said right from the beginning here, is that we really should look at reclassifying it from that of a menace to a pest, particularly if it is going to have this sort of impact on our society and our community as a whole. That is all I have got to say.

Mr BONSON:

Just one thing, you know, what can we do, you have got a six point here, change of community attitude from one of acceptance to one of resistance. So you are feeling that in the history of this episode with the toad is that people have just said well, it is coming, better deal with it?

Mr BASCHIERA:

Yes. People have basically just been sitting on their hands and making jokes of it. I mean, what would the world be like today if Churchill had sat on his hands and looked at Hitler across the channel. It is the same sort of thing. We are facing a battle here. We are facing a very serious battle. We need to resist the toad. We have got to stop accepting the toad. We have got to change the community attitude. If we keep on accepting the toad, the toad is going to manage us and it is going to manage our environment.

Mr DUNHAM:

How do you suggest we do that?

Mr BASCHIERA:

We need to spend money. There is no question about it. We have to spend money. And it is not just a state thing.

Mr DUNHAM:

So you believe that it is within the capacity of finance to eradicate the toad?

Mr BASCHIERA:

The capacity of finance and research, and we need to look at that. I think there may well be some potential solutions in genetic engineering. I know everybody gets all funny under the collar about genetic engineering but I think this is an issue where we really do need to look at what genetic engineering can do for us. There is, I believe, some research going on at the moment in regards to genetic engineering and producing toads that will not mature and

potentially, not become fertile. That is a good change. That is a way and means by which we can backburn against the toad. That is what we need to do. If we can produce larger male toads that are totally sterile and backburn them against the swarms, they will dominate the females and prevent the fertile males from getting to the females. And that way we can have a bit of a backburn, at least a slow down, some time out to try and see what we can do.

Mr DUNHAM: Given that that work is underway, what else would you suggest? I mean, to miss these northern suburbs, apart from having a Senate which I think is a very novel idea to get rid of them.

Mr BASCHIERA: I think what we could also look at trying to do is to get Mr and Mrs Jones out in the suburbs to look at seeing what they can do to cane toad proof their gardens. I think if the conservation commission can link in with that as well, I do not know what they are called today, they seem to change their names fairly regularly, to help I guess, protect, the genetic pool of the wildlife. If people can get into the hobby of making their gardens into little sanctuaries to protect things like the frillneck lizard, the twoline dragons, other lizards, other frogs and the like. Yes, it will cost a little bit to cane toad proof your garden but you are going to have to do it for your swimming pool anyway because the cane toads are going to get into your swimming pool, you can do that and then if the support of the Northern Territory Government, the Conservation Commission, you know, with registered guidance could put in wildlife....

Mr DUNHAM: What about habitats like Holmes Jungle, Lake Leanyer, Knuckeyes Lagoon.

Madam CHAIR: Litchfield.

Mr BASCHIERA: Yes, if we can cane toad proof those places and make them isolated and try and keep the toad out of there.

Mr DUNHAM: Yeah well we'd all like to do that. What I am saying is, you have for just rolling over on it, what should we do, what should we do?

Mr BASCHIERA: Keep searching, looking at every, all means that we can to research this. Get a community attitude out there, a community awareness out there to look at ideas. We may get a station hand down on the station that might notice that cane toads are falling over on a particular patch of vegetation or something like that or might notice something different that we could use. You may come up with a small little idea that could be used, as the case might be. We have to be eclectic in looking at this problem. Ok, we have to look at it from whatever angle we can to try and tackle it. Not only just purely in the scientific research phase

in terms of the genetic engineering or the what do you call it, Calisivirus research that we did a few years ago. Ok, that is certainly one pathway. What I am saying here is, we need to look at as many pathways as we can to try and stop this. Whatever ideas that we can come up with. We can isolate areas like Holmes Jungle and the like, build fences around them, that is expensive, that is hard, you are not going to really probably control the cane toad but if we have a community attitude out there that is resistant and not accepting these things and doing their best to remove them, and to destroy them from the community, somebody can come up with an idea that can easily and humanely what do you call it, neutralise the cane toads, I don't know, get these cattle things that you can zap cattle with, does one of those work? If you can zap a cane toad with that. If we can get people doing that, hundreds.

Mr BONSON: What about pig traps, you know like having traps for these cane toads?

Mr BASCHIERA: Yes. I know that somebody was experimenting with something like that a while ago, putting an electrical mesh out with the light and that calls of the cane toad to bring them in and trap them as such, yes. That is another method. The more we can do to try and trap them and slow the swarming, the better of course.

Mr BONSON: Whereabouts was that do you know?

Mr BASCHIERA: It was over in Queensland. I only heard that anecdotally, I believe it was quite successful, he was able to catch a lot of toads. But that is only just a drop in the ocean. Even if everyone in the community had a trap like that, we still wouldn't stop them. Talking about multiple breeding rates, multiple breeding rate of cane toad, in Queensland the female cane toad produces a string of eggs, 40 000 long, probably two maybe three times a year. In the Northern Territory we have got really, really ideal conditions which I suspect is very much the case, you might be getting a string of 60 000 eggs, five and six times a year. So they see an explosion as such. And that is a problem.

Mr BALDWIN: Dan, you talked about changing the classification of them from menace to pest, are you saying that just to try and ...

Mr BASCHIERA: From pest to menace.

Mr BALDWIN: Yes sorry, the other way round...to try and just highlight this community attitude change or are you trying to

Mr BASCHIERA: Yes.

Mr BALDWIN: Are you doing it like a noxious weed classification so that you can attract more funding and all that sort of thing, I

mean?

Mr BASCHIERA: It is a combination of all. And the thing is, in terms of a menace, this thing is moving a lot quicker than any noxious weed, it is going to do a lot more damage and a lot more short window frame, time window frame and we do need to call it what it is – a menace.

Madam CHAIR: Any further questions?

Mr BASCHIERA: Thank you.

Madam CHAIR: Thank you very much for coming in, providing us with your submission. Do you have anymore copies of this? I have got some at home, you want some more I will drop in some, not a problem.

Madam CHAIR: Thank you very much. Right we are seeking now submission from Ms Kirsten Blair from the Northern Territory Environment Centre. For the purposes of Hansard, what we try and do is state our names, our positions, our places.

Ms BLAIR: I am Kirsten Blair, I'm the co-ordinator of the Environment Centre of the Northern Territory. Thanks a lot for the opportunity to come along and present to you all. I will just be pretty brief I think. Just a background, the Environment Centre is proud to have a 20 year long history of representing the concerns of our community based membership on a range of issues relating to environmental protection here in the Territory and amongst a vast range of other things including: current plans for increased land clearing in the Daly area; proposals to increase the Territory's dependence on fossil fuels. The march of the cane toads across the NT is something that we, as an organisation are concerned about and have been concerned about for many years.

I think the committee has been presented with copies of this report that the Environment Centre commissioned ten years ago and one of the recommendations from that report was: setting up barriers at critical points where the cane toad would be likely to enter into the Territory as the predicted paths that were sort of identified at that time and unfortunately that recommendation was not taken up at the time. No barriers are currently in place and the toads as you know are continuing to spread, so I guess that is just an example of some of our long standing kinds of recommendations that we've beenfor years. But to be frank I guess, the spread of cane toads is not something that the Environment Centre has been actively engaged on in recent years and largely this is actually because of a lack of government will in engaging in the issue which people may be aware was stemming largely from the Parks and Wildlife Department and the sort of insistence from that level

that the cane toads would not be having a dramatic impact, a lasting impact on the Territory environment and so faced with that lack of bureaucratic will to acknowledge the potential seriousness of the species. There was little room for us to move in terms of progressing government policy or directing, seeing funds directed to research in the area. However we continue to support increased funding into biological and physical controls and while maybe if research funding was injecting in 2002, it might be too late for the environment of the Territory, we could possibly still hope to see a halt to the march further west. I guess that could be something we consider in terms of national responsibility.

I am certainly not here to try and offer you scientific expertise, I have seen the list of speakers and they are certainly people who are much better qualified in that area than myself but I guess, just from some of the things that I have read, I would note that there doesn't appear to be recognition that there is actually quite a dramatic impact being had, at least on some species – the announcement over the weekend of that funding allocation to the northern quoll relocation project, I guess is an example of that recognition on the part of the government but this is a significant issue which is an encouraging sign, a bit late, but still better than nothing. And I guess, given that recognition, one of the key things I would like to see this committee take away is an acknowledgement of how stupid it is to introduce exotic species into the natural environment and the example of the cane toad I guess is a very poignant lesson for people because it does have that really, it gets that response from people as the previous speaker was saying, it does have an emotional association with it.

But there are some pretty significant examples in an NT context of sanctioned weed dispersal such as gamba grass, mission grass, buffalo grass, which are having dramatic impacts on a different kind of scale I guess, if you are looking at an ecological sense to something like the cane toad. It has an impact at the level of fire regime and the level of species composition in the areas where those species have already taken a hold and so I guess, as long as they are continuing to be distributed through the Department of, what is it, Industry and Resources I think, then what we are really doing is saddling future generations with inquiries similar to this one in that that issue is going to continue to develop and the weed problem that the Territory faces really is an incredibly significant one and will only continue to get worse and so I really urge this group to take the lesson of the cane toad, which I imagine you are getting through this inquiry and apply it across the Northern Territory to all the ferrels and weeds that are continuing to be introduced.

So, the only other thing I wanted to talk about was this little

one. This is, I'm sure you have seen plenty of them
sorry?

Mr DUNHAM: It's a baby.

Ms BLAIR: Yes, it is a baby one, that is right. This is from the, there was an introduction in 1999 in Nightcliff, a family moved over from Queensland and had quite a few of this size in their planters and they hopped around into sort of neighbouring yards and at the time because local residents were aware enough to recognise them and Parks and Wildlife started helping them to stop that particular infestation but at the time Parks and Wildlife staff were told, 'Oh, it's that'. That in itself, could have led to a sort of regional population expansion hob from the Darwin end, so I guess the potential for human assisted migration is probably something you have heard about but it is really something that we should not overlook and I guess it is an avenue where the community and this committee might have an opportunity to at least slow the migration and at the other level I guess things like, areas where we still have the opportunity to quarantine, such as the Tiwi Islands, if there was some increased effort put into ensuring quarantine through the amount of traffic that happens between the mainland and the Tiwis, I guess presents us with an opportunity to ensure strong quarantine and equally from speaking to some of the scientists, who I am sure you have spoken to, there is probably the opportunity to employing the barrier method at Cobourg, was the understanding that I got, so yes, I guess those are my three key messages. That let us not let the lesson of the cane toad be wasted on us and learn about the devastating impact that ferrels and weeds can have and really take the opportunity where we still can in the Territory to ensure that we quarantine areas off. That is really all I have to say. Unless anyone has got any questions.

Madam CHAIR: Questions? Mr Dunham.

Mr DUNHAM: The barrier method, well the toad hasn't reached the full extent of its potential habitat yet and I was interested in your report where you talked about a barrier, a vegetation barrier – a toad fence around areas like Kakadu. I think even the environment committee would realise that is pretty futile. Would you or do you still hold to that belief?

Ms BLAIR: The Environment Centre, you mean us?

Mr DUNHAM: That is your barrier, toad barriers, where you are talking about areas such as Litchfield and Kakadu barriers and various ways of ...

Ms BLAIR: I think that those recommendations were probably made, from my reading of this document, was in association with

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- trying to identify areas where there could be some scientific research associated with the spread, more than ...
- Mr DUNHAM:** So the barrier thing, pretty much everybody has realised that unless it is very limited and there is already significant geological formations like for instance seas and stuff, that there is very little ...
- Ms BLAIR:** On its own I do not think it could be really utilised but I think that there is still, from the people that I have spoken to, that it seems like, you could still consider utilising it for Cobourg.
- Mr DUNHAM:** Yes.
- Ms BLAIR:** Because there is not, there are other, like you said, geological
- Mr DUNHAM:** Yes, three kilometres. The other thing is, one of the things that seems to be coming from science is the issue of the priority status of this ...
- Ms BLAIR:** Threat.
- Mr DUNHAM:** And you have said yourself that the Environment Committee has not been largely involved but there are big issues like for instance buffel, mission and gamba. Would you see, if there are limited resources, this to be the top priority?
- Ms BLAIR:** Of all exotics?
- Mr DUNHAM:** Yeah.
- Ms BLAIR:** No.
- Mr DUNHAM:** You wouldn't.
- Ms BLAIR:** I don't think so.
- Madam CHAIR:** What would your priority be?
- Ms BLAIR:** I was going to say that next. I would, like I said before, I am not a scientific expert but I would, from the work we are doing and I guess the opportunity that there is to halt the spread, there is more opportunity within the pasture grass, weediness, I am just thinking about this now though, yes I would say that would probably
- Mr DUNHAM:** Weeds are a potentially bigger?
- Ms BLAIR:** Well, I think, I mean it is tricky isn't it, it is very you know, which ecological value is more valuable.
- Mr DUNHAM:** Well, I guess in a perfect world we would like lots of money to do everything but I mean everybody has been before us
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as a scientist has said, 'Look, we had to weigh it up, we looked at different things.' And all the scientists have said, 'We would like to do different things but here is some minimum that you could do', and I guess what I am saying to you is would you see this as a top priority for your organisation, you know, even comparing weeds for ferrel for instance for ferrel animals would this be your top priority?

Ms BLAIR: No, within our work on exotics, it is not the highest priority, no. Like it is something that we and our membership has concern about but no, I think the spread of pastoral grasses unchecked is more significant environmentally.

Mr BONSON: Just one thing that you mentioned about, there seemed to be a history there coming out from Parks and Wildlife that there was no lasting effect or that after many years of cane toads affecting the place that somehow balance out and people would come back. Do you know of any research would support that claim because we have heard that constantly that that was the, coming out of Parks and Wildlife that that was the argument but I haven't seen anyone that could actually show any proof in Queensland or anywhere else where the cane toads have been where, you know, is there any scientific evidence, do you know?

Ms BLAIR: No, not that I've been able to find out. I guess that this document is still the most comprehensive that I could find literature review on this issue and it's 10 years out of date, but it talks about that claim and if people have read that report then I guess, it says in there the same as you've just said that they haven't been able to find enough research to sort of substantiate that claim, which is why it's difficult for us because we weren't willing to accept that as a claim yet, it was a sort of burden of proof situation, I guess.

But, no, I can't help you out with that evidence and the fact that it has been in Queensland for so long and no one is saying, you know, it's come back to sort of stable community level.

I guess it also raises that question: well, what is of concern to us? And if someone could prove that in 500 years things would be okay again, is that actually good enough? How many generations of people are going to live through that and what values are we applying? I guess, that is significant.

Mr BONSON: The other one was: Would the Environment Centre be interested in education process of educating the community about things? Having an input?

Ms BLAIR: In the system with distribution? Yeah. Well, yeah, it is something that we've done historically with, people tend to ring us up with things like that and we distribute the existing

Parks and Wildlife material and we supplement that with some other things of our own. Yeah, we'd certainly be willing to be involved more.

Mr WOOD:

Maybe from this type of committee that we also should be looking at pressuring the government to look at protocols, and state governments, the Commonwealth and state, on the introduction of both plant and animal species. I think animals to some extent, especially insects and those sorts of things, have got a fairly strict regime these days that plants, and I mean the classic one is the neem tree today, which was brought out because it was going to get rid of mosquitoes and other insects, and now it's along Victoria River.

Do you think that as part of this we should be looking at sort of protocols for introduction of exotic species of anything?

Ms BLAIR:

Yeah, I think that would be a really useful outcome of an inquiry like this because the cane toad is a well known example of an introduction that's gone wrong, and also it's a bit harder for people to grasp which plant species are problematic, yet often it is actually the plant species that have more sort of dramatic and embedded impact. So, yeah, protocol sounds like a good idea.

I mean there is work being done at the moment to review the Northern Territory weeds list, and I'm not, I mean we are participating in that process but we're hopeful that what will come out of that is some of those pasture species are included on that list in recognition that there needs to be management plans put in place rather than continued distribution of those species. So that would be a useful start, yeah.

Madam CHAIR:

Any other questions? Kirsten, thank you very much for coming along today and providing a submission. We appreciate it.

We're due to have Dr Mike Tyler from the University of Adelaide. Has he arrived yet? Dr Tyler.

Dr TYLER:

Thank you very much for giving me the opportunity to speak to you.

Madam CHAIR:

Thank you very much for coming to Darwin to speak to us.

Dr TYLER:

I will start perhaps with giving you a little of my background and experience in the Northern Territory. I obtained a Master of Science degree based upon a global study of frogs. I recently obtained my Doctorate of Science degree based upon a thesis of my contributions to systematics and frog biology.

I've been coming to the Territory since about 1963 when it was thought that there were 14 species of native frogs here. With my team we pushed it up to 44. So, 40 years, 14 to 44. The reason I decided to offer my services to come here was that I care for the Territory very much indeed and I wrote a book called *'Frogs of Northern Territory'*, which has since become extinct.

I don't want to repeat much of what the Committee will have received from organisations such as the Australian Society of Ecologists who, I understand are making a submission which is, presumably, before you. I don't want to repeat data on impacts. Rather, I would like to concentrate on the positive activities to alleviate impacts in the Territory.

Now, in December this year, or perhaps it was January, I was commissioned by the Tiwi Land Council to examine barging sites at both Melville and Bathurst Island because the Tiwi people do not want the cane toad upon their islands. These islands, which are the largest offshore islands from the coast of Australia, can represent a little, in the long term, segments of the Northern Territory which will not have the cane toad. People in future generations will be able to go there and see what it was like on the mainland.

I visited, say, all of the barging points and my draft report has been examined and submitted to a number of organisations and I'm about to conclude my final report on the topic.

I think we need to recognise two aspects. One, the cane toad will reach Darwin. Secondly, this one of protecting offshore islands as probably the only parts of northern Australia which will remain in a reasonable pristine condition.

In 1974 I was then asked the then Minister for the Territories, Dr Patterson, to come to Darwin to try to coordinate a plan to collect cane toads which had been accidentally released in Nightcliff. Unfortunately the exact number of cane toads we were looking for was not obvious. But what struck me greatly, I brought with me a tape recording of the mating call of the toad, and this was played over radio organisations in Darwin every night, and resulted in the collection of a couple of specimens.

People would stop me in the street and say: 'We're glad what you're going, we used to live in Queensland and the great joy of living in the Territory is no cane toads'. I don't think that the sociological impact of the cane toad has been considered by any organisation at all.

Now, when I refer to offshore islands I'm talking of Melville, Bathurst and then, possibly, Elco and Groote, certainly the

eastern half of Groote Eylandt which is virtually untouched by manganese mining. Although the company has done a great deal to rehabilitate the site, there are some features of the eastern half of Groote Eylandt which are probably unique in Australia. For example, the most northerly known salt lake is on that island.

Mr DUNHAM: Why would you not want to exclude from the entire of Groote Eylandt given it's capacity to invade the whole island? Why would you pick half?

Dr TYLER: No, I'm just talking about the state of the island.

Mr DUNHAM: And why would you not include Goulburn, Croker, the English Company islands?

Dr TYLER: Yes, I've picked up just simply a few of the larger ones where I think the resources might be sufficient to be able to do something. But, yes, these insular areas are most important.

Mr DUNHAM: I would have thought our greatest chance of success is uninhabited islands or islands with fewer people rather than islands with a lot of traffic and a lot of people. Is there a reason scientifically you've picked those, or is it just that they're big, obvious islands?

Dr TYLER: They're big, I think Melville and Bathurst are the two largest islands off the coast of Australia ...

Mr DUNHAM: Except for Tassie.

Dr TYLER: I won't comment about that, Madam Chair.

Mr DUNHAM: I mean from a scientific point of view, why those three?

Dr TYLER: I guess it's because we can monitor.

Mr BONSON: Is it to do with distance, maybe? Possibly?

Dr TYLER: Yes, I was looking at the larger islands which I thought something might be done and where there are people who could participate in a controlled program. But, you're quite correct, some of the smaller islands could be equally important.

Mr DUNHAM: As a committee should we be looking at all of them? Or is there a feeling that we should pick?

Dr TYLER: It's a matter of resources. Because of the communities that exist on the islands that I've mentioned it's quite possible that there will be a lot of support for such a venture.

Madam CHAIR: Please continue.

Dr TYLER:

Thank you. Now the only positive research which is being undertaken at the present time is by CSIRO in Canberra, and I understand from Dr Tony Robinson that a two year program which attracted \$1m of federal funding, the funding has just been renewed for a similar period. I don't know how much is involved.

This is genetic work to try to introduce a disease into tadpoles which will prevent them from turning into adults. Now, of course, we've got a very poor track record of introducing diseases into Australia, and the cane toad, of course, the tenor of the times was that there had been a successful biological control of the prickly pear and biological control seemed cheap and effective, and because of the experience with the prickly pear I think Australian went into this, one might say, I suppose, the streak was defence - you know, it seemed like a good idea at the time.

Now what is needed, I believe, are steps to minimising impacts, and when I talk about sociological impact I'm talking about the residents of Darwin and particularly the tourists because I don't think there has been any study to look at what the impact will be on tourists. If I was a tourist and I wasn't that keen on cane toads, I might decide to move my holiday destination to Kununurra rather than come to Darwin.

Now, I'm interested in minimising the influence of toads on the suburbs of Darwin. I am wondering about a program to look at pheromones. These chemical messages work at sort of picogram quantities, absolutely minute quantities. We discovered the first pheromone in any frog in the world in a *Utoria Spendida*, a frog which in the Territory is confined to Keep River National Park, but is much more widespread in the Kimberley.

What we found was that if we used subnanogram(?) quantities we could get females to run towards males. It showed that pheromones actually work. There are insects that one is no bigger than half the size of my thumbnail which can detect female pheromones at 400 metres.

Humans respond to pheromones. It is a somewhat contentious issue. But, I mean, the fact that we have a flourishing industry in scent sales demonstrates that the humans olfactory powers are certainly designed to see what something smells like.

Now recently Channel 9 ran a *60 Minutes* program on cane toads. I was advised just this afternoon by Channel 9 in Sydney that they have been, and I quote:

Deluged with expressions of concern from companies and

the general public. People are saying: 'What can we do? Can we donate funds to research that may bring this under control?'

And that is not just from Sydney, that is from throughout Australia. That program has done a lot, I think, to assist the activities of this committee and I believe that we should see what we can do to work on that benefit. I've agreed to respond, to coordinate, with some reluctance, because I don't know how, without secretarial assistance, I will ever be able to cope. They're talking of over 100 responses so far. I've received quite a few myself from companies who say: 'The federal government has been incompetent and has failed to do what it should have done at the right time'.

I would suggest that the Northern Territory government should persuade the Western Australian government to share costs of any amelioration program, because it's only a matter of time before the cane toad reaches the Kimberley. I believe that you should not regard your problems and your investigation as being confined to the Northern Territory, but to be looking for either federal or Western Australian support.

We need an effective marketing program to make the public much more vigilant and participate in community eradication activities, as has been undertaken in Brisbane, where people go out in groups and now the numbers of can toads in Brisbane has dropped off quite considerably.

We need a new edition of '*Frogs of the Northern Territory*'. I'll do it for free. I think we need to persuade the federal government to take the lead in funding activities and in relation to the offshore islands, whichever ones are selected for attention, I believe that legislation is required to give the offshore islands quarantine status, in exactly the same way that there are other areas of Australia where you are not permitted to take in fruit or vegetables for various good reasons. Those are the main points I wanted to raise. I am very happy if I can assist the inquiry in any other matter.

Madam CHAIR:

Yes, I will kick off with a question. Dr Tyler, we have travelled to Borroloola, Kakadu, Katherine, already, in terms of the public inquiry aspect of our inquiry, and the suggestion of quarantining the islands has certainly come up already through other submissions. People are also talking about trying to protect some biodiversity on the mainland and they have suggested fencing across the Cobourg Peninsular which is some 3 km. What would your view on such a matter be?

Dr TYLER:

Yes, I was on the national cane toad control committee for some time and we were wondering whether we could halt it by a fence. The problem is that we are dealing with

organisms which may be as small as 3mm long and we are dealing with an area which still has feral animals, that such a fence is going to have to be very strong and keep out individuals of small size as well as large size. But it is attractive because of the unique features of the Cobourg Peninsular.

Madam CHAIR: So you would not rule it out?

Dr TYLER: No, I would not.

Madam CHAIR: Would you encourage it?

Dr TYLER: Yes, I would.

Mr BONSON: There are issues there about the fencing but also others like pit traps and possible patrolling and things, so you would see a combination of things?

Dr TYLER: No, pit traps will not work when it is wet. The trap pops out of the ground as the groundwater level rises. I have seen efforts to direct toads in Europe and the United Kingdom into funnels so they can pass underneath roads through the so-called toad tunnels. People are trying to reduce the toad toll. At the present time people are actually picking up toads from one side of the road and carrying them to the other when they are going to their breeding grounds. But no, I do not think pitfall trapping will work.

Madam CHAIR: Dr Tyler, on the issue raised in terms of collaboration between jurisdictions and involving the Commonwealth, certainly that has been an area of inquiry that this committee has considered in terms of recommendations to parliament. One of the considerations has been a suggestion of a peak level task force, few in numbers, involving Queensland, Northern Territory and Western Australia with obviously the search for some Commonwealth dollars, with someone tasked to drive forward the battle against the cane toad. In your learned opinion, who do you think would need to participate in such a collaborative effort?

Dr TYLER: I think I would add South Australia to that because the cane toad is about 100 km north of the Murray Darling headwaters. When it gets into the Murray river, the billabongs, the ground cover, the insect life, will be sufficient for it to flourish. But as far as Queensland is concerned, I have to say that during the activities of the cane toad control committee the Queensland attitude was rather gung ho. They were quite pleased that they got something that other people had not got, and I have never seen any sign of any financial support from Queensland for the eradication of the cane toad.

Mr DUNHAM: Is that still the case?

- Dr TYLER:** So I understand, yes.
- Madam CHAIR:** Who, in terms of organisations, agencies, academic bodies, would you suggest, given that you have a vast knowledge in this area, would be useful participants in a task force?
- Dr TYLER:** Well, probably not national parks and wildlife service officers because they are so timid when it comes to arguing with the politicians that control them. But the University of Queensland would distance itself a little bit more, and Prof Gordon Griegg from the University of Queensland in Brisbane would be an appropriate person to be involved. I do not know about Western Australia but I believe that it would be quite simple to persuade them that it is in their own interest, at this stage, now that the toad has crossed the Stuart Highway, for them to become involved, because they have some lovely parks as well.
- Mr DUNHAM:** You are the first person to mention the pheromone research. How far advanced is that?
- Dr TYLER:** Well, we published in *Nature*, the very first publication in the world on frog feramones. I have been talking with, can you advise me Rick, the minister for...
- Mr GRAY:** Kon Vatskalis.
- Dr TYLER:** That is right. About a pilot study that I would like to run on cane toads which would not cost more than about \$10,000. But I have to say that if the pilot study was successful and we found that the frogs are influenced by their own secretions, now to explain, you have essentially a wire tunnel and you blow odours down different chambers, and you try to see which way the cane toads will go. We have tried this with native species and it works. The green tree frog, for example. It does work and we believe that it would be worthwhile running the pilot study first of all because the next stage of commitment would require probably about \$200 000. That would be the salary for a post-doctoral fellow and adequate funding for use of equipment and travel. That would be the next step and we think that we could achieve a response in two years, but it has no guarantee.
- Madam CHAIR:** And where would this be based?
- Dr TYLER:** Well, the best place for that to be done would be Adelaide, there is no question, largely because of the peptide studies which were undertaken there.
- Mr WOOD:** That is right. You mentioned South Australia. I mean, is it possible that cane toads could reach Adelaide? Is there anything that would...

Dr TYLER: I don't think Adelaide, and it is not a question of temperature. There are limits to its potential dispersal and I do not see it getting out of the Murray valley. There are already three species in the Murray which have been there probably for many thousands of years and which have not gone beyond a few small filtered streams outside.

Mr WOOD: What do you see as the barrier? Is it a physical barrier, a meteorological barrier?

Dr TYLER: In the case of Western Australia it will travel certainly as far as Derby but not probably as far as Broome. You get into these lateritic soils, lower levels of moisture, and then from there there is a barrier, of course, down to La Grange, which is almost desert. But that is the limit I think that will be placed upon its ultimate dispersal and I hope that I am not around to see it happen.

Mr BONSON: I am going to ask this question I have asked everyone because I have found it very interesting. Frogwatch gave us evidence that there were people in Katherine who had observations of cane toads dying after night, underneath a light pole, and eventually someone cut them open and found lavender beetles. We have also had evidence from Jabiru saying that well, we have caught cane toads, opened them up, and there have been 20 lavender beetles there and they have still been alive. Do you think there is some kind of natural thing there that might be worth investigating?

Dr TYLER: There was an article in the *Scientific American*, in about 1958, and I can almost see the front page now, about the introduction of dung beetles. Because the native dung beetles are good for being able to bury the droppings of kangaroos but they do not face much of a chance against cattle. So what concerned the people was that the cane toads were sitting around the dung pats feeding upon the dung beetles as they arrived to have a feed. Now, we are dealing with, the native frog has an apology for a brain, it really does. You know, it is not that smart. But I have to say that cane toads are pretty smart, they are able to learn, they are able to retain a certain amount of memory, and I have to give them some respect for that. But one of the suggestions that were made in the American Express article was that we import a really big scarab beetle which, once it got inside the stomach of the cane toad, would just burst its way out.

Mr BONSON: The lavender beetle, being a natural thing around Katherine, though, a native...

Dr TYLER: I do not know the distribution of the beetle.

Mr BONSON: But it would be worth having a look at? Because the other evidence we heard in Katherine is that this year, the cane

toad numbers have been down, and guess what, the lavender beetles' numbers have been down. Now, I am not saying there is a...

Dr TYLER:

No. Normally you get, with a coloniser effect, individual numbers of a species go up like crazy and then it levels out, and sometimes it becomes acceptable. But I went with a *Channel 9* crew to Bourketown and there we found around the temporary marshes, 60 baby cane toads per square metre. And one of the most significant things about the cane toad is the fact that its eggs are toxic, and this has probably been presented to you. There was a student at the University of Sydney undertaking medicine who was doing first year biology, and he had a female toad, and it looked remarkably like caviar. His friends bet him that he would not eat it, and he said he would not do it for nothing, but he would if everybody tossed in a dollar, which they did, and he ate the eggs. He had his first cardiac arrest after 20 minutes, was in intensive care for five weeks where he had two more cardiac arrests. A family in Peru died from eating a stew, where apparently frogspawn is made into stews, and there, a mother and two children died and one child recovered because they had picked the wrong species, they had got cane toad eggs.

Can I raise another issue? As far as conservation goes, I am rather pragmatic and I believe that there is great benefit from being able to demonstrate to the human race that there is benefit from conserving particular species. You mentioned the green frog. Now, I asked a very simple question, 'Surely that is a most unhealthy environment, how do they do it?' and as a result of that work, we found a new class of antibiotic drugs in the skin. Then I wondered why, when I was standing up to my waist in water at two o'clock in the morning, you know, the way you do... And I noticed that although the water temperature was 35 and therefore close to my body temperature, I was covered with mosquitoes but the frogs were not. And this resulted in us demonstrating that frogs have got a mosquito repellent. They have also got a rodent repellent and a bird repellent. The bird repellent is known. It is a chemical which has been used in Paris and London to try and stop pigeons from pooping on parapets, I mean, it is a known chemical. So they have got this aura. And the more we look at these native species, the more we can demonstrate that there are benefits from conservation, and I think this is one of the aspects that I would urge you to take on board, and I say, this is pragmatic conservation.

Mr DUNHAM:

I am interested in the range of distribution, because a lot of the stuff I've read said that apart from in the snowy alps, these little critters are fairly robust and will go anywhere where it does not get below about 6 and above about 45, or whatever. These three species of natural frog in the Murray,

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- are they omnivorous, like the cane toad, and are they poisonous?
- Dr TYLER:** No, they do not have any attributes which would cause you to think, look, there is a reason for them being constrained to the Murray River.
- Mr DUNHAM:** So what is the barrier? Is there something we can be optimistic about?
- Dr TYLER:** Well, I guess it is a very wet area surrounded by an extremely dry area.
- Mr DUNHAM:** So it is the dryness.
- Dr TYLER:** Yes.
- Mr BONSON:** Dr Tyler, I saw that *60 Minutes* show that you were on while we were actually travelling around the Territory and taking interviews, and one of the things on there was goannas and bluetongues. You mentioned about the effect on peoples' cultural style of living with bush tucker. Could you expand on that for us?
- Dr TYLER:** Only evidence that there has been a concern expressed by Aboriginal populations that the goannas are dropping down and because it was a traditional food, they were concerned and raised the matter in fact with National Parks & Wildlife. I think that was in Queensland, it may have been in the Northern Territory.
- Mr BONSON:** Because the interest that I have is in Queensland, you said still Aboriginal people are using goannas and blue tongues and traditional tucker
- Dr TYLER:** There is no doubt about it.
- Mr BONSON:** So they are co-existing with toads over in Queensland.
- Dr TYLER:** Yes indeed. But what's the evidence is that the numbers have absolutely crashed and there are very few left.
- Mr BONSON:** Because in Borroloola what they are saying is 15 years but we haven't seen any goannas and blue tongues so I'm just wondering if that's the case
- Dr TYLER:** Yes, also the impact on snakes, Nutwood Downs just off Daly Waters. They said that when the cane toads came through the snakes disappeared. The only that they didn't, they didn't mind the poisonous snakes, the only one they disliked were the pythons because they got into the chook runs and swallowed the chooks. But no the snakes have now virtually disappeared from Nutwood Downs.
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- Mr WOOD:** What do you know about the effects on native frogs, has there been some definitive work here?
- Dr TYLER:** I was commissioned by the Department of Agriculture and Fisheries in Papua New Guinea in the 1960s to look at the impact of cane toads in cocoa plantations, which may sound a little bit odd but they were there in huge numbers. I had an entomologist with me. What he concluded that there really were no insects left at ground level beyond members of the high mynoptra??, ants and poisonous wasps and things of that kind, because the toads have virtually eaten out, they're vacuum cleaners, and they've eaten everything out at ground level. I think it's there that the biggest impact is.
- The second thing is the native species, most of them, there's no real altruism, they'll eat the eggs of their neighbours and it's been shown that every species of native frog, it's tadpoles have been offered the eggs of cane toads that they die.
- Mr BALDWIN:** You mentioned that the private sector and the response you've since the *60 Minutes* show, and you say there's a fairly good response from by the private sector to offer assistance, would it be worth some sort of a national approach in terms of government private sector funding and setting up some sort of trust
- Dr TYLER:** Some sort of foundation or some sort of a structure, yes I do. I think the time is just right.
- Mr BALDWIN:** Everybody has the same problem, Queensland perhaps didn't do enough, Territory we're in the midst of the invasion, Western Australia's going to cop it, South Australia's going to be affected, and resources and the biological control seems to be the end gain where we're going to try and get to, but which takes as you appreciate a lot of money
- Dr TYLER:** It takes time, a lot of money
- Mr BALDWIN:** And a lot of time unless you can find the money, so would ... it would be logical to look at this nationally and set up sort of foundation and try and attract large amounts of money.
- Dr TYLER:** I hope it would not be administered by CSIRO, my reason for that is it's takes something like 40% off the top because of administrative costs and I think that's all
- Mr DUNHAM:** We've got your hitlist. That's up to number three I think.
- Madam CHAIR:** Who would you recommend?
- Mr BALDWIN:** ... it gets back to the question about a taskforce, either locally or nationally
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- Dr TYLER:** We forgot to mention New South Wales because it's now down as far as Coffs Harbour
- Mr BALDWIN:** So we won't pin him on who should be involved.
- Mr BONSON:** There was some literature that I read where they said in New South Wales they seemed to stop the advance of
- Dr TYLER:** Yes it's going through the high country and it doesn't do too well in dense vegetation. I looked at it, I did the survey in New Brighton and there there were places where it hadn't moved for about 30 years, but it was very dense vegetation and there were no tracks. I have a funny feeling that they're short-sighted and for feeding purposes they need space around them to be able to get at their food, though I have no proof of that but it's just an impression I think.
- Madam CHAIR:** So you say you are close to making final conclusions on the Tiwi Islands that you were commissioned.
- Dr TYLER:** Yes, I would hope to have the final report through in a couple of weeks.
- Madam CHAIR:** Will that report be able to be available to this inquiry?
- Dr TYLER:** I am sure it would, yes. Their draft report was made freely available through Kate Hatton of the Tiwi Land Council.
- Madam CHAIR:** And do you think there's real potential to quarantining those barges
- Dr TYLER:** Yes I do, Wednesday I am going to the Tiwi barge facility for about the third time. We're now at the stage of, I'm not a designer, I can say what you need is a barrier that must be x high, you've got to have grills with holes so big, and you've got to keep all your pallets off the ground so that creatures can't get into the pallets and become stowaways. Those are the sorts of things we hope to finalise on Wednesday, I hope they will put in a, and they have got funding to do this, but the barging points on the islands for the most part I don't think that anything could be done at all. One or two of them have concrete ramps, for the most part the high tides at times, simply would erode the super-structure. I don't think it could be done. I think what we've got to do is to have a program in Darwin which is much more conscious of the risks that are involved in accidental dispersal of these animals. I would suggest there was a film produced by the BBC narrated by David Attenborough on cane toads which I think is excellent, but I think that there has got to be this, we need this marketing focus to keep it in front of everybody eyes, it can become an icon species for Darwin if you wish.
- Mr BALDWIN:** The Giant Toad.
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- Mr DUNHAM:** A new football team.
- Madam CHAIR:** Dr Tyler, you have provided us with a most fascinating and challenging submission and we thank you very very much.
- Mr DUNHAM:** I have got one. I was surprised when we got to Borroloola to find that they are on all the islands off McArthur, that's Centre Island, Vanderlin Island all of those islands, and it's quite a salt water journey for them, the local people have surmised that at times of flood they have been flushed out in freshwater streams, but they've definitely been seen by fishermen and others swimming in salt, proper salt water.
- Dr TYLER:** Yes, well that's why they've called them marine toad, they have a very thick skin which gives them a tolerance to salt water.
- Mr DUNHAM:** Have you done experiments how far they can
- Dr TYLER:** Yes, well no, but what I have done, I was looking at, I was posing the question why is that there are frogs species which are widespread in New Guinea but don't get in Australia, even though they get right down to the southern adjacent part of the Markham, the Fly River, and secondly there are species which occur right across northern Australia but definitely don't get in to New Guinea, so what I did was to conduct experiments to see whether in fact those which were common to both land masses had a higher tolerance to salt water for whom over-water dispersal could therefore be a feasible approach as opposed to those which were constrained on one land mass having a much lesser. My philosophy was quite wrong, it's the thickness of the skin. The cane toad has got a very thick skin, in fact it was claimed, I don't know whether your committee is aware of this ma'am, it is claimed that the Queensland governments gift to Prince Charles and Princess Diana when they got married was a book covered in cane toad leather.
- Madam CHAIR:** No, we weren't aware of that.
- Mr DUNHAM:** It does then present some design problems for this Cobourg obviously, because it's all very well having a terrestrial barrier but if they've capable of sustaining a short swim or dog paddle, however they do it, for the 15km out to Centre Island, surely,
- Dr TYLER:** I think most of the currents in that area are fairly well documented and someone should be able to find out whether they're running in the right direction or the wrong direction.
- Mr BONSON:** Dr Tyler, there was evidence at Borroloola that they found dead cane toads on creek beds, the locals would
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summarise that they swam from one side to the other and then dropped dead, because of the salt.

Mr BONSON: Towards the end of the dry when they're highly saline.

Dr TYLER: I doubt it, I don't know why they die, but I would doubt if that was the cause. They've got a very tough skin.

Madam CHAIR: Have you identified particular frog species, native frog species, of the 44 you know here, that are most vulnerable to the cane toad, or would you say they're all as equally

Dr TYLER: Small ground dwelling species, I would have no worry with tiny ones that climb. The idea of the cane toad controlling insect pests of sugar cane, there was a lack of awareness that the cane toad's can't climb.

Mr BONSON: There was a person in Borroloola again that gave us evidence that he reckons that the mosquitoes were down since they've arrived in the area, now whether that's true or not I don't know

Madam CHAIR: Thank you very very much.

[Adjournment: 15:41:57 to 16:07:34]

Madam CHAIR: The Parliamentary Inquiry into the Incursion of Cane Toads into the Northern Territory will recommence, and we invite to make some observations to us and to explain the operations of Green Corps, Mr Alan Kerr, who is a Coordinator of a Green Corps group currently working at Territory Wildlife Park, I believe.

Mr KERR: Correct. Thank you.

Madam CHAIR: Thank you for coming today.

Mr KERR: So this is an informal submission, I guess, and I guess I'm representing my team, which are a group of young 17-20 year olds who were in the audience. We are in week three of our 26 week project. So we are not going to be like the cane toad, we are going to go away in 23 more weeks.

Green Corps youth program funded by Family and Community Services. It was previously funded by Environment Australia. It's outputs are environmental and the way that that comes about is non-profit organisations bid for a team. There will be six teams in the Northern Territory over the next two or three or four financial years.

The other part our program is that as well as producing environmental good works at the Territory Wildlife Park, the team has to become involved in a two week community

project that they design and execute. The reason, I think, the program is so good because we are developing youth, hopefully, to become economically independent, we're generating environmental outputs and we're also getting the third part of the triple bottom line, we're getting 17-20 year olds involved in the community.

We've started with their community program, and I shouldn't say we, they have, I facilitate but they develop it, and we had the first facilitating brainstorm last Friday and cane toads got on the mat, so we thought it would be a good idea to learn something from particularly Dr Tyler and, secondly, for youth to see this sort of forum take place. I've never seen it, so I'm enjoying it too.

Madam CHAIR: With their discussions you said cane toads got on the map. Why was that? What were the youth saying?

Mr KERR: Umm, I think it was because of the paper, advertisement, had been made and a core part of our work, our work at Territory Wildlife Park is developing a fine management plan and the first work that has to be done to develop that plan is a survey of the flora and fauna. Discussion over the last couple of weeks has been that the fauna is going to change in this Territory Wildlife Park as a result of the cane toads and the data that we collect will be a record, as it is in May 2003. I think that's significant and I hope to influence people to make that fauna survey more scientific rather than less scientific because there's been a lot of qualitative stuff spoken here today, and perhaps the team can contribute to quantitative analysis of that.

Mr DUNHAM: Are they looking to toad exclusion devices on the barrier of the Wildlife Park?

Mr KERR: I don't know what they're looking at, at all.

Mr WOOD: Berry Creek would be the difficult thing.

Madam CHAIR: What do you think is the potential to get youth of the Territory actively involved in environmental groups to combat toads?

Mr KERR: From the percentage of real interest in this group, this is the third week we've been involved, I'd say that 30% or 40% of the youth are definitely, they've definitely got it on their mind that they think it's an issue and they're aware of it and probably would like to do something about it.

Madam CHAIR: Questions? Other members.

Mr BONSON: I suppose, just one, I'm not sure if you cover this. Would Green Corps be interested in helping some kind of plan of getting information out to younger people and attracting

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- them into the issue of looking after localised areas of cane toads?
- Mr KERR:** They've got two weeks to do that sort of thing. They will choose what they want to do for the community and I'm trying not to influence them because it's my rule to facilitate, not to influence.
- Mr WOOD:** I was going to comment I reckon that Green Corps is one of the best Commonwealth projects for young people that's been around. I'm glad it's still going and got a bit more funding for a few more years.
- Mr KERR:** Yes, I think this is the first round since Family and Children's Services have taken it over, and perhaps Matthew's question could more lead to does someone want to put up a project for next year's round that does something towards the cane toads. So, a project sponsor would need to ...
- Mr BALDWIN:** So in other words, bid for one of the teams, Allan?
- Mr KERR:** Exactly.
- Mr BALDWIN:** You do a fair bit of work with or in conjunction with Parks and Wildlife like on the weeds eradication stuff?
- Mr KERR:** Not necessarily, that work would only be because they've been involved as a project bidder and have been successful.
- Mr BALDWIN:** Yeah, my question is that: So are Parks and Wildlife top agency can be a bidder?
- Mr KERR:** Yes, I believe it's any non-profit organisation can be.
- Mr BALDWIN:** That doesn't exclude government agencies?
- Mr KERR:** No, because Territory Wildlife Park is our sponsor for our project.
- Mr BALDWIN:** So if they were wanting to do things like baseline data in one of their parks it hasn't been effected, they could bid for some of your resources in terms of manpower?
- Mr KERR:** I think down in Nitmiluk a few years ago that style of project did take place.
- Mr BALDWIN:** So there is no logistical trouble travelling and going to say, Keep River or Gregory or something?
- Mr KERR:** One of the things Green Corps got really well organised is projects that are in a range of major population groups. Of the six projects in the Territory this year, five of them are remote and Green Corps is open to adjusting the model.
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They do have a classification for remote projects, like a bigger budget and stuff like that. I am particularly interested in trying to break through that, take it from around population vicinities right into remote; and I have heard that remote in Canberra is Queanbeyan, but at Hart's Bluff there is a project down there at the moment, there was one in Tiwi Islands, and there is based in the VRD and Katherine. Those team leaders have got a much, much tougher job than I have got. I think the family and community services are open to ideas as to how to do that, particularly in Aboriginal communities...

Mr DUNHAM: It should be encouraged.

Madam CHAIR: How do family and community services source the youths in terms of the referral to Green Corps?

Mr KERR: Advertise in the paper and say there is this work available, so it is just like applying for a job.

Madam CHAIR: Excellent. Any further questions? Alan, we really appreciate you having given your time to talk with us today.

Mr KERR: That might be why they have gone. We are still in the storming norming forming stage. Thank you.

Madam CHAIR: The next person to give us a submission is a Mr Mick Denigan, well known for Mick's whips.

Mr DENIGAN: I have been making crocodile skin products since 1990. I have worked at Berrimah Research Farm assisting the senior veterinary officer doing post mortems on crocodiles, hundreds of them, and I also wrote a similar submission in 1996 when Steve Hatton was interested in the cane toad problem. So my interest in this matter of the decimation of our wildlife through the steady progression of cane toads is not only economical and financial and social, but it is also something that I have had a lot of experience with as an employee. It is a big problem, as you have all obviously seen. Last year I put in a submission to the conservation commission to assist a pastoralist who was having trouble with crocodiles in their billabong. There were over 150 crocodiles, mainly freshwater, big ones, in this billabong at Oloo. Jan Rickson is the pastoralist. Every time they would go down and put their water pump in, to pump water for their homestead, crocodiles were getting smarter all the time, you know, the freshwater ones chasing them and attacking them. So she had a problem and I was offering to help the situation with a culling type exercise. The reason why that became essential, for me, is because crocodile farms in the Northern Territory refused to sell me crocodile products and therefore I had to do something to keep my people employed and keep my business afloat. So that was the suggestion that we located. It was refused because the

conservation commission or the legislation does not allow a cull.

Mr (?): CSITIS, I think it is. Is that what they told you?

Mr DENIGAN:

Well, CSITIS is completely different, although it is an international organisation, but that I believe is a different matter. What has happened now is the rangers down at Oloo have said oh well, you won't have a crocodile problem any more because the cane toads are going to wipe them all out. So what I am saying is, are we this clever country or are we you know, not. And I have got a problem that I can not get enough crocodile skins, and this may be only a one off thing but it is something in the equation which could be addressed. There is potential for meat there, in the same way as the pigs were harvested perhaps, you know, with a freezer; culled, taken to a registered abattoir, processed properly. Also, a couple of weeks ago I got a call from the Prime Minister's department and he requested that I make a special whip that he would give to George W Bush, and a journalist was talking to me, and he said...

Mr BONSON:

I saw that on TV mate. It was on CNN or something like that.

Mr DENIGAN:

Was it? Okay, I haven't seen it.

Madam CHAIR:

Yeah, well you're world famous now if you have been on CNN.

Mr DENIGAN:

Well, we're working at it. But that is not mainly what I am after. I am just after a good lifestyle, which the Territory has always afforded me. It does make it a little bit rough, though, when I can not get my products, and a lot of these crocodile skin hatbands, I was the first one to make them in Darwin; crocodile foot back scratchers, we invented those, and the crocodile on the handle of the whip, and quite a few other things. And now, when this journalist the other day said, oh you must be really happy that a Northern Territory crocodile was on that whip, and I said well, it wasn't Territory crocodile, mate. I am having to buy crocodile skins from South Africa, getting them tanned in Italy, and then come to Darwin, and they are not the Perosis crocodiles either, they are Noloticus which is a freshwater crocodile which is inferior quality, which is all I can get. And the cane toads are obviously going to decimate the numbers, and perhaps, if not through a cull, but maybe when we are on this topic, we could talk about other ways of giving Territory people a job. It might not be me, but some sort of hunter safari type tourism should possibly be looked at. It is humane, I mean, you are shooting and harpooning, it gives someone a job, it gives that new direction for Territory tourism, an elite market, and it has got a lot of potential.

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- Mr BALDWIN:** Let's go back a step. Why won't the local croc farms sell you the hides?
- Mr DENIGAN:** Well, they developed a monopoly and they get all of their products made in Queensland, so no one is winning out of it. I mean, all those gifts in protocol are all made in Queensland, and they all have the NT made stamp on it, which is another thing that should not be allowed, because they are not made here. Now, they might say well, we can take you somewhere and they can show you a rusty old sewing machine and a couple of other little things in the corner somewhere and they say, 'This is the factory where we make them.' But I tell you right now, that is not the case. They are made by a firm called Delafoe in Queensland. Very high quality gear, but we can manufacture the same thing if we are given a go. And unfortunately the consumer watchdog dudes, they are not interested because the way it is, there are several propriety limited companies, and although there are directors on this one and directors on that one, somehow it is linked so that it is not seen as a monopoly type situation. The end result for me personally is that I have got sources interstate who can supply me with a little bit of what I needed, so I will probably come out of it equal, but there are a lot of other Territory businesses who haven't, and it certainly gives me no scope for growth. I would like to expand a little bit and employ a couple of specialised sewing machine operators, because I have got a few machines out there, top quality gear, and I can't, because it is all made interstate.
- Mr WOOD:** Where do the other two, the bloke at Humpty Doo and this one near me in Howard Springs in Barker Road, where do they get their
- Mr DENIGAN:** I don't know but I would say if they got any new gear they would be sourcing it from New Guinea.
- Mr WOOD:** I got a belt from one of them.
- Mr DENIGAN:** Yes, well there is a little bit around. I used to have written contracts from these people when I left the government to become a whip maker, and when I went there I was assured that you will have crocodile skins for...
- Madam CHAIR:** From whom? You have got parliamentary privilege here.
- Mr DENIGAN:** Yeah. From the person who was running the tannery, but he no longer works there. So you know, instead of looking at the negatives, I would like to perhaps look at the positives and see if there is another way through maybe this disaster, which is the cane toads, to pull something positive out of a hat for a local industry that needs some assistance.
- Madam CHAIR:** We have heard the cane toad leather is a possible positive
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spinoff of the cane toad incursion into the Territory, that small businesses in Queensland have been paraded around, cane toad leather, cane toad sculptures, cane toad souvenirs. Have you considered that, Mick?

Mr DENIGAN: Well, there are heaps of different opportunities and you can spend years developing these business ventures. We have already spent that time developing this thing and now our raw materials have been taken off us, so that you know, well I've got to go out there and push cane toads. I think what I would rather push would be a frill neck lizard or a goanna or a crocodile, you know. Maybe there is some way we can enhance the quality of life of those reptiles or their continued survival, and then possible reintroduction into the bush, or manufactured into gear.

Mr BONSON: Yeah, I notice that is what your letter suggests here, about frillneck lizards will ultimately be to get perhaps into environmentally sustainable harvesting of frillneck lizards.

Mr DENIGAN: Well, they are a magic animal, you know, and people have got skinks as pets, they are from South Africa or wherever they are from, these lizards.

Mr BONSON: So do you not have much skills in it, Mick, just to put it back to the frillneck lizards. You know, I am sure there are other people in this room, that from what evidence we are hearing, frillneck lizards, goannas and bluetongues are going to be affected by cane toads. Do you have any skill or are you knowledgeable in the breeding of frillneck lizards, goannas etc.?

Mr DENIGAN: No, I am not. But there are heaps of people who would quite easily. Once again, I am not just looking out for myself, I would rather see someone who has got the resources, or the Berry Springs wildlife park, it seems to be depleting a bit, maybe something could be done there to, you know. In Australia, traditionally, the government would, especially in the primary industry sector, develop a pasture species and then give it to the farmers, or develop an industry like kangaroo harvesting or something and then free enterprise would run with that initial work that the government has made. I know things are changing and it is a very user pays system in the way the government operates now, but...

Mr BONSON: So you are saying that if it could be done, if it was affordable, to raise goannas, bluetongues, frillneck lizards, there would be two edges to that; one environmental stuff, to keep them going, and another one is that there could actually be commercial benefit from it.

Mr DENIGAN: Definitely, I think so, Matthew. I think it is worth having a look at.

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- Mr BONSON:** I suppose just the one thing about the freshwater crocodiles, what we have heard is that if a freshwater crocodile swallows a cane toad whole, that their stomach can deal with it and they don't die, but that if it gets stuck in their throats, that's when they are going to pay for the eating of cane toad. So that is one thing.
- Madam CHAIR:** Could you, in terms of your crocodile skin business, and your issue of sourcing the materials; with deceased crocodiles, I take it you could still do something with their skins? Or do you need to get them at a certain state?
- Mr DENIGAN:** You would like to get them fresh and probably harvest them. There are certain times of the year, the frillies go out on the road and they get run over, heaps of them. I mean, at that particular time of the year, you could probably use that road kill, because it was just run over, that apart from
- Mr DUNHAM:** I don't think so, mate.
- Madam CHAIR:** No, there is not much left.
- Mr DUNHAM:** No it's not that, you can't have native flora and your species. I know a bloke who had a black cocky feather in his hat and he was told
- Madam CHAIR:** Protected species.
- Mr DUNHAM:** Freshwater crocodile, you can not harvest them at all, under CSITIS, as I understand it, at the moment.
- Mr DENIGAN:** You can get exemptions for that.
- Mr DUNHAM:** If they're breeding and then the progeny are harvested or wild catch?
- Mr DENIGAN:** All of the farms, now, they go out and get the eggs and bring them in and hatch them and they stop their pens and then they harvest those.
- Mr DUNHAM:** Progeny. So you can't take the big animal, freshwater and kill it
- Mr DENIGAN:** There is a form within the SILIS(?) regulations, perhaps for traditional purposes, but I know for a fact there is a form that you can get to apply to harvest roadkills. I remember seeing one in the course of my travels.
- Mr BONSON:** The work you did in 1996 with Steve Harrington (?), what was that all about?
- Mr DENIGAN:** Well, from that, I believe that the cullers, you know the harvesters, who harvest crocodiles who got the license to,
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that was the outcome, the only outcome. I went to a few public meetings, I didn't hear anything more about it because I'm concerned that these marvellous things, the frill necked lizards, are potentially in danger. Tourists come to see these lovely characters.

Mr BONSON: Yes, we have heard terrible stories about what effect is going to happen to frill neck lizards.

Mr DENIGAN: So it is not just my personal well being or financial well being that I am interested in. It is the environment as well, our home. And if we can find a way to help them then it's worth throwing a couple of bucks at it you know.

MR DUNHAM: Parks and Wildlife have a permit system to rid the areas of problem crocodiles and there's people accredited to go in and do that. Have you talked to them about that.

Mr DENIGAN: All that happens Tim is they get harvested from here, they get taken to the Crocodile Farm, they get shot in the head after a couple of days, because they're problems and then they get taken over to Queensland and turned into handbags. I don't see anything wrong with that

Madam CHAIR: That's from the Croc Farm? They have the contract?

Mr DENIGAN: Yes, there is an independent body but they have to take those trapped crocs to a farm. So then they just stay there for a little, the farms don't pay much for them either, I think it's only like not much \$50 or something, so then they say it's a problem so they harvest it for \$50, cheap croc, and off it goes and local people don't see anything wrong with it. Last year down the markets, we had a taxidermist, Wheelie, a specialised skill, he's not here anymore because he can't get any stuff, he may not have been the best in the world, but he was always a handy man if you had something, he's part of the community, part of what makes our industry tick, he's gone.

Mr BALDWIN: Bit of a worry when you can't get croc skins and one of the most prolific croc breeding areas in the world.

Mr DENIGAN: Got to get them from South Africa.

Mr BONSON: Just back to cane toads again, I suppose this question hasn't come up, how in Queensland there fencing off their croc farms from cane toads so the cane toads don't get eaten. Is that right or you don't know?

Mr DENIGAN: I am pretty sure they do. Cane toads, I don't think can hop very high. I'm not an expert at that, how they stop them from, you know how the cane toad comes in that big wave and then they back off, so it's maybe that wave that is the main problem with the environment, that big impact straight

away, but if there is some way that we can help

Madam CHAIR: Any further questions? Mick, I appreciate you coming in today and making a submission to our inquiry, I know you travelled a long distance so thank you very much and we look forward to doing something to assist you with a small business.

Mr DENIGAN: Thanks very much.

Madam CHAIR: We have up next Mr Graeme Sawyer and Mr Stan Orchard. Mr Graeme Sawyer has appeared before the committee before from Frogwatch NT. Mr Stan Orchard has travelled to the Territory, he is the coordinator of the World Wildlife Fund Frogs program in Australia. So I invite you both gentlemen to come before the committee.

Madam CHAIR: We are re-convening the Northern Territory Parliamentary Inquiry into the Incursion of Cane Toads into the Northern Territory. I welcome Mr Graeme Sawyer from Frogwatch NT and Mr Stan Orchard coordinator of the World Wild Fund for Nature Australia the national coordinator of the Frogs program. Welcome to Darwin. I understand you have a powerpoint presentation for us.

Mr ORCHARD: I do yes, I hope you can see if from here. I am the National coordinator and I have been for the last four years, what is technically WWF Rio Tinto Frogs program. It's the world's largest privately funded frog conservation program and I'm also on the board of directors for the Centre for Environment Education Australia. Last year, almost exactly a year ago, I pulled together a small discussion group up here, to see if we could get enough background information to come up with a comprehensive plan that involved environment education and conservation. We have a private investor who was asking for this proposal and felt that there was a very good probability of getting that funded. So we put together a comprehensive proposal and it's been awaiting release of funds for quite some time now, and we're getting a bit dubious as to whether or not it's going to happen or not, but there was some excitement about the way it was designed in any case.

Having that in hand, what I've done is brought you a copy of the original comprehensive proposal and what I've done for this presentation is also strip it down in terms of the budget for a two-year pilot project and what I am going to present today is based on the essentials of getting on with the conservation actions to deal with cane toads.

My background is in collections based research in museums in Canada. I was at the Royal British Columbian Museum for a number of years and I've been coordinating Canadian programs and deploying amphibian populations, problems

that sort of thing. We also had a similar problem with the American bullfrog invasions in western North America.

I have a few slides I wanted to get through quickly. As you know some people like cane toads and this isn't to be dismissed when you are starting an eradication program because if you advertise it too widely or promote too widely that you are killing hundreds of thousands of individuals, you'll get organised resistance and it can be a complicating factor, it is something to consider right from the start. I actually put out on a discussion list the question, as I was finishing the last stages of an eradication proposal for American bullfrogs in North America, what did people think would be the most humane way to kill large numbers of large And it generated an enormous of email, it went around the world. It was an eye-opening exercise.

- Mr DUNHAM:** Before you go on, that is a isn't it?
- Mr ORCHARD:** Yes it is.
- Mr DUNHAM:** Why would anyone get a child pose for a photo like that when the entire back of them is toxic in any event? That's tantamount to child abuse.
- Mr SAWYER:** People keep them as pets.
- Mr ORCHARD:** Well yes they do keep them as pets
- Mr DUNHAM:** Notwithstanding if they squirt or not, on their back it's toxic isn't it to touch?
- Mr ORCHARD:** These clusters of granular glands and the toad actually has to be agitated to ooze out the toxin. There will be toxin on the surface.
- Mr DUNHAM:** Hasn't the back got dried secretion on it which still remains toxic?
- Mr ORCHARD:** Yes, and that is why it is illegal to lick a toad in the state of Florida, because of the hallucinogenic effects.
- Mr DUNHAM:** One of the things you have to educate is a photo like that is a pretty bloody stupid thing to get a kid to do isn't it.
- Mr ORCHARD:** Sure
- Mr DUNHAM:** And we have to educate people about handling them and things like that, and I would have thought that's probably the worst photo you could put up in Darwin at the moment with such high levels of
- Mr ORCHARD:** This has gone around the world. This documentary that this is based on is one of the most promoted documentaries out

of Australia that's ever been produced and it certainly demonstrates that there are a lot of people out there who do like them. People do keep dangerous animals as pets whether they're venomous snakes or pitbulls

Mr DUNHAM: What would the weight of that thing be, huge?

Mr DUNHAM: The highest weight I think in our literature is 1.25, that looks like it's a couple of kilograms.

Mr SAWYER: I'd imagine so.

Mr ORCHARD: Well, it's puffed up with a bit of air probably. To actually release a lot of venom they pull themselves down and put some pressure on those glands and that's how they can actually squirt the toxin out.

Mr DUNHAM: Could you do that just by picking them up and applying pressure, that could happen, or they have to be

Mr ORCHARD: Yes you could squeeze it out.

Mr SAWYER: If kids like that squeeze those animals too hard they would for sure.

Mr ORCHARD: Just agitating them will allow them to release the toxin.

Mr SAWYER: The biggest danger in something too is a kid puts it down again and then gets an itchy eye and does that, and rubs a bit of toxin in their eye and you've got a screaming child on your hands.

Madam CHAIR: I just interrupt you at this moment Graeme, you made those comments then, Graeme Sawyer. For the purposes of Hansard where we've got a dual presentation they should hopefully pick up from the accent which one of you two is speaking, but it's useful just to throw in a name if possible.

Mr ORCHARD: I was just going to pass through these things quickly. Obviously there is a lot of concern and often that concern is generated into people saying that there's an urgent need for more research and my experience in Australia is, in talking to researchers that they want to study the natural condition as it unfolds. It is very difficult to get people in to the applied frame of mind, taking what we do know, or finding out what we need to know to actually control populations and knock back their numbers.

I'm sure you've heard all this stuff ad nauseum about cane toads. I think some of the key factors here are certainly the fecundity or the biological potential of the animal. They've found egg numbers up to 54 000 in an individual female and she can produce two to four times of year, these clutches of gelatinous strings of eggs.

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- Mr WOOD:** Have you recorded the dogs that have died, have you actually seen records of that because we're getting different opinions about whether dogs actually die or just get sick and recover.
- Mr ORCHARD:** I can't cite a reference, but I have come across a lot of references to mortality for a variety of species and it has been documented. Mammals are quite susceptible to the alkaloids and the toxic effects. I can find it for you.
- Mr WOOD:** Thanks
- Mr ORCHARD:** And the other thing is that it is being listed in this country as a pest instead a menace and that has been a factor apparently ... not being funded or applied research being funded into actually getting out there and finding out how to kill them and eradicate.
- Mr BONSON:** Could you please explain that to me, I'm a novice with the difference between a pest and a menace.
- Mr ORCHARD:** Well I am too because it's a legal definition. Presumably you have some equivalent of a wildlife act that comes up with these definitions and as they go from one category to another it's like different work levels to code red, and a pest puts it below the priority level for being treated as an urgency.
- Mr BONSON:** So you think it would be wise to maybe push that priority level up to a menace rather than just as a pest?
- Mr ORCHARD:** Yes, I think it is absolutely astonishing that you've gotten away with not calling it a menace. But on the other hand, in terms of political priorities, it's been sold as being such a horrendous problem that it would be potentially a black hole for throwing cash at it. I don't think that's the case but I think that's been the fear and that's what has paralysed people from taking action.
- This is a native species from the Northern Territories and I just flashed it up there to remind you of the ecological effects that cane toads are going to have as competitors of the native fauna but also as predators they have voracious appetites and they live in high density. There's no doubt that they will knock back native populations of native frogs, possibly to extinction, and the Top End predators are going to be hit very hard as well. The quolls and the crocodilians, the goannas and the large snakes and so on.
- There are going to be obvious cultural impacts on the Aboriginal communities, as you are quite aware. One of the things that isn't often discussed but actually was covered in some detail in Bill Freeland's problem analysis from 1984 is

the human health factor of cane toads. That they eat mammalian faeces and that includes dogs, cats, humans and they can become primary hosts of human hookworm, dog and cat tapeworms, various intestinal parasites, and they pass that on of course when they're moving in and out of freshwater systems, so they have an extended pollution factor as well and human health issues should be of serious concern.

Obviously your natural heritage values in places like Kakadu National Park are threatened, I don't need to tell you any more about that, and looking at the Top End from the air it certainly looks as though the habitat is well suited for cane toads. This is just at the beginning of flood stage taken from a helicopter. There seems to be few natural barriers to cane toad distribution which is certainly going to complicate things. But we don't really know, we haven't got a very refined understanding of what constitutes a natural barrier to cane toads, what limits the distribution with a rate of advance, that sort of thing.

This is a map of the bio regions of Australia. There are 51 bio regions and they have been grouped here into 15 larger regions by my science panel based on the biogeography of the frog fauna of Australia, and you can see that obviously the entire Northern Territory is not going to be threatened by cane toad invasion, it is going to be restricted to this area up here. So clearly there was a missed opportunity back in 1983 when they crossed from Queensland in to the Northern Territory where you might have been able to create a control zone there and effectively keep them out of the Northern Territory. But it's still a possibility to take advantage of this area along the Gulf of Carpentaria and prevent more cane toads from being recruited from outside the Territory.

And you also have the variability of rainfall which is pretty extreme up here and variability in rainfall offers an opportunity as well for controlling cane toads. Obviously when water levels are low or during periods of protracted drought that are bound to happen if you have the trapping techniques in place and eradication control methods already laid out that's when you can hit them really hard and knock their numbers back.

Mr BONSON: Have there been any studies on their breeding during June or July.

Mr ORCHARD: As far as I know there haven't, you mean in the Northern Territory?

Mr BONSON: Anywhere, you know where there's small amounts of rain.

Mr ORCHARD: The general understanding is that as long as the standing

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- water is available for them to reproduce in, they will reproduce at any time of the year.
- Madam CHAIR:** We have also heard, when we in Borroloola for example, that they're pretty good at going to ground and lying low in burrows when the weather is dry and then coming out and using the wet season to peak in terms of breeding.
- Mr ORCHARD:** Well that's true. It depends on the substrate that's available as to whether they can burrow. I don't think they're very good burrowers themselves so they're depending on other animals as burrowers.
- Madam CHAIR:** That's right, yes.
- Mr ORCHARD:** To some extent that is another opportunity because if you can create artificial retreats for them that they will concentrate in, then you can just collect them up and carry them away. It's another approach to getting them to congregate.
- Mr DUNHAM:** That's old, that's really old
- Mr ORCHARD:** Yeah well I put this together based on Hal Carter's book on the amphibians and reptiles of Australia.
- Mr WOOD:** Do you want us to show you?
- Mr ORCHARD:** Well I would be interested in knowing that
- Mr DUNHAM:** We were in Jabiru last week, and the headwaters of the, so they've travelled up to here, on your subzones you had they were river catchments the way I looked at them, they were in the headwaters of Snowdrop Creek which is here, the headwaters of the Katherine which is the Daly system, that's the river there the Katherine/Daly they were in the headwaters of that and Snowdrop also runs that way into the, within a couple of kilometres, the East and South Alligator basins already and they are in Pine Creek I think?
- So that river catchment now has got them, that is Pine Creek, it's a very short hop to the wetlands here at the floodplains and that's the Vic, probably our biggest river in terms of volume and they are right up into the Mann, so I'd say apart from those couple of islands, these island here are all inhabited already
- Mr WOOD:** And that is a very old map because you have got Birdum there, that about Well they've Newcastle Waters aren't they, or are they heading that way?
- Mr BONSON** No. What was that station?
- Mr McADAM:** Hayfield, just south of Daly Waters.
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- Mr ORCHARD:** So does that mean that their rate of distribution seems to be accelerating?
- Madam CHAIR:** It's what we've
- Mr DUNHAM:** the river valleys, you saw that picture of the rainfall
- Mr ORCHARD:** Yes they just get swept or the eggs get swept, I'm not sure. On the other hand it depends on how many of them get swept away because they can be overwhelmed by the predators, even if they are taking our predators, predators are taking them out as well. So there's got to be a threshold density of cane toads to be sustainable from their point of view.
- Madam CHAIR:** We're getting evidence that they'sustained.
- Mr DUNHAM:** 60 per square meter, wasn't it?
- Mr DUNHAM:** Well, you'd never get death adders at that rate. So even if one death adder takes out one cane toad, you've still got another 59 there, haven't you?
- Mr ORCHARD:** Yeah. Well, we get to the sort of mathematics of that. I put a fair amount in here about what I call the silver bullet solution, and this based on the CSIRO line of research to develop a virus that will kill cane toads exclusively. It's a genetically engineered virus, it's attenuated, in other words it apparently cannot replicate itself, so it's just carrying this so called lethal gene that will incorporate itself into the genome of the tadpole and as the tadpole begins to metamorphise it kills it.
- There has been a problem coming up with a virus that is species specific because they're working with irrida viruses, which include the renna viruses, with about seven strains of irrida virus, and they're known to attack not only frogs, a wide range of attacks on frogs, but also jump between species groups, between fish and reptiles and amphibians.
- So this is the model that is genetically engineered, attenuated, carrier of lethal genes, species specific, attacks tadpole stage and kills at metamorphosis.
- But the practicality are it's been extremely expensive and lengthy in development. It's been virtually the only well funded line of research on cane toads. I don't know how much money it's going to end up but I keep hearing that it's over \$10m in over a decade.
- There are all kinds of inherent dangers of releasing viruses into the and it's the basic lesson we learnt from the cane toad that when you release biological agents into nature

they can have unpredictable effects and the toads can develop resistance to it, it may not as species specific as advertised, it's a certainty that all of the frog fauna in the Top End hasn't been tested, but in strictly physiological terms you'd have to test a lot of frogs to find out what proportion of any population is vulnerable, in any case.

It's focused solely on tadpoles. I think this is a major strategic mistake, and I'll explain that in a minute. The cost of applying the technology are going to be astronomical. I mean it's along the lines of weapons of mass destruction where you have to blanket the area just at the time of reproduction but, of course, they're reproducing all the time. The virus isn't going to sustain itself in nature, so you have to keep applying this on a massive scale and you're killing tadpoles.

So, the virus will not replicate in nature, it just kills and stops; it must be propagated synthetically and then manually disbursed repeatedly. The technique ignores post-metamorphic stages, and I'll get to that in a minute. I think that's a major error. As a stand alone technique it must kill every tadpole at every site to effective, and cane toads are long lived, possibly 20 years or more, which means if you had sessile cane toads, which you're not likely to have, cane toads are adults and post-metamorphics are on the move often. But if you did have them stuck at one particular site, you'd have to go down there and kill every tadpole, every year for possibly 20 or 30 years before you've worked your way up their dying of old age.

It's the wrong direction to attack the cane toad. You should attack the reproductive age classes and work backwards and then instead of a 30 year proposition, at minimum, you've got a six year proposition at minimum.

The program is going to have to be huge to be effective and I think it's going to have a modest return. It's certainly not a stand alone eradication remedy but it might be really useful on a local scale or as an accompaniment to a whole suite of other techniques.

Now, the cane toad fundamentals, it has a very simple life cycle: it goes from an egg to a tadpole, this is the aquatic phase, and then it has a terrestrial phase, juveniles that develop into adult males or adult females that go back to the water intermittently to reproduce. So, at each stage here you have an opportunity for designing other techniques, you're looking for vulnerabilities and ways of using the behaviour and physiology of these different stages against themselves. It develops quickly to maturity, probably in about five years. I don't think it's really known here, but given the abundance of food and the optimum conditions, well, as Graeme just said, they can probably reach sexual

maturity in three years, two years, okay. Well, it was a conservative estimate.

Mr SAWYER: And that's what they're getting out of Queensland I understand, but up here they seem to be much quicker than that from what we're hearing.

Mr ORCHARD: Right. It has simple needs and motivations. It needs food. It needs water. It needs shelter. It has to reproduce and it has to avoid predation if possible. At each stage there, like each stage in its life cycle, at each point in those elements of its life cycle that are required, it's needs, those are all opportunities for killing and controlling the species as well.

The four commandments that I'll offer you are. These are conditions that you have to meet. You have to remove toads from delineated, well defined areas, much more rapidly than the toads can recolonise from the outside, if you're going to be successful. You have to effectively block the recolonisation of areas once they've been cleared of toads. You have to kill toads much faster than they can be replaced for reproduction. You have to prevent any further migration in population, regroupment (?) of toads into the Northern Territory from Queensland.

So, in other words, you have to fragment the distribution. You have to understand their distribution well enough that you can see where their bottlenecks, dispersal corridors, that sort of thing and work on those ...

Mr BONSON: Stan. I suppose this is one question that has been worrying me. There's evidence that it's going north-east ...

Madam CHAIR: North-west.

Mr BONSON: North-west, sorry. All travelling north-west. What are the ones doing in Queensland at the moment that are ones that are, you know, 200 kilometers around corners, behind the front line? Are they staying put in their localised areas, or are they still travelling north-west? You know, the ones that are left behind?

Mr ORCHARD: We don't know. There isn't enough known about how they actually migrate. Obviously the toads that crossed in 1983 weren't determined to get to Kakadu, they've fallen out along the way, they've probably found good places to stay.

There's a whole lot of really fundamental questions about how toads migrate, what motivates them to migrate, what age classes they migrate at, that sort of thing that there aren't any answers to, at the moment. I mean it's relatively simple to investigate.

Mr BONSON: Just the research hasn't been done yet?

Mr ORCHARD: No, the proper research hasn't been done. But, I mean, it's very important.

This is just a bit of a model. The species diversity, what I've called the wall of resistance, what's kept cane toads from advancing unobstructed is the, obviously, the species diversity of the Top End and so the cane toads on the perimeter of the expanding distribution are going to be knocked back by predators. So you've got a wall here basically, cane toads are advancing this way and your natural allies in any control eradication are going to be the native top predators.

Now, behind the wall over here you've got densities that are stable, densities of the predators. The density is decreasing at the wall because that's where they're encountering the cane toads and being killed, but there's also population recruitment on this side because the populations are stable. So there's more bodies being thrown at the cane toads and that's slowing down the advance.

The stable populations could overwhelm toads, where toad density is low. On the other hand, your enemy, the cane toads here, the density is increasing over time along this advancing wall, but the rate of advance is slowest here. So if you can start eating into the distribution from the perimeter, these are your allies that will move back in and slow down the recolonisation of that cleared area. So it's very important to pay attention to healthy populations back here as well and incorporate that in your overall strategy of reclaiming territory from the cane toads.

Now, what I'm proposing here in this pilot project is to run a series of very quick, simple experiments that deal with these questions, these fundamental questions. What attracts cane toads? You hear this all the time, well, cane toads like roadways and if you walk along the roadway you can find cane toads, and you walk into the forest from the highway and you can't find cane toads at all, they don't seem to penetrate. Cane toads seem to be congregating under lights at night, that sort of thing.

Well, all of that's really useful for developing techniques for attracting cane toads, making them concentrate and then killing them.

What repels cane toads? Well, that hasn't been looked into. What constitutes a minimum sized barrier for cane toads? We don't know. From the natural landscape you have these suggestions that certain grades will keep them, will act as a natural barrier; that forests act as a natural barrier.

Mr BONSON: Simple test of how high they can actually climb hasn't been

done. No one ...

Mr ORCHARD:

No, well, the thing is you've got to run this series of experiments, really testing their physiology as well. You're looking at all the different age classes. You might find juveniles can jump higher than adults because of the physics problem of their having more mass, for example, relative to the strength of their legs. But they can also jump to different heights at different temperatures. It's a great university first year understanding of the relationship between temperature and metabolism in physiology, where if you cool a frog down to the point that it almost arrests its muscle activity, and then you just poke it and see how far it jumps, then you heat it up a few degrees and poke it again, and poke it again and poke it again and you'll end up with a perfect bell curve like this. Well, what you need to know is what's at the top of the bell curve. And you need to know what that height is in order to create barriers and incorporate them into traps, that sort of thing.

So you have to run these tests very systematically, but it's not big science, it's not expensive science and it's something that you can get quick results on and incorporate it into the fabrication of your trap.

What attractants are most effective? We know that cane toads have a good sense of smell, for example. We know that cane toad males have a call. Presumably that has some attraction value to the females. But what else are they attracted to? It's conceivable that if you played around with the call, if you change the amplitude, if you change the amplification, if you change the frequency you could see how females respond to that and you may be able to produce a synthetic call that's basically a super call. That could be useful as well.

But, you might find that totally unexpected things attract them. Unexpected sounds. We need to experiment a bit with that.

How can multiple optimised attractants be incorporated into an easily transportable, economical, durable, self contained trap? All of those are serious considerations. You've got to be able to mass produce these things. You've got to get them out into the field, set them up quickly and they have to put up with the rigors of nature once they're out there.

As I said earlier, we really need to know what is the precise distribution of cane toads in the Northern Territory, we need a really high resolution of understanding of that; where they're advancing and at what rate.

How can trapping and eradication techniques be tailored for each life stage? We've already talked about that. And how

are these traps to be deployed for the greatest possible effect? That comes with answers to all of these questions. Those are really the two fundamental areas: understanding what attracts them, what repels them and what their basic motivations are, or what the basic motivations are each of those stages in the life cycle.

In the proposal I've suggested holding a workshop, getting some of the most creative minds from around the country and including engineers and biologists and so on, just to do some brainstorming.

Not everything that people know about cane toads is going to be found in the published literature. People who have experience in nature are going to have an intuitive understanding of certain aspects of their behaviour. So it would be really good to get all these people who may have unique insights into one place and start pooling knowledge.

So what do we need to find out? How do we translate this knowledge into control eradication techniques? How would we design the most time efficient experiments? Is this technique cost effective and time efficient? Is this technique suited to extensive applications? In other words, I mean you can create a pretty elaborate trap that may be wonderful at a local level, but if you can't mass produce it and use it extensively, it's not of much help under the circumstances.

What are the most effective techniques for each habitat type? That's another things that we've got to look at, how to adapt the techniques that you come up with to the terrain that you encounter. Which techniques will have the greatest impact on reproductive success and population survival? That's the most important ultimate question, right there.

So what I'm proposing is that we can get underway with these simple experiments right away. We can start doing some tests. We can answer some simple questions and about a few months down the line, maybe three months down the line, hold this workshop where we do some brainstorming.

Now what I did here was put together a simple matrix that divides the various age classes of the different elements of the life cycle of the cane toad against all sorts of environmental parameters, and I've actually listed 27 of them, so that's a minimum of 135 potential areas in this grid of answers to how to kill cane toads in different ways. The entire matrix is in the comprehensive proposal that I'll leave you a copy of, and it's on a CD as well.

Madam CHAIR:

Just on a question, Stan, just to interrupt for a second. You did mention at the outset that this proposal in a comprehensive form had been submitted to whom,

previously?

Mr ORCHARD: It's a group of called the Green Bank, based in Melbourne.

Madam CHAIR: Green?

Mr ORCHARD: Green Bank.

Madam CHAIR: Yes, I know them. Yep. You've gone there?

Mr ORCHARD: Well, I went there initially because they said they were interested in a proposal to do with cane toads and they were trying to tie it into an ecotourism merger, set of projects up in the Top End.

Madam CHAIR: And no word back? What's ...

Mr ORCHARD: The word we got back was that the, I guess the principals of the Green Bank thought it was a worthy and good proposal. The problem that I am told is transferring money right now internationally – that there is a large block of money that they are trying to get out of North America, that is as I understand, I do not know. But it has been a bit of a frustration, so far. So I am not ...

Mr DUNHAM: Are they still enthusiastic, so it is only a money transfer problem or are they going cold?

Mr ORCHARD: No, they have not gone cold. As far as I know it is still in the pipe line, they have other projects that they are funding.

Mr WOOD: So it is just a money log jam thing?

Mr ORCHARD: It seems to be, I can not say in absolute terms what the situation is but that is what I am told.

I included this model from Canada just as another sort of source of hope I think, that back in 1950 the state of Alberta, not the state of Alberta, the province of Alberta, they do not have states in Canada, decided to get rid of the Norway Rat, *Rattus norvegicus* and they committed to it in the long term. In the first five years they knocked the populations back by 75% and by 1990 rats were extinct in the province. And they kept refining the techniques – of course the public was right behind it – they set up a control zone along the border here with Saskatchewan, 30 kilometres wide and 610 kilometres long and today it costs the province \$100 000 a year to maintain this but they estimate that just in grain damage alone it is saving the province \$30m annually.

So, I think, what to do? My advice is approach the problem from a military perspective. That is sort of push aside people who want to study the problem and document the problem. They are wasting time. Take a comprehensive

strategic approach to driving cane toads to complete extinction in the Northern Territory – adapt, innovate, refine and kill toads relentlessly, that is how you do it. And what not to do, do not waste another minute, do not listen to defeatists, do not expect a quick fix and do not abandon demonstrated success, that is do not put money into something that starts to show promise and then have it peter out.

What I propose, is this two year pilot project to design, fabricate, field trial and refine trapping technologies incorporating only the essentials of (b) which is the full blown comprehensive, three year program of applied science and education or (c) a phasing in of (b)s positive results from the applied science pilot project warned.

And the timeline for the pilot project for 2003 to 2004 is extend my Australian work visa now. If any of this

(?): will keep you here.

Mr ORCHARD: Yes, that is true. My four year work visa is up on June 20 and if I were to have any input into this, that obviously needs to be fixed up right away, I need an extension on it. The project could begin in mid-August and would begin with: controlled behaviour manipulation, and bio-mechanics experiments – run for the next eight months; intermittent field trials with prototypes leading to extensive application during the dry season 2004; refined mapping of cane toad distribution throughout the Northern Territory to clarify growth rate of expanding perimeter; workshops at the first national meeting of Frogs Australia in late 2003, this is a national frog conservation organisation that we are going to try and launch later this year; and then I am co-chairing a global conference in Brisbane on amphibian conservation biology in 2004, where we could pull together an international workshop and try and refine it a bit more; continue to refine and diversify techniques in 2004. That is the basic plan.

Reason for help, if there is one thing that people are really good at, it is driving species to extinction, that as a conservation biologist I can attest that that's what we've done the world over – we do it really well, when we work co-operatively. So, that is the basic pitch.

Mr WOOD: That is why we have weeds and pests. Everything else will get extinct....

Mr ORCHARD: Well there are a few stalwart survivors that is true but I do not think there is any species that we could not get rid of if we really, they set the population of China catching flies a few years ago and they knocked back fly populations to almost zero.

- Mr DUNHAM:** There is a lot less of us than the Chinese.
- Mr ORCHARD:** Well, that is true.
- Madam CHAIR:** We have got a fair sized land mass to cover. You said that you pared down your costings in comparison to what you put to the Green Bank, what was your pared down project?
- Mr ORCHARD:** Well, with the, instead of a full blown education program we factored in a website for dispensing information about how the project is proceeding. We factored in workshops, local workshops and this national workshop, the facilities that would be required, money for research and development in terms of fabricating the traps, the various prototypes and field testing them, travel costs, field equipment and the wages at the very least for a full time co-ordinator, plus the infrastructure costs of ten percent in overhead. So that came to \$319 000 in the first year, reduced to \$280 500 in the second year, which is a total for the two year pilot project of \$599 500. I will leave a copy of this with you.
- Madam CHAIR:** Thank you.
- Madam CHAIR:** Questions, committee members.
- Mr DUNHAM:** Put me in whichever category you like but to eradicate cane toads seems to be not in the lexicon of all of the scientists who have spoken to us and maybe they were pessimists, I do not know, but given its robust nature, it breeds at 8% per annum and the fact that there are millions and millions of animals now and given that your inputs are generally human and that there is a small population of humans here, how do you expect to achieve eradication and in what time frame?
- Mr ORCHARD:** Well, we can not project a timeframe until we actually test the techniques in the field but people are driven to defeatism because of the sheer numbers of these animals. Forget about the numbers, we are playing a mathematics game but in terms of the life cycle, what you want to do, your first priority is to target the reproductive females. They carrying the eggs, and they are carrying tens of thousands of eggs and you will start knocking those numbers down rapidly if you can target the females. If you can effectively pull them out of the population, numbers is no longer a factor.
- Mr DUNHAM:** But its, your same scenario with the biological thing, I mean, assuming you are taking out 10% of females, the other 90% are going to live for 20 years, as you said with your biological thing and you are still going to have their rate of their fecundity, such that you would never get over the hill surely.

Mr ORCHARD: Well, it depends on how you approach the problem. If you started doing this in the centre of distribution in Northern Territory, this is where communities have failed.

Madam CHAIR: So go into the front, do you say?

Mr ORCHARD: You have to work from the perimeter and start eating away at the populations for one thing, otherwise you will be overwhelmed by recruitment from all sides coming back into your area. What we want to do is come up with inexpensive ways of getting them to congregate and setting these traps out in an array, in such a way that you will probably, well hopefully you will get 100% collection and then keep moving your traps. But you use it in concert with manual searches and manual killing and a whole lot of other different things. And that is why I was talking about the military, if cane toads had come from another part of the galaxy and landed on earth, you would not call out a bunch of biologists who wanted to study it. You have seen this in movies, you call out the military and the military, they know how to kill and they know that they have to adapt, they have to go out and understand their quarry and find out where their weaknesses are, where the animals are and where they aren't and knock them back. That is your overall strategy and it can be done if you get the right suite of techniques and you work from the perimeter or effectively fragment the distribution in such a way that you can deal with one fragment at a time and eat away at overall distribution.

Mr SAWYER: Comment from Graeme too, I mean we just had Frog Watch people go to Pine Creek three weeks ago and just in a general cruise around town they did not see much in the way of cane toads at all and so they went up to either the pub or the servo or one of those places and asked, and they said, 'Well, if you go down to the end of that street and turn left, you will find them underneath the street lights. And you know, general drive around Pine Creek didn't reveal very many cane toads at all but going to those particular areas, there were literally dozens of them under each of the street lights. So I mean if there is a way to attract numbers, I mean, even if in the end it comes to the point where you can use that as a technique to apply some virus that CSIRO has developed to gravid (?) females. You may have a mechanism that is applicable but at the moment we do not even know whether that is possible.

Mr ORCHARD: Well, we know they do congregate and if you can set up a trap that does effectively lure them, it is a mindless predator. The more of these mechanisms that you have got out in nature, they are just mindlessly taking, hopefully taking reproductive females out of the population and you can increase the density of these mechanisms if they are working. You can use them as a barrier or you can keep moving them across the Territory and knocking back the

numbers. But you have to realise it is a long term proposition, it is like the Norway rat in Alberta, it is a 40 year proposition.

Mr WOOD: If you are trying to compare Alberta with Northern Territory, the climate would be more cold and I presume you have got a long winter. Is there a time there when ...

Mr ORCHARD: Well no, it is not really a long winter in Alberta.

Mr WOOD: Longer than our dry season.

Mr ORCHARD: Well, it is relative I guess.

Mr WOOD: I mean what techniques did they use to get rid of that and did it stay out of, I mean was there a way of keeping it out of other provinces?

Mr ORCHARD: No, they were trying to exclude it strictly from Alberta although Saskatchewan has now bought into applying the same techniques. I brought that case up because it is similar to this situation in that this is a habitat generalist species. It is relatively fecund, although not to the extent of the cane toad, it is much more mobile than a cane toad and it is much more intelligent and adaptable than a cane toad. It is not as area typic (?) in its behaviour as a cane toad and that makes the cane toad a much simpler proposition.

Mr WOOD: How did they catch the rats?

Mr ORCHARD: How did they catch them?

Mr WOOD: Did they bait them or did they ?

Mr ORCHARD: Well, they use traps, they use all sorts of things, it is like a military operation, they use guerilla warfare and they use every means available. I do not know all of the techniques that they have used but I know that they use probably a suite of snap traps and poisons and all sorts of things. But they also have in place things like hotlines, where if somebody sees a rat, they can contact a central authority and they will come out and get rid of it right away.

Madam CHAIR: Did they use school children or youth at all in terms of mobilising and public awareness? What were some of the strategies they used?

Mr ORCHARD: There was a big public awareness campaign and clearly you can use the internet to get up to the minute reports about where people have seen rats or cane toads or anything else but that is an excellent sort of surveillance system that is already in place. There are people who are working even in remote areas of the Northern Territory, I mean people are everywhere for some reason at some

point, whether they are hunting or whether they are doing some forestry or they are farmers or what they are and if you can engage these people in actively sending in their observations and you have somebody who is controlling the flow of information and synthesising it that is vital but it also increases political will for eradication project and it give people hope that something is being done.

Madam CHAIR: Just in terms of the submission, why wouldn't World Wide Fund for Nature and Rio Tinto continue to support the work you have done in the past in terms of the Frogs Program and look at the natural extension to cane toad eradication given the clear detrimental impact that cane toads are going to have on frog species? Sorry, but some of the hard questions come towards the end of the day.

Mr ORCHARD: Well, what I will say is that this is a formal partnership between WWF and Rio Tinto. Rio Tinto came to WWF with frogs in mind as being the theme. Between them, they have decided to move on to something else, which is a freshwater program – there are reasons for that, I think, basically it is money. There is budget envy in the Frogs Program and freshwater is a way of dispensing money around the organisation, so frogs are going to be de-emphasised.

Mr BALDWIN: Unless they are living in fresh water.

Mr ORCHARD: Well, yes, that is right but there are all kinds of other freshwater issues.

Mr BALDWIN: So they have changed their focus.

Mr ORCHARD: They have changed their focus but if this pilot project does go ahead and while I still have some influence on the budget I can possibly get some money into it, I do not know, anywhere up to \$50 000 potentially. That has to be approved of course butdirectors but I would make a strenuous effort to do that.

Madam CHAIR: Questions?

Mr DUNHAM: Is this your highest priority do you think?

Mr ORCHARD: My highest priority?

Mr DUNHAM: In the Northern Territory, cane toad eradication.

Mr ORCHARD: Yes. Yes, no question. Just in terms of its scale and the fact that it is not a short lived phenomena, it is going to change things permanently.

Mr DUNHAM: So, we could count on you to articulate this as being the highest environmental priority in the Northern Territory?

Mr ORCHARD: Yes. Well, now wait a minute. Somebody could question my authority on what the highest priority is in the Northern Territory but speaking as a conservation biologist and looking at issues on a global scale routinely, I would say there is no question. I cannot imagine a worse problem up here short of the out of control fire ant plague or something.

Mr WOOD: a few ant problems, big headed ant, crazy ant.

Madam CHAIR: Yellow crazy ant.

Mr ORCHARD: I wouldn't mind on crazy ants, but I know more about ferals.

Madam CHAIR: Did you have anything you wanted to add?

Mr SAWYER: No, I don't think so. I mean, talking to Stan about this stuff over a period of time, it is the only real place that I have managed to find that there is a degree of optimism and so forth that this sort of stuff might actually be achievable, and all the questions that Stan has asked of me in time over the issues, like are they lurable, what attracts them, what sort of behavioural stuff do they exhibit. I am just stunned that that basic biological research is not there for everybody to look at. Just last night, we took Stan out along the Margaret River and at this time of the year, all of the frog species that we could find were just packed along the wet sand at the bottom of the river, and I would imagine, as I said last night, next year the cane toads will just be vacuuming the floor, of all these frogs down the Margaret, coming in from Kakadu. This concept of what Stan is talking about, is that if there is a trap, and there is a corridor like that in the dry season where these animals are pulled off the floodplains into those river corridors, and there is a trap that can pull out 80% or 90% of the females, then surely it has got to be worth investigating. Because the problem with cane toads, from my point of view, is that even if we can not eradicate the things, any dent in their numbers that we can make is a plus for our native wildlife, because we know that they are wiping out wildlife left, right and centre. So if there are weaknesses in their armour, in terms of tracking adult females, and in terms of looking at refuge points and stuff like that in the dry season, then I think the biology should be at least investigated, until we know that it is not feasible.

Mr ORCHARD: Yeah, but this is getting outside the realm of what a lot of purist biologists would consider studying their biology. We are trying to manipulate their behaviour. We are trying to figure out how we can manipulate it, how we can optimise that. And biologists just are not schooled in the applied side, or sort of provoked in the applied side. I do not want to leave you with the impression that what I am suggesting is the construction of the perfect trap. I think we can develop all sorts of traps. I think there are ways of getting the

juveniles concentrated and killing them and creating barriers around certain habitats. We need a whole suite of things. We need to understand their behaviour and find out how we can adapt technology to killing them but in an eco-friendly way.

Madam CHAIR: We have had some submissions regarding ideal places to erect fencing, across the Cobourg Peninsular for example, which is a 3 km stretch, that would hopefully keep part of the mainland of the Northern Territory toad free and protect the biodiversity. But also there is the issue of the islands to the north.

Mr ORCHARD: Well, certainly one of the major problems you have with this species, is it is called the marine toad because it has some resistance to salt concentration, and if they are swept out in some floods or that sort of thing they could easily end up on islands. They will get around barriers. It is going to be an ongoing problem.

Mr WOOD: When is the next ice age? That is an eco-friendly system, I would have thought.

Madam CHAIR: Any other questions?

Mr BALDWIN: The program you talked about is over a sort of two year period.

Mr ORCHARD: Yeah, I think after two years we can demonstrate success or we would have a much clearer picture of whether this would be successful in the long term.

Mr BALDWIN: Yeah, the outcome being that you would have trialed and developed a number of different trappings and barrier systems and whatever.

Mr ORCHARD: Yes.

Mr BALDWIN: By that time, two years from now, they are going to be not only to the top here, in Darwin, but also probably, at least to the WA border. So it becomes sort of, the problem is much larger I guess as to where to start holding them back from, whether we will be at the Ord River by then.

Mr ORCHARD: Yes, well we should have had this discussion back in 1983, that would have been the time to do it.

Mr BALDWIN: 1935. When they were introduced.

Mr WOOD: They are probably going to Kununurra for the sugar cane, that is what they did. They left Queensland.

Madam CHAIR: They could smell it.

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- Mr WOOD:** Smells, that is it.
- Mr ORCHARD:** The thing is that if you don't do this, you are throwing up your hands, you are turning the terrain over to the cane toads. And if you are resolved to doing this you had better get started right away and not waste any more time.
- Mr DUNHAM:** I guess I have come across a bit pessimistic but I mean, we have got water buffalo here that were introduced and we can't eradicate, pigs, horses, donkeys, cats, there are a number of species, and there have been some native species, including dingoes, that we have tried to eradicate for one reason or another over the last 50 years, including helicopter gunships, something like that, to give you a military analogy. And the habitat even for a bit animal like a bloody water buffalo is such that you would have to be very, very good, and it would take a long time to eradicate even an enormous mammal like that, without something that in its metamorphic stage is as big as a 20¢ piece. So I do not want to sound defeatist, but just the enormity of the scale, and the paucity of resources, you know, all of us out at night with flashlights and all the rest of it, it just seems not to compute.
- Mr ORCHARD:** Well, I think the buffalo, a large mammal, actually, if you had the resources available to you that the US military has, for example, that can zero in.
- Mr DUNHAM:** Yeah but you never will
- Mr ORCHARD:** A buffalo is generating a lot of infrared radiation and you would be able to stop it.
- Mr DUNHAM:** What I am saying is you will never get that, I mean you will never get to the stage where any government anywhere will devote that amount of resources to it.
- Mr SAWYER:** It would be a lot more mobile and a lot more intelligent animal than a cane toad. Like, I do not know of any potential lure for a buffalo.
- Mr DUNHAM:** I suppose all I am saying is we have got a number of feral animals we would like to get rid of and this is definitely one that is at the top of the list, probably the top of the list.
- Mr ORCHARD:** Well, I do not know what strategies you have used but presumably it has been turned over to a few people to carry this out. If the entire population of the Northern Territory got behind getting rid of water buffaloes I would imagine that you would not come back.
- Mr WOOD:** We haven't got rid of the rabbit yet...
- Mr DUNHAM:** Or the donkeys.
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- Mr WOOD:** ... with the calisi virus.
- Mr ORCHARD:** Calisi virus. Well, you are looking for a silver bullet. You have got to do some hard work.
- Mr SAWYER:** One of the things that I think is different with this process is that it would appear from some of the simple stuff that has been seen so far that cane toads do respond to certain types of attractants, like they have got a call that attracts females, that seems to be a chink. There is nothing like that that we can use with the mammals and stuff. And they also appear to be attracted to light and have a preference for open areas where they tend to congregate, as they have said. They don't find them in monsoon forest habitats so much. The less dense area, the more the concentration of cane toads, it appears. So there would appear to be some biological factors working in favour of some sort of control mechanism which is not present with any of those mammal species. My point would be that it is a question we can not answer, we don't know.
- Mr ORCHARD:** It does seem to be that the waterways are major dispersal corridors. That is a big advantage for your trapping, if you can run trap lines effectively along roadways and river grounds, you can start knocking back, you are looking at what is called a meta-population strategy. You have got some areas where their densities are always going to be low and they are going to be periodically knocked back because the conditions are not prime for them. But you find where the conditions are perfect for them and hit those very hard, and their long term survival starts to teeter a bit.
- Mr SAWYER:** And the upshot of this may well be, you can take a gorge, like Deathadder Gorge in Kakadu, and protect it by putting a series of those things across the entrance and stuff like that. That might be the upshot of it. But at least then you have got some major habitat areas that you can possibly protect. It might be the same thing in Litchfield.
- Mr BALDWIN:** And cheaper than fencing
- Mr SAWYER:** Well, it might be a lot more robust and reliable than fencing because fencing is going to get knocked around by floods and by animals and all sorts of other stuff.
- Mr DUNHAM:** By these buffalo.
- Mr SAWYER:** If that is the best case scenario, it is still a hell of a lot better than what we are in for now.
- Mr DUNHAM:** I am not saying, all I am saying is that the people that use the word eradication, I reckon that is supreme optimism. I think we can mitigate, I think we can exclude, I think we can

have quarantine areas, and I think we can have some impact on numbers, certainly around areas where there are high human population densities. But eradication was the word that was up there and I reckon that's a bloody tough call.

- Mr SAWYER:** I still reckon it's a good target.
- Mr ORCHARD:** That's the goal. That's what we're aiming for, and try to develop the techniques to do that. If you lower the bar at the start, you will never achieve your
- Mr DUNHAM:** So you think as a committee we should show the people of Darwin we're aiming for eradication.
- Madam CHAIR:** People in the Territory.
- Mr WOOD:** People of Australia, you know. I think it's an Australian problem.
- Madam CHAIR:** It is an Australian issue. We've heard today in New South Wales, South Australia, Queensland, NT and WA, states affected.
- Mr ORCHARD:** I've never heard of anyone launching an effective eradication program against cane toads in Australia, or anywhere else.
- Madam CHAIR:** Mimosa Pigra eradication program, doesn't mean there's no Mimosa Pigra out there, but it's an eradication program.
- Mr DUNHAM:** I'm just saying. If the recommendation is eradication, and one of the things you had up early there was you've got to be judged on success. That's how you'd be judged. You'd be judged on whether you've eradicated it or not.
- Mr ORCHARD:** And it's a mathematical formula that you have to meet those four conditions that I laid out as the commandments. You've got to kill them faster than they can reproduce. You have to kill them faster than they
- Mr DUNHAM:** 120,000 a year, for each toad and there's millions of them. I mean they're all up for about 10 million a year. If we can kill that many we can get in front of them.
- Mr ORCHARD:** If you can kill 90% of the females over a given region, you can start knocking them back. You can pick up the rest of the 10% with other techniques. But I think we can develop, they're not that complicated an organism They are very simple.
- Well, they are very fecund, The numbers, but it is not that difficult to outsmart the cane toad. You do not have to chase them around. You can manipulate the behaviour.

There are just a few things that motivate them and you have to try and understand how to capitalise on that.

Madam CHAIR:

Thank you very much for coming in today and submitting to our inquiry. I am sure you will be hearing from the committee.

Next we have Robin Knox, who works for the Northern Land Council in the Caring for Country Unit. Robin has given us a submission.

Ms KNOX:

My paper really just argues the case to try and do something, because of the affect on Aboriginal people, and they certainly are hurting. I will run through some. You have heard how much damage they are doing environmentally. The affect on people is enormous. Where cane toad populations are established, they have severely reduced the availability of bush foods for Aboriginal people to hunt, the lack of animals to hunt has contributed to reduced consumption of bush foods which previously contributed to a healthy diet. The loss of skills and knowledge about hunting and animals that were taught to younger generational hunting trips and these sort of things will be lost forever. I don't know if you have ever seen an Aboriginal person catch a goanna, it is just an amazing skill that none of us can do. So they are the sort of skills that, while they are not going out on hunting trips, they have been lost, and the knowledge that is normally passed on to children has been lost. Reduced mental wellbeing of Aboriginal people who are virtually connected with their land and the animals that live on it. People really get very depressed, and they have enough other problems as well. Watching the animals disappear really hurts. There are some quotes here, I don't know whether you want me to go through some of these quotes from Aboriginal women at Ngukurr.

Mr DUNHAM:

We have heard a lot of them ourselves.

Ms KNOX:

Yes, you went to Borroloola?

Madam CHAIR:

Yes. And Jabiru.

Ms KNOX:

Well I will not read through all those you can see them for yourselves, finding a dead or some you know in billabongs, cane toads have taken over fresh water crab holes, there are so many detrimental effects. The older people worry about cane toads, they know what it has done to our land, things we used to have. Everyday use is not there anymore. I think that is the, it is changing the lifestyle yet again, another very negative influence. You know, to about sewerage down drains being blocked, things like this, so even in the communities, just infrastructure damage.

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- Mr DUNHAM:** I was interested, they mentioned geese there and there is a study as you probably know at Fogg Dam where the impact is likely to be on the snakes but not the geese is what we heard today, so I was interested that the women are finding that geese, they don't sustain themselves off, are mostly vegetarian, they are being killed.
- Ms KNOX:** Yes well that is it. This is a comment the women have said, I mean with all of these it would be lovely to have a look and talk to them about what they have found but yes that is what the scientists have found, that they are not dying. Sometimes the language, English being their second language, they may be using geese in a general term for perhaps another bird too, that is all I can say about that yes. I can not answer all the science questions. I think that the scientists will have given you a lot of that background.
- Mr DUNHAM:** I was more curious than
- Ms KNOX:** But no it is interesting and I can double check that fact, I will be interested when I see the women.
- Mr DUNHAM:** Water chestnuts too I was interested, bush potato.
- Ms KNOX:** Yes, bush potato and chestnuts, things we dig from ground, they are not healthy too. This is where I was, as a scientist, some of these things would be interesting for a scientist to work with and it is more of this general depression they feel about having cane toads, they feel that everything is getting damaged and these facts may be absolutely right or they may be interpretations so I think, working with Aboriginal people on any eradication would be absolutely essential and they already have so much knowledge, you have been talking about how high do cane toads jump. Now it would be interesting to be with Aboriginal people and put that question to them because especially here when they talk about some of the young children playing, I mean, I am sure the kids could tell us really the highest they have seen jump, you know and that sort of thing, I quote here 30cm I heard from a Queenslander talking about it. Now whether that is accurate for the front line of cane toads which the bigger ones seem to be pushing forward, we do not know know, experiments have been done here but the experiments the kids do playing is probably as accurate an answer you are going to get.
- Mr WOOD:** Sometimes you get the women, I have got some personal experience telling stories, not necessarily telling stories they are passing on like, it is a bit like the gossip chain and things develop.
- Ms KNOX:** Yes
- Madam CHAIR:** Chinese whispers?
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- Mr WOOD:** That is it, yes. I mean, it does happen and sometimes they may be applying something that has happened to the cane toads when maybe it was something else.
- Ms KNOX:** Yes that is right. I accept that when they say geese, they mean another bird too.
- Mr WOOD:** It may be, that is the other thing, it may even could be.
- Ms KNOX:** I find mostly everything they say is absolutely accurate actually which is interesting, scientists
- Mr WOOD:** The ideal would be for you, if you are speaking to them and they did find some geese that were dead or pelicans, see if they could be brought in for investigation. There will be something inside them.
- Ms KNOX:** Yes, and this is where this network of ranger programs can be so useful to a project linking in with all of these networking because you have got a massive resource out there, just a matter of connecting in with it.
- Mr WOOD:** Have you met that ranger at Jabiru, that lady there who was dissecting cane toads
- Ms KNOX:** Thelma.
- Mr WOOD:** yeah, to find out what they ate and something like that coming into a place like, she might be interested in opening up those animals and seeing what they've been eating.
- Ms KNOX:** Yes.
- Madam CHAIR:** We certainly received evidence in Jabiru and Borroloola that from the local indigenous people were more aware to literally locate and be very useful at the survey level as well, locate toads, the first cane toads spotted at Kakadu was by one of the traditional owners, literally they would know their land better and more acute with their eyesight in noticing differences.
- Ms KNOX:** Mmm. That is right. Yes, and they will know where they are hiding and they certainly do attract under lights but then we've been to very remote areas that Aboriginal peopleCherie talks here about and we were pretty disappointed to find them way up there where, nobody had been up there for 15 or 18 years since anybody had driven there, somebody had gone in, in a helicopter for a land claim about ten years before, eight years before but nobody had driven to that country and yet the cane toads were
- Mr WOOD:** Where is Walpurni?
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- Ms KNOX:** It is north, it is about 66 kilometres north west of Ngukurr.
- Mr WOOD:** That is up in here somewhere.
- Ms KNOX:** Yes, north west.
- Mr WOOD:** North west, so it is inland.
- Ms KNOX:** I was down there about August, July last year and cane toads were there.
- Madam CHAIR:** So you have got good communication networks through your rangers obviously?
- Ms KNOX:** Yes. Our unit is very over stretched and this came out in the recent quoll project where, we are very, very keen to offer support and assistance to any of these projects but we are only a small number of people and perhaps we've been a casualty of our own success because everybody comes to us to help things happen and this, I just had a talk to Terry Monee who worked with Parks and Wildlife on the quoll project before I came here and we knew we were very busy at that time with all our own projects but we did say we would help, now he was hoping it would take maybe 10% of his time but it actually ended up taking 80% of his time because it was the project based in an area where there were no, we didn't have an established ranger network or a co-ordinator working out there and he says if we do want to keep them off island, we do want to focus on that as a quarantine area, cane toads free area to, you know, to base a co-ordinator or to employ and indigenous person or bring somebody to work with them, but Galiwinku is really essential, he sees that because that area we haven't yet established a good strong ranger group.
- On the map here, as I have said, some of these groups are strong and well established, others are really just fledgling groups, that we have contacts but they are just trying to get started. I mean for instance, thethe women at Ngukurr particularly strong, they do not have a, I work directly with the indigenous women down there trying to keep in contact with them, they do not have a facilitator working with them but some other areas do have facilitators working around a larger area. But we do not have anybody based over near Galiwinku. So that was why Terry found it very time consuming but that idea of keeping up the islands is probably one of the strongest, the best way to have a quarantine area but I think it needs consistent work and I have spoken about that here. I have said, I did organise signs to be placed around the islands and the coastal communities, sign on barge landing and air strips, did that a few years ago, also sent in posters, like the one at the back here in offices, council offices. And people had, you had heard from people in Borroloola at that time

about how bad it was. We were very keen to do something and try and keep them off islands. It seems to have been pretty successful but like anything, I think it needs vigilance, I think it probably needs continued effort to keep in people's minds to be checking their boats and I have said here, not just indigenous people now that there are now people, tourists, fishermen are getting out all the time. Everybody has to check all the time and I think that is a message that needs to be put out everywhere, probably to white fellows but also through Imparja or Teebu Radio, I think that has ...

Mr WOOD:

There was talk today about using quarantine regulations. Do you see there might be a requirement that there is a penalty as well in place to emphasise the seriousness of it?

Ms KNOX:

With all our contracts for barges operating across, we have, there are penalty clauses in our contracts if they are landing on our land but we know there is always the legal all the time, we are trying to establish more sea ranger projects and trying to give enforcement powers of some sort, at the moment they only really have reporting powers but yes, the penalty is great but we have to stop it. I did talk with Parks and Wildlife when I did the campaign about signs to keep them off islands – what would happen if one got on the island and from work, early work they have done in Borroloola region, they said that if they did find them quickly, they felt they could go to an area and manage to poison and attract and poison cane toads and eliminate them before they were to spread say across the whole island. You know if one was noticed near a barge landing, they felt they would be able to move in with a big effort and eradicate them in a small area like that. In this paper I talk about focusing I have talked about trial quarantine areas, cane toads free areas. Now whether this idea of fencing is viable, I mean I take into the account all the possible things you mentioned and but perhaps the idea in Aboriginal communities of having certain billabongs that might be used as areas that can be fenced off in some ways, sanctuaries and they can be used as educational areas for Aboriginal people and I am sure they would work really hard to keep toads out of them if, because it would mean so much to them.

Slowing down the spread of toads westward, I mean that is perhaps something that could be worked on. If they could be just slowed down even so that they moved, they travelled at a slower pace so that perhaps we have a biological control in ten years and maybe by that stage they haven't reached Broome, you know, otherwise they probably will have. And whether that would be done with this sort of attracting them to lights and attracting – or whether you try and fence catchment areas at the top of catchments – that is where I think science, getting together and planning would be worth doing.

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- Madam CHAIR:** On the planning front, do you think the Northern Land Council would work, be willing to work probably in a peak task force position?
- Ms KNOX:** We work, all our work is collaborative with partners of all sorts and we are very keen to be involved. I suppose we are somewhat wary, as we found with the quoll project, we are only a small group of people, we would love to have a ferrel animal project officer, you know, that is something that we do not have and you quoted the donkeys, the horses, I mean, I do not think there has every really been a concerted effort to eradicate them. I mean, what happens is they might, one probably might have a shoot out, the one next door does not.
- Mr DUNHAM:** They are not as offensive either. People like them, people like horses and donkeys and cattle, they do not really like toads, so they are quite happy to have companion animals intrude on their life but I do not think they are that happy with toads.
- Ms KNOX:** No, they certainly are not happy with toads and they are very depressed about the toads. So, yes, I think that whole issue, I mean cats was brought up, there are just so many ferrel issues that we have to deal with. Toads, maybe if we could slow them and stop them so that they do not get so far westward and if scientists are going to come up with a biological control of some sort, who knows, have CSIRO reported to you on their work in that area?
- Madam CHAIR:** We are speaking to them and there are pheromone potential as well, so ...
- Ms KNOX:** So the other issue that Aboriginal people have brought up is just having to live with them. Now, the they say in their words, learn to be careful with water and these sort of campaigns I think that a lot can be done with working and whether it is done through advertisements on Imparja TV with well designed advertisements or whether it is done through community councils and I mean obviously we can go through ranger groups too, but if you are going to try to sell an idea of 'be more careful with water', the women talk about the lights, can we have different sort of lights so they do not attract toads. I mean did you see in Borroloola the millions of them under each street light?
- Mr WOOD:** We were there in the daytime.
- Madam CHAIR:** We were there in daytime.
- Ms KNOX:** Oh right, you can play football with them.
- Mr BALDWIN:** They do not attract lights, they attract insects. I have not
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- seen a light yet that has not attracted an insect, even the insect free ones, they still get the ...
- Mr WOOD:** I have seen some poisonous insects.
- Ms KNOX:** Yes.
- Madam CHAIR:** Oh they haven't found the lavender beetle?
- Mr WOOD:** Not yet, Mathew has been working on it.
- Ms KNOX:** I mean maybe what would happen if every toad that was attracted to lights was killed? At the moment nobody is really making the effort to do anything. I make the point, Parks and Wildlife say put them in your freezer, well I have never heard of an Aboriginal person doing that.
- Ms KNOX:** They have got some, I mean one lady reported to me in Bullman area, you know, they put salt on their backs but they have watched them jump into puddles and wash the salt off and with the number of leaking taps around there are usually puddles unfortunately but this is, that issue about wasted water is a whole other issue but it links to water management yes.
- Mr DUNHAM:** And habitat Did Borroloola women, I've just read what the Ngukurr women said, but they have virtually said, 'Well, we are used to it now, we tolerate them, we learn how to live with them'. 'Do you kill them?' 'No, not really.' I mean I suppose it is a wave of experience that comes behind it but they do not claim to be out hunting for them and killing them, they just learn how to roll over ...
- Ms KNOX:** I mean they have been told more or less, well you can not do anything about them. I mean people, as they have come in the foyers, I have been in NLC, people have asked me and I in a very depressed feeling say look, I do not know what we can do, nobody has got an answer and they talk about the experts, go to the experts, they have the knowledge and they can do something about those cane toads. The ranger women can talk to the experts, the scientists. I mean the trouble is, we, and it comes up every year at our ranger conferences, our women land management conference, I think they are like that because we are the same because we are saying, you know, we have not got an answer for you, we are really sorry, it is sort of a dilemma and that ...
- Madam CHAIR:** But the Borroloola women said that, they talked about the sorrow, they talked about how their food sources of the goanna, the blue tongue lizard and they said also the barramundi had gone and had not come back.
- Ms KNOX:** Mm. That is right. I mean used to feel that the
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populations would return in time. Well at Borrooloola it is what, ten years now or something?

Mr DUNHAM: They have seen little goannas again.

Ms KNOX: Yeah.

Madam CHAIR: Yeah, not the big ones.

Mr DUNHAM: Well, big ones would be ten years old.

Ms KNOX: But then, I know we are concerned about certain species becoming extinct before they have a chance to come back, goanna is a pretty big animal compared to any of the smaller things like the frogs and other things.

Mr BALDWIN: In any awareness campaign, which is something that needs to be done for at least this part of the Territory, the top end part of the Territory urban wise, obviously there is a big need for communities out bush to have a similar campaign that would be slanted a little bit differently because you talk about a lot of the same issues but as far as what wildlife, what is going to happen there and all that sort of thing, do you think that is worth doing or do you think a generic campaign for everyone is going to be sufficient? Because there are things like, in remote areas, it is a bit like your brochure at the back of the lift at the thing there that if they see a toad on an island, ring that number, you know, I mean that is going to be a very important message to get right across the coastal parts of Arnhem Land and the west as the toad approaches.

Ms KNOX: Well it is going to be a very important message to get on the islands but I think the people on the mainland are more or less going to say, well maybe in the west they won't have but they are going to say, 'Well, nobody is doing anything about it, what can we do, why bother ringing the number'. Now on the islands they will because they know that

Mr BALDWIN: Yes, except that we know that Territorians, both indigenous and non-indigenous are very, very mobile, particularly Aboriginal people on coastal communities and what have you, either by Toyota or by boat. So the island issue is going to be very important in terms of educating people to properly check that boat, not just sort of a sign there, it has got to be more of a campaign to change the attitudes.

Ms KNOX: I think, yes, I mean Aboriginal people are incredibly observant, I mean it is probably the white fellows who are not going to be so observant but I just think yes, it is a constant thing that we will have to just keep up and like I said because tourists, fishermen, everybody, new people coming to the area yes, to really be vigilant and whether the

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- big stick with the fine is going to ...
- Mr BALDWIN:** Most people do the right thing if they know what the right thing is and what they should be doing.
- Ms KNOX:** Yeah, the right thing is, that is right but
- Mr BALDWIN:** The point being is that the campaign for teaching people what the right thing is, is going to be an urgent thing to do for those areas not affected, right? For Katherine, Borrooloola it probably does not matter but for up here ...
- Ms KNOX:** Arnhem Land, they are all in the headwaters of all those rivers already, the tadpoles are already floating down. Yes, just, I think
- Mr BALDWIN:** Yes that is my point. There is all those little aircrafts flying out to outstations, you know how mobile they are, I mean, so that message is a slightly different message than the one you would deliver her into urban Darwin, isn't it?
- Ms KNOX:** Yes. That is right.
- Mr BALDWIN:** So that message is a slightly different message than the one you would deliver here into urban Darwin, is it not?
- Ms KNOX:** Yes, yes. And what are we going to deliver to urban Darwin? I mean, once they are here...
- Mr BALDWIN:** Yes, pets and picking them up and handling them, how to kill them, all that sort of thing.
- Mr BALDWIN:** Fencing barriers. I mean, barriers is - a lot of those generic things will go across. Any campaign will, remote or urban, but I just see a note for a slightly different bent on the campaign out into the communities in that, because of the mobility and because of the last sanctuary needing protection - that is the offshore islands - that is something we should focus on.
- Ms KNOX:** Yes. Look, I definitely think very seriously focus on the offshore island, the people...
- Mr BALDWIN:** And the other part, from what you are saying, and from what I have read in your submission is, that if there was some way of at least formally raising the knowledge of how to handle cane toads in whatever fashion as we move along, that we should be doing it to the ranger groups that are operating out there.
- Ms KNOX:** Yes, working with the ranger groups.
- Madam CHAIR:** Using existing networks.
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- Mr BALDWIN:** Yes, just delivering that info to them, because people are turning to them in these areas and saying, "Okay, what do we do?"
- Madam CHAIR:** 'What do we do? How do we do it?'
- Mr BALDWIN:** Who knows?
- Ms KNOX:** I suppose the reality of the ranger groups is that
- Madam CHAIR:** But do not burden them.
- Ms KNOX:** you might have 10 or 20 but you have got a community of 2000 in Maningrida or something, so - they certainly are very good. If you wanted to start doing actions and trapping or something like that, they will be a fantastic resource. I think, you know, through all channels, not just ranger groups though, is important.
- Mr BALDWIN:** Yes, that is right.
- Ms KNOX:** But I think television and radio, messages, schools...
- Madam CHAIR:** Someone suggested a video.
- Ms KNOX:** Because I remember, I
- Mr BALDWIN:** For BRACS, put it on the BRACS system through all the communities.
- Ms KNOX:** Yes, I borrowed videos from Parks and Wildlife a few years ago when I doing some People, Aboriginal people, they really want information and knowledge, so they would love to know those answers about, 'How did they get here?', and a few facts, and the facts that we are thinking about, trying to attract the females to stop them. You know, these sort of messages. If Aboriginal people knew there was something they could do, that would help them to be less disempowered.
- Mr DUNHAM:** The same with the northern suburbs. You cannot bullshit them. You cannot say, 'Go out and catch 10 every night and we'll fix it up', because it is just not going to happen.
- Ms KNOX:** Yes. But we can say, 'If you have got a pond to take the eggs. The eggs look like this, the strings of eggs and black dots. Take them out'. You know, Aboriginal people...
- If you went into communities and councils and said, 'Look, seriously' - I mean, it is going to help the councils in other ways and not wasting a massive amount of waters, you know. But, you know, 'Don't allow puddles, to sit. Go around and fix all your taps', you know, like these sort of messages even. It would help improve their lifestyle. I
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mean - don't look at me and He said, 'Oh, yeah, we need a plumber in this community'. Yes, those sort of activities, to make people feel they are doing something.

Madam CHAIR: Will it help lift the depression too, do you think?

Ms KNOX: Yes, I think if people thought they could do something, something that was right. Instead of us all saying, 'Well, look, nobody can tell us what to do. We haven't got any answers for you'. What do you do? Do you go out and spray them with Domestos? And use up 20 bottles of Domestos a day and you cannot afford to feed your family anyway, so why are you buying more bottles of Domestos.

Mr DUNHAM: It goes a long way.

Mr WOOD: There might be little things

Mr DUNHAM: One bottle of Domestos will last you a month.

Mr WOOD: There might be little things. If dripping taps were a problem, it might be a time to change the style of tap, the type of tap, because the taps we use will always leak. They are the ones with the valve. Whereas, if you use the ball valve type, they do not normally leak. This is the normal type of tap we use right throughout the Territory. They always leak. On Bathurst Island they always leak. But there are other types of taps that will not. It just may be a simple thing. We just do not use those sorts of taps anymore. When they are leaking we replace them.

Ms KNOX: That is right, yes.

Mr WOOD: The ones with the handle. It just goes like that.

Ms KNOX: That is the one that is leaking at Ngukurr.

Mr WOOD: That type?

Ms KNOX: Yes.

Mr WOOD: Just throw it away and put in a brand new one. You do not repair them.

Ms KNOX: I see. Yes. Well, I mean, even that information, I mean, yes, it is something that

Mr WOOD: You do not have to reset and put a value in them, so it makes it simple.

Ms KNOX: Yes. It had better be fixed by the time I get there next time or I will take one with me. But those sort of - I mean, just those education things that people - and, yes, if we want people to kill them around like - I mean, the millions of that

stand around every street light, you know, well, do we issue whatever the best poison that Parks and Wildlife tell us to give them a squirt of? You know, do we issue it to people, so they can actually do it? I mean

Madam CHAIR: Parks and Wildlife.

Mr DUNHAM: It is still toxic and by then they will be putrid.

Mr WOOD: Liquid nitrogen.

Madam CHAIR: They do have to be collected. That is the advice from file. They are still toxic after death. They do have to be collected carefully.

Ms KNOX: But even to kill them, what - you know, do people – people do not really go out there and pick them up alive, I do not think.

Mr DUNHAM: We are only listening for advice. We cannot do it.

Ms KNOX: Yes. Yes, that is right. But that is not for me, again. I go to the experts them. any other - you know, just that fact that Aboriginals are living with the consequence of the cane toad invasion, the enormous knowledge of the toad's habitat and habit - the behaviour and habitat - habits. If any action results from this inquiry Aboriginal people living on the land can, obviously, contribute a great deal of knowledge and experience of living with cane toads. Through the Aboriginal ranger network there is an established group of environmental experts. Some of them have been interested in working on actions that make quarantine areas or attempt to slow down the movement of cane toads to their areas. So there are the groups. As I have said, some groups are well established, some are really struggling on.

Mr DUNHAM: I like the way you have got two in Anidilyakwa in there too.

Ms KNOX: Sorry?

Mr DUNHAM: I like the way you have got the two in Anidilyakwa in there in your sphere of influence.

Ms KNOX: No, no. We have got them as a

Mr DUNHAM: I thought

Ms KNOX: They are marked as a different – not our - yes. But the reason we actually - because of native title.

Mr DUNHAM: It is all right.

Mr WOOD: It is all the seas up to the

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- Ms KNOX:** We are not going to
- Mr WOOD:** That is an external boundary.
- Ms KNOX:** exclude them from our successful campaigns when we want to help them. I do invite them to the women's land management conference. As yet they have not come. But, yes. But, yes. No, it is because of our native - particularly the native title; that's why that - and sea rangers are those areas too. Yes, they talk to us. What else have I said? Just - yes. The simple fact that indigenous people - you, hopefully, all here do value them for their - they are watching our country. Quarantine are using them a lot and working with Aboriginal groups a lot now. The involvement of Dimarru(?) rangers in controlling the East Arnhem Land is an example of a controlled program that is attacking the potentially disastrous pest before it spreads. That has been very successful, and that will probably lead to complete eradication; that is what they are thinking at the moment.
- I suppose, as far as our unit goes, yes, we are only a small unit trying to service that massive area and we are really struggling. Our unit seems to be the most successful way of relating and helping indigenous people on their land, but we just are desperately under-resourced, and the whole feral issue is something that we would love to tackle but is struggling to tackle in - and ferals, everything from cats to donkeys to horses. Individual ranger groups are trying to work on it. We are running training programs for shootings and those who are good will be going on to doing helicopter training, shooting from helicopters, this sort of thing. But, yes, if - the position like a feral animal officer would be a massive assistance - the project officer would be a massive assistance for working with our ranger groups. And that, you know - then with our specialist cane toad program as well or part of - I do not know - but - any other questions? You have had a long day, I am sure.
- Mr WOOD:** If only you could eat cane toads.
- Mr DUNHAM:** I reckon you can.
- Madam CHAIR:** They are too toxic.
- Mr WOOD:** Is it not part of the reason that buffaloes go out in the Arnhem Land and some traditional owners did not want them eradicated?
- Ms KNOX:** In some areas they - yes. But, well - but, yes.
- Ms KNOX:** But it was not continuous. Like all these things, some - one - our programs are started, a big spurt for a year or two and then what is
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- Mr DUNHAM:** That was to eradicate the disease not the buffalo.
- Ms KNOX:** Yes. Well, that is right, yes. Yes, yes.
- Mr WOOD(?):** It did a pretty good job on the buffalo.
- Ms KNOX:** Yes, quite successful.
- Madam CHAIR:** Robin, on behalf of the members of the committee I would like to sincerely thank you for your very informative and comprehensive submission into our inquiry. We wish you all the best of luck with your Caring for Country Program. That has already done some great things. We look forward to incorporating some of your suggestions into our recommendations.
- Ms KNOX:** Thank you. Well, we will look forward to seeing your report. I am glad you have actually done something about this. It - yes. I will be reporting to the Women's Conference in two weeks' time, that - because they have been
- Madam CHAIR:** I am happy to. I am happy to, Robin, to come out and talk to people.
- Mr DUNHAM:** There you. There is your number.
- Ms KNOX:** Yes, I know. Well, the problem is, it is has been in your budget I did not want to invite - I found out that none of you can make it, which is - next year I am going to find out when you people are available so you can come. But - I mean, the simple fact that the government is talking about it, I really hope something will come out of this, because people are really hurting and - yes. Maybe the Borroloola people, who have had it for a long time, are saying, you know, 'We can't do anything', but...
- Madam CHAIR:** They would love to be told what they could do.
- Ms KNOX:** Yes, they would love to be told.
- Madam CHAIR:** They women I spoke to said, 'We want to do something too'.
- Ms KNOX:** Yes. Even if it is not going to complete eradicate it, it will reduce - I mean, people feel much better to do something than stand there and cry about it, and I think the fact that people are going hunting less is really horrific. Their mental wellbeing, everything is - you know, if they do not go hunting, they are going to end up sitting around and playing cards and gambling all day and the men will go off drinking or something. So it is - on the social level, I think it is really important that positive messages be given. Thank you very much.

Madam CHAIR: Thank you.

Mr WOOD: Thanks, Robin.

Madam CHAIR: I formally close the Darwin public hearing into the cane toad incursion into the Northern Territory.

TRANSCRIPT NO. 5

Litchfield Public Hearing
Monday, 19 May 2003**PRESENT:**

Committee: Ms Delia Lawrie, MLA (Chair)
Mr Tim Baldwin, MLA
Mr Matthew Bonson, MLA
Mr Stephen Dunham, MLA
Mr Elliot McAdam, MLA
Mr Gerry Wood, MLA

Secretariat: Mr Rick Gray
Ms Maria Viegas

Attended by: Ms Denise Batten
Mr Herb Backers
Mrs Barb Backers
Mr Peter Visentin
Ms Mary Walshe

Note: *This transcript is a verbatim, edited proof of the proceedings.*

Madam CHAIR:

We might get started. Apologies to be made, I got delayed at the office. My name is Delia Lawrie, I am the Chair of the Environment and Sustainable Development Committee that is currently conducting an inquiry into the incursion of cane toads into the Northern Territory. I am the member for Karama. With me are fellow committee members, Gerry Wood, as you all know, member for Nelson; Matthew Bonson, member for Millner; Stephen Dunham, member for Drysdale; and Tim Baldwin, member for the Daly. With us as well here today are the committee secretary, Rick Ray, and his very able assistant Maria.

Thank you for all coming. The inquiry has been listening to the impacts of the cane toad on the Northern Territory, both ecologically, socially, culturally, as well as looking at any method that people believe government can do to tackle the cane toad incursion. We have had hearings in Borroloola, Katherine, Jabiru, Darwin and Palmerston and we have heard from a range of expert scientists from throughout Australia, and we welcome your attendance here this evening. Who wants to kick off with a submission to the inquiry?.....

Ms WALSHE:

Pity we didn't get all the other briefings.

Madam CHAIR:

We have gathered a lot of information too, so it can be a combination of, as residents of the rural area telling us the

issues that you perceive or understand and the knowledge you have and also what you would like, in terms of the information that we can provide, because the committee has received a lot of information to date.

Ms WALSH: Could we have copies of all that? I think that is what we generally are very interested in.

Madam CHAIR: The process would be, as a committee, we are in the gathering of information stage, and we get together and we create a report, that report goes to parliament, and that is a very public document. So there will be a great deal of information forthcoming.

Mr BONSON: I suppose one of the things that we have found out mostly, is that people in the Territory, except for where the cane toads have actually come, in Katherine, Borroloola, etc., people are really unaware that Okay, it's coming but it's in the background, you know, we will deal with it when it comes and it won't be a great big impact. And what we are actually finding is that it is going to change people's lifestyles.

Mr WOOD: I suppose being the rural area, what this committee can do is recommend various ways of at least trying to maybe control cane toads on your block, especially if you have got other animals. You may not be able to fence your entire five acres, it might be fairly expensive or impractical, but I think perhaps we can disseminate information on how to at least reduce the number of cane toads on your block if you can't completely get rid of them.

Ms BACKERS: So they don't jump, do they? So you can put a

Mr DUNHAM: They walk. They walk like that.

Ms BACKERS: Yeah. So if you are talking fencing, how big, high, does the fence have to be?

Madam CHAIR: We expect to have some recommendations. The experts have said there has been no definitive study done on the height. So we have as expert as evidence, as you can receive, and we will base our recommendations on their expert guesstimates. But you are essentially looking at about that high.

Mr DUNHAM: It is 300 or more metres.

Mr BACKERS: Yeah but they can climb, can't they?

Ms WALSH: No.

Mr DUNHAM: Yeah, a little bit.

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- Mr BALDWIN:** They don't have the suckers like frogs so they don't climb right up the walls and things.
- Mr DUNHAM:** But a little fence like that, they can get on their hind legs and reach.
- Madam CHAIR:** So part of the recommendation will definitely go to the height of fencing.
- Mr BONSON:** I suppose what has come out from our hearings is the fact that you know, even though they have been in Australia for several years, there is not actually giving us scientific evidence about what animals they are going to affect, how to stop them, what to sort of type solution etc. I suppose there has been evidence about the biological backbone of the cane toad, I suppose that is quite a large amount of work that has been done there. But just a simple example is, that how high should a toad barrier be, is actually unknown.
- Madam CHAIR:** It hasn't been tested.
- Mr BACKERS:** What about Queensland, what did they do there?
- Mr DUNHAM:** Nothing. And so your problem, Herb. You have got a waterway. They lay 30,000 eggs every time, average. And they will come straight down that waterway behind your place.
- Mr BACKERS:** I was in Kakadu about a month and a half ago, when *60 Minutes* was there. And one of the scientists there was A cane toad and he did an incision on the back and opened it up and there were about 30,000 eggs in the back of this female cane toad, so...
- Mr DUNHAM:** So you have got a waterway problem. You have got a problem with your vehicles coming in through the front, so even if you had a grid or whatever, you still need to have some barrier at the front, which means getting in and out of your car to open the gate or whatever. And every time you move machinery, motorcars, swags, boats, they're not all big like that cup; there are millions of little tiny ones. So to keep them out is no mean feat.
- Mr BACKERS:** What effect does that have on the poultry?
- Mr DUNHAM:** They are toxic at all life stages. We have got some material actually that says that the metamorphs, the little ones, are not toxic to chickens, but we talked to a scientist and he reckons they are. Eggs, metamorphs...
- Ms BACKERS:** Well, I get all my chooks and ducks and things from Queensland, from the Sunshine Coast, and she has got free range ducks and she reckons that when they are tiny, really,
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the ducks gobble them up and they don't have a problem, and she has not lost anything.

Mr WOOD: We have got to chase up a lot of that information.

Madam CHAIR: There is conflicting information because of the lack of scientific research, so certainly, CSIRO are doing biological research at the moment, which goes to finding, they have identified how to inject into the tadpole to make it infertile, and they are now looking for the agent that will carry that through the species without a detrimental impact on other amphibians. So there is certainly hope there, but that is very long term. That is, you are looking at anything from five to 10 years before you have something that can actually be released into the natural environment if, in fact, that can ever be found. There have been suggestions from scientists that you could put money into research on pheromones and create an attractant for females. We have received evidence that they gather at lights.

Ms BACKERS: Yep, street lights through the rural area?

Madam CHAIR: So they are at if you like, collection points, that they get into ditches and can't get out again, so there is discussion about whether people want to create traps around areas of, if you like, lifestyle, certainly for feeding areas.

Ms WALSHE: So when you say, some evidence, like with the pits, for example; what are you talking, like, scientific evidence, or are you just talking anecdotal?

Madam CHAIR: It is anecdotal.

Mr WOOD: Adrail have found out, Adrail are the ones that had the lights over their dams, over the water, and they all toppled in and couldn't get out. It would be difficult pumping water, is the only problem.

Mr BATTEN: From the Landcare point of view, like, I am the rural Landcare coordinator, so I do Litchfield and Coomalie. And within Litchfield and Coomalie we have 11 Landcare groups. Now, every one of those 11 groups is focused on some sort of a watercourse, whether it be a lagoon, a creek, or whatever. That is their major concern. Of course, what is going to happen, like, what is the impact on these watercourses from these cane toads. So a couple of the groups are now looking at potential experiments that they can do, and also the associated funding for those potential experiments. Something like you know, if we can do a series of pit traps or something, that we can remove the other animals, if we can work it so that it is specific to the cane toad, so things like that are certainly what the groups are interested in.

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- Mr DUNHAM:** There is literature on that. In Borroloola, they went to a small billabong and they had an exclusion fence, and they removed the eggs, tadpoles, and they couldn't get rid of them. So you will catch them, and you will probably catch thousands, but what you have got to remember is, there is millions. So all you will be doing really is harvesting some animals and you might have a very efficient trap; the swimming pool at Borroloola is reputed to have had 30 in every night, but there are millions in Borroloola. So it really depends whether you just want to catch cane toads, or get rid of them, and you want to get rid of them.
- Mr BATTEN:** Certainly around those watercourses, you need to control them.
- Mr WOOD:** There was that case in that Queensland national park, where that ranger worked for years and years, and he was just continuously working collecting cane toads, and he was able to keep them, what I am saying now, he kept them at such low numbers. But when he died or when he moved on, chung! Stuffed.
- Mr BATTEN:** Yeah, but I mean, the way landcare groups work, you could do that quite effectively.
- Madam CHAIR:** Certainly the submission from Frogwatch has been that with localised action, groups such as Landcare where you choose certain waterways, and have a lot of effort in terms of going down and gathering the eggs, particularly because it is in a long gel, and it is easy to identify; you can twirl it up in a twig so with a collective action, you can remove tens of thousands of eggs that if you don't remove them, they become cane toads. So the submission from Frogwatch is very strong towards having your localised action groups that, whilst this stuff is quite brief, your chipping away at a mountain, and there are millions more in the front, there has been the suggestion that localised action can protect some local areas, or keep the impact on other species minimal.
- Mr BONSON:** And the other good evidence is when they first move into an area they swarm, then the numbers drop down. So maybe that might be, I am trying to think and I suppose, just to mention what type of effects on waterways; any frog predator, toad predator, that eats it. You know, snakes, goannas, bluetongues. We had evidence at Borroloola that people haven't seen any bluetongues and goannas regularly since 1988, when the up there, and where they would go hunting and catch one every 20 mins now they can go the whole day without seeing one goanna or bluetongue. So you know, anything that is going to eat them...
- Mr BALDWIN:** It is not just the frogs, it is the eggs and it is the marine life in the billabong.
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Mr DUNHAM: The bloke from Frogwatch in Katherine, he is on Maud Creek, and the river came down there in little puddles, and he said he put his hand in like that and he couldn't see just a couple of inches under because of the tadpoles. It dried out and he said they were a mass like that, like 5 m and that thick of tadpoles. Now, they all died, and good...

Ms BATTEN: Sure I understand that. I grew up with cane toads. I grew up in South East Queensland. I understand that. I suppose what I am getting at is what do you guys as the Committee actually, after you have collected all this information I assume you then go back to government with some sort of recommendation

Madam CHAIR: Yes that is correct, and we can not pre-empt the outcome. Certainly what we have found through the inquiry process is very strong recommendations coming from a lot of the key organisations, Environment Australia for example holds federal government funding. A lot of people are saying that there needs to be collaboration on first of all research, but also on localised action, on looking at whether there are any ecological areas that you could try and quarantine to sustain the bio-diversity of those particular areas. And given that Queensland has not done the work, clearly the focus will be on the Northern Territory nationally in terms of doing the work, and this inquiry is indicative of that intention to do some work. New South Wales has cane toads. We have heard evidence that South Australia may get cane toads down from the Murray-Darling River basin, that came from a frog expert. Certainly there is evidence that they will go across the Kimberley right back in the Territory. So we have identified Queensland, New South Wales, South Australia, West Australia, the Northern Territory and the Commonwealth as key areas that we will focus on in terms of collaborating. When you get collaboration you get the funding add-ons.

Mr BALDWIN: The other role for Landcare will probably be not only the localised action but also in assisting the public dissemination of information, so you can have a major role, all the Landcare groups can have a major role in being proactive in that area which is a charter of your own.

Ms BATTEN: Well sure, but that was what I was meaning about potential, like some of the groups, I suppose the more active groups are looking at doing some sort of experiment and something like you know the fencing. I know a couple of private people who have actually put geo-textile along their fence now. I personally do not believe that is going to do anything after growing up and living in Queensland, but if there is evidence of some sort or another that says that this may work, then fine we will pinpoint some of those areas and start doing it. I suppose another question is can the Landcare groups look

at any sort of assistance from the government to do some of those experiments in conjunction with whoever, with the bio-diversity unit or whoever else, that is something that we would like to know.

Mr BONSON: Well I suppose in summary that is, it is going to be long and the Commonwealth government and the other interested states and also the Northern Territory government as well try and make those funds available. I think there is probably going to be two avenues of attack. I suppose. One is the long term finding a simple solution if there is one out there if we can ever find it and the second one is the education for instance we have evidence that waterholes and water sources that have had cane toads come into it but people have drunk from them and got sick, animals have died, etc etc so

Madam CHAIR: Children handling them are an issue as well.

Mr BONSON: in the eyes, getting the toxin in your eyes, and there are pets and all that type of thing, so

Madam CHAIR: The advice is with pets to as quickly as possible to flush out their mouth with a hose. We heard evidence during the inquiry that that is effective. It certainly stops the death of a pet.

Mr DUNHAM: It might kill some feral cats they reckon. There are some upsides. It takes out King Browns and Death Adders. They love cockroaches so there are a few upsides.

Mr VISENTIN: It might solve our dog problem.

Ms WALSHE: Although there has been no research done allegedly in Queensland and New South Wales, little. After 70 years though, has there been major impacts. Like is it noticeable that all wildlife has been wiped out. Like, I guess that is why people are a little bit laid back in that those states you do not hear anything about their wildlife.

Madam CHAIR: There is no substantial base-line data to categorically say that is the impact. So apparently what is occurring in Kakadu for example, if they have identified thewhere they doing that base-line scientific survey now, and people are saying that that base-line data collection will be the first true scientific indication of the type of impact. Early recommendations coming out of Kakadu are there is significant impact on many species.

Mr DUNHAM: But I asked Environment Australia today if they could name any species that had gone extinct and they could not. So, there is definitely an impact there is no doubt about that, and there is definitely an impact on numbers, and there is definitely some high risk groups, probably the Northern

Quoll here is up the top, and some of the poisonous snakes and some of the goannas, but enough of that, but Environment Australia and others have yet to demonstrate that species have gone extinct from it. So, and we have evidence from a bloke, because we were talking about how to despatch them, he put a thing up on his website about spraying with Dettol or something, and he virtually got reams of electronic hate mail, because people have grown to like them. The Queenslanders see it as something that was uniquely Queensland, and as ugly and offensive as they are they quite like the idea that it was something they could put their label on, and so that is a whole other series about how you despatch them, and whether you do what the scientists say and that is pick them up and stick them in your freezer or whether you do like Tim does and spray them with bloody Dettol.

Ms WALSH: There was another one on the stink beetle, a chemical out of the stink beetle and that sort of had a little entry in the paper one day and never heard any more.

Mr DUNHAM: Because it is not right, it is wrong. But still it is good news.

Mr BONSON: Well I disagree. I am actually one of these guys hanging on to the stink beetle theory, and what I mean by that is that

Ms WALSH: Me too, yeah. There has to be some use for the mongrels.

Madam CHAIR: in Kakadu, they opened up a live cane toad, they caught a live cane toad and opened it up and found about 27 stink beetles in its gut. So that would tend to indicate...

Mr BALDWIN: There has been no scientific work.

Mr BONSON: No, and then we heard from Frogwatch which was a very good argument, that at different times of the year the toxicity of the stink bug might be different. So at different times of year, and we also heard anecdotal evidence from property owners there that the cane toads, the numbers have decreased in Katherine and also that the numbers of stink beetles have decreased. Now whether that

Mr BALDWIN: As of last night there are plenty of stink beetles and the cane toads are in smaller numbers than last year because the way it's come through and there is lots of

Mr DUNHAM: Anecdotally, our Secretary here who lived in New Guinea reckons that you could walk around ankle deep in New Guinea, stink beetles and the cane toads just wolf them down. Love them. It is like ice cream.

Ms WALSH: But they might not be as good as our ones in the Northern Territory.

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- Ms WALSH:** We have good strong ones
- Madam CHAIR:** But I guess the focus of the inquiry has been to find out what is known, where the gaps of knowledge exist, what are practical implementations that the community, government, scientists and others can do, and how there could be collaboration to actually tackle this head on for a change, instead of acceptance, and
- Mr WOOD:** There might be some bright people in the rural area that can come up with some ideas
- Ms WALSH:** There was another point too that was raised. I mean discussions I have had with people and it was whether they disperse from waterways and can sustain away from waterways or is it just to waterways.
- Mr DUNHAM:** On the Barkly in that really hard black soil country, it had been burnt over, there was no foliage and where they had the cracks they were just chock a block full of them. In fact their native habitat is plains. They prefer this sort of country than heavy grass and heavy
- Madam CHAIR:** They do not like dense foliage.
- Mr DUNHAM:** But there are fossils of this beast that is exactly the same as this one there, so they have been around a long, long time. They are very robust. All the things that can attack them in Venezuela where they come from kill our native frogs, so while Mattie and Delia are saying we want to take it head on and no acceptance, the fact is we are going to have to accept that these bloody things are here and we have to live with them. And if anybody thinks we can hold them out of Darwin, I will be very interested to see how.
- Mr BONSON:** I am of the other camp. Seventy years this animal being in Australia has not been scientific work done and that is what has been coming from the and people around Australia seem to want to give us as much advice as they can and there seems to be little interest from all the scientists involved and environmental groups to tackle this beast. I suppose to put it to me it is obvious that Queensland gave up a long time ago, and my feeling is that it was seen in the past that it was inevitable in the Northern Territory. Fortunately the amount of evidence I have heard is going to have an effect on our life styles and all, and the animals that are natural to Australia , I just can not accept it, I can not quite accept it and there have even been submissions that this could affect places like Kakadu National Park and the World Heritage. And for me to roll over is not a good thing. Yes, they might win the war but we have just got to keep them out the way.
- Madam CHAIR:** We did hear, it is interesting that the United States scientist
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is doing studies in Kakadu. Certainly he had finished his submission was saying to me something to the effect of Australians were well known throughout the wars as never giving up the fight, and I urge you to take that attitude with cane toads. Certainly a Canadian scientist who spoke to us at some length has been working on frog programme called Worldwide Fun also had the example of a province in Canada, British Columbia that had rat and the province said we are not going to accept this rat, we are going to get rid of it and they did. And it took them years, over a decade, but they eradicated the rat, and he is a frog expert and he said rats are far smarter than cane toads. There are things we know about cane toads that he believed would help battle such as their attraction to lights, such as the movement through waterways as where they travel through groves etcetera. It was interesting that the foreign scientific experts we heard from were very much urging us to take up the battle, whether that is for our personal funding reasons who knows, we could have an argument about that.

Ms WALSH: What is their research behind the wave theory/ Why don't they stay and say

Mr DUNHAM: Tucker. See all that up there on the board.

Ms WALSH: Purely that.

Mr DUNHAM: They are coming to the land of milk and honey. There are food sources everywhere, the native animals and the crows and the whistling kites know how to flip them and go through the guts, but until they learn that, until goannas learn avoidance and that sort of stuff, they just take them out.

Ms WALSH: Why don't they? If the food source is there, why don't you end up, why does the numbers drop? That is what I ...

Madam CHAIR: Because the front moves on.

Ms WALSH: Yeah, but why do they not keep with their 30,000 and

Mr BONSON: Yeah well the thing, it has an effect on all the animals around them. I think that basically, the scientific evidence is the food sources, they move on.

Mr WOOD: The food source probably limits their breeding.

Mr DUNHAM: That is the other thing Mary, they will eat anything. I mean they are insectivorous mainly, so that is why they are under the lights, but they have caught them with 60% herbage in their gut, so they will eat plants, animals, have been know to take on birds, small birds. They eat nearly ...

Mr BONSON: Human faeces.

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- Mr BALDWIN:** Human faeces.
- Mr DUNHAM:** Yeah they love human faeces.
- Mr WOOD:** Little lizards
- Mr DUNHAM:** Dog food.
- Madam CHAIR:** That was the interesting part of the inquiry that there is certainly a health risk because they eat faeces, so salmonella and other bacteria which is a very ...
- Mr DUNHAM:** They carry imported viruses and bugs.
- Madam CHAIR:** Very high.
- Mr BACKERS:** Why don't you kill two birds with one stone?
- Mr DUNHAM:** Say they catch 50,000 what do you do then?
- Mr BACKERS:** That is something isn't it?
- Mr BACKERS:** Each female lays how many thousands of eggs a year?
- Mr BALDWIN:** 30,000 average twice a year.
- Mr BACKERS:** If you put a bounty on them, it will give the unemployed something to do ...
- Madam CHAIR:** In the environment up here they are estimating four times a year they will lay.
- Mr DUNHAM:** They grow at 8% per annum. They have been doing that since, they only brought in 102 and half the males died, and the next year they had over 3000 of the bloody things. This is in 1935, so they have been growing at that rate ever since.
- Mr BALDWIN:** On the scientific stuff, we need to clarify there has been a lot of scientific work done in terms of studying the cane toad, and there has been some scientific work done on studying the environment, not enough on base-line data before the cane toad came and then after and all that sort of stuff. So there is reams and reams and reams and we can give you a list of references, both here in Australia it has been done and overseas. So it is quite comprehensive, but it is not conclusive. And with all of the scientific submissions that we have had from the scientists and one particularly renowned scientist who has been studying frogs in the Territory since 68, none of them so far, have offered, apart from the knowledge of some biological controls that need 10 more years work, any conclusive way of controlling these things, except the fact of physical trapping to minimise the

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- extent of damage that might be done in the local environment.
- Madam CHAIR:** Even removal to
- Mr BALDWIN:** Even with all of that background knowledge, and with today's technology, no one has got the answer yet.
- Madam CHAIR:** They say there has been no collaboration.
- Mr DUNHAM:** And they are in every country now, pretty much. The Yanks have got the same problem.
- Mr BALDWIN:** In Florida for years
- Mr DUNHAM:** There are four islands off the coast in the Gulf of Borrooloola and there are frogs on all of them, so they have swum across 10 and 15 km of salt water to get to these islands.
- Ms WALSH:** You reckon, or have they been transported somehow?
- Mr DUNHAM:** No, the fishermen gave evidence that they saw them swimming in the MacArthur, and they could have gone out on a freshwater plume, or something like that, but the scientists are totally unperturbed that they can get that far. So they are a very hardy animal.
- Mr BALDWIN:** As the frog experts said, that is why they are called *Bufo marinus*, because they swim in all sorts of water including fairly high salt content water, although they can not stand it for a long time it seems but they can tolerate it. So they are very, very hardy animals.
- Mr BONSON:** There's no doubt that they are tough critters and they are going to be hard to stop. There can be no doubt about the fact that they are going to have a major effect on our lifestyle.
- Mr BALDWIN:** I think groups like Landcare are going to be very important though, because when you say, can we recommend designs and things, there is a lot of literature around and that sort of thing, and it is going to be a case of you coming up with the answer for that local area. And that could be, you know, you do a combination of pits, the low fence that does not stop the bigger animals getting to the water, and picking up the egg plumes and all of those things. And it will be groups like Landcare that say, if you do this, this and this in this type of billabong environment, then you can lower the impact. And there will be assistance in terms of where you can go to find the literature, and then the funding is another issue, of course, as it always is, between agencies, and it will be Commonwealth included.
- Ms BATTEN:** Well they've certainly been, like somebody mentioned
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before, about getting baseline data before coming in. They have certainly been doing that with other frog species. But yeah, I agree with you, the network has a huge potential to be able to...

Ms WALSH: We need a liability protection for these little holes that are going to be dug all over the place too, please.

Mr DUNHAM: The other thing they've found is cattle hoof prints in some of that, they get in and they can't get out. So it is interesting that that does provide an ideal breeding condition but it also makes it difficult for them to get out. They have been found in the plumage of wading birds, the eggs are sticky, so it is possible for a wading bird to fly over your fence and swim in your little pond and spread them that way. I am not trying to be pessimistic, I am just saying they are bloody hard to stop.

Madam CHAIR: There are studies going on at Fogg Dam at the moment in terms of the snakes, that's CSIRO

Ms WALSH: Do pythons not, are they not affected for some reason?

Mr DUNHAM: No, they reckon some of the pythons something is very interesting about pythons...

Ms WALSH: Why the poisonous ones?

Mr DUNHAM: They don't know whether it is avoidance or capability to ingest it. There is a lady who told us her dog actually eats them, consumes them holus bolus, which is really quite surprising because most people tell you the dog will mouth them and then drop them because they are pretty noxious to taste.

Ms WALSH: Someone in the Territory?

Mr DUNHAM: Yeah, a lady in Katherine reckons her dog eats, just woofs them down

Mr BALDWIN: We breed tough dogs.

Mr WOOD: There might be other things that people can do, like I suppose you do it with mosquitoes, like you have no water lying around, no dripping taps.

Ms WALSH: Actually the amazing thing this year, though, Gerry, it was really amazing. I think with the advance of cane toad no one, one woman in the rural area even refused to clean her pool out because there were little froggies hatching, she left it for the frogs; and a lot of people this year, I think, purposefully left all their containers. And I know this year I had an invasion of little green frogs come in one night and now I have got on my kitchen sill, where there used to be only one big mongrel that scared the hell out of you, there

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- are 15 green frogs this year.
- Mr WOOD:** Well, you need to water up high because they can't climb so the toilet bowl is still safe.
- Madam CHAIR:** Exactly. So keep that local action of breeding frogs but just up your height.
- Mr BONSON:** Because the news is that in some places they are coexisting, you know. The green frog is living by the cane toad.
- Madam CHAIR:** The green tree frog is better off than frog species that
- Ms WALSH:** Okay.
- Mr BONSON:** But there is interesting stuff, like about barramundis. You know, what is going to happen to barramundis, and stuff. There is no information from Queensland whether or not it affects the fish stocks but there is anecdotal evidence that barramundi will eat the toad or the tadpole and sit it out.
- Madam CHAIR:** Yet the women in Borroloola said that they noticed less barramundi.
- Mr WOOD:** The lady in Kakadu said that, there is some traditional owners...
- Mr BALDWIN:** Yes, but every great fisherman says that too.
- Madam CHAIR:** But does the tadpole affect the species, or smaller species of fish,
- Mr BONSON:** Freshwater crocs, apparently if they swallow it in their stomach, they are alright, but if they get it caught in their throat, or you know, half chewed, then they will die. And that effect on the crocodiles.
- Ms WALSH:** Does that mean there has been a lot in the Katherine River already? Is that why that
- Mr BALDWIN:** No, in the early days there were a number that were sighted, eight roughly, and in the time since, sort of the year period, or a bit more than a year period, very few, in fact no one, could remember one in the last year, that they could say you know, cane toads, but we had eight belly up in the first week the frogs came through, that they saw. So maybe they
- Mr DUNHAM:** Some cheeky species like quolls and maybe those little crocs, I talked to a bloke in Queensland and he said that they all had foxies and Jack Russells for snakes, and he said the whole lot died when the cane toads came through. So it could be that some species that are very aggressive
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with taking on, like terriers or cheeky crocs or quolls, will be the first casualties. And the ones that are a bit sleepier and dopier or whatever might be the ones that learn to avoid them.

Mr WOOD: Dog control.

Mr BALDWIN: I have got two cross Jack Russells at home and they don't touch them. They don't go near them, they can go hopping right around the and they don't bother them yet they will chase those little marble frogs just for fun.

Madam CHAIR: They say that, the good news is that the Queensland experience has been, you can train your puppy from an early age to leave them alone. With the more mature dogs, they do have to go to the extra effort of I guess, changing a habit.

Mr DUNHAM: And their water bowl.

Madam CHAIR: Yeah. Put their water bowls up high.

Mr WOOD: A lot of rural people have fairly open houses, I mean, they are going to have to live with them in their house, or they are going to have to spend some money on screening them out. And we don't have any Queensland style houses, they say in Queensland they don't get up to the top floor. But a lot of, you go to a place and it is very open designed houses that I think, you know, like my place, you can see underneath part of it because we have got a demountable surrounded by a house. They are going to have a field day in my place if I don't lock it up.

Madam CHAIR: They say when people are camping they burrow under the tent, a meeting under the tent.

Ms BACKERS: Remember a lot of rural people keep their headlights on outside, rather than inside, so they attract

Mr WOOD: You have your open verandahs you know, where people, you go to a barbeque and that's the kind of area where they are going to come to visit.

Mr DUNHAM: I went to his place last week, and there were four there, and he just went Shshshsh with Domestos, bloody knocked all of

Mr WOOD: No, no I picked them up.

Madam CHAIR: Domestos!

Mr BALDWIN: No you didn't. What are you ashamed about. I was impressed. It knocked them off.

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- Madam CHAIR:** Did it work?
- Mr DUNHAM:** Yeah.
- Ms BACKERS:** How long did it take?
- Ms WALSH:** Domestos is worse than Dettol.
- Madam CHAIR:** It remains a very effective way of killing them?
- Mr BALDWIN:** Well, I'm pretty bad when they....
- Mr DUNHAM:** Well, that's how I am going to do it. Right, so I don't mind saying it, because that is how I am going to knock them off.
- Ms WALSH:** Dettol's cheaper
- Mr WOOD:** It's not practical.
- Mr DUNHAM:** Put a bloody toxic animal in it. That is stupid.
- Mr WOOD:** No thanks, I don't think it is going to be practical.
- Mr DUNHAM:** I think it's dangerous putting toxic animals in your fridge.
- Mr WOOD:** So do I.
- Mr BONSON:** I suppose the good news is, listening to all the scientists talking about it, they sound pretty excited that, you know, someone is interested in it, and they are hoping that there is going to be some kind of group that is going to focus on this issue, to come up with some solutions hopefully. You know, there is always, like I said, pointed out, there is always the possibility that it's too bad, you know, this is it. But the positive side of it is, I don't, I think that has probably been the attitude for a long, long time and I think that you know, we are here to investigate the other side.
- Ms BACKERS:** Like if everyone does their little bit?
- Mr WOOD:** That's right and you can reduce.
- Mr BALDWIN:** You'll have less numbers.
- Madam CHAIR:** Certainly that is the message that came out of that example of rats in British Columbia, that it took a province of everyone doing their bit, that removed the rat from that province, and they set up corrals along the border of that province where they monitor and eradicate the rat. Now, the rat exists in neighbouring provinces, but British Columbia is rat free. So as I say, there are scientists actually arguing that with a combination of research and action, and everyone doing their bit, you can have a real impact. Now, that has not been tested in the Australian
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- context.
- Mr BACKER:** Someone went to China, they had that problem with the flies over there.
- Mr DUNHAM:** There's 10 billion people, mate.
- Mr BACKER:** 100 flies a day, they had to catch.
- Mr DUNHAM:** They passed a law. They got a lot of people, we haven't got that much people out here. How many cane toads are you going to catch?
- Mr BACKERS:** Every one that gets on my property.
- Mr WOOD:** Every one, you are going to catch?
- Mr BACKERS:** Every one, that's right.
- Mr BONSON:** The other thing that was the American guy talking about the bullfrog toad. And they are using barriers to keep the bullfrog out of certain areas. And he is saying not only with the barriers but you know, people walking up and down the barriers, you know, traps, and a combination of things...
- Madam CHAIR:** Yeah, they say barriers, ditches, lights, monitoring, removal, the practical methods that would if not eradicate, minimise.
- Mr BACKERS:** They reckon they lay their eggs at a certain time of the year or just
- Mr DUNHAM:** All through. Up here, they'll lay any time they want. It is only water and temperature, and they've got, they can live from 6 degrees up to 48 or something. They are a bloody tolerant animal.
- Ms BACKERS:** So we should have all dry moats around our
- Madam CHAIR:** Lawns, your well watered lawns, they love well watered lawns.
- Mr WOOD:** I can just see those night matches at Marrara. I can see these guys flying across the lawn.
- Ms BACKERS:** Which is the ball?
- Mr BONSON:** I will put in a question I never asked, now, it's one from Queensland somewhere and I wanted to ask you but I completely forgot, you know, what is going to happen to all these ovals, playing cricket?
- Madam CHAIR:** This is being recorded for Hansard purposes I might advise people.
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- Mr BONSON:** in Cairns on Christmas Day people were telling me, you know, because I was interested in cane toads, and they were saying oh, there is hardly any cane toads, but they say it is out of dry, wet...
- Ms BATTEN:** Well, realistically, like, when I go home now, when I go back to Queensland now, there is nowhere near the number of cane toads or the size that they were when I was a kid. I mean, we used to do really gruesome things to those animals.
- Ms WALSH:** All the stuffed things, you don't see them as much as you used to.
- Ms BATTEN:** No, that's right.
- Madam CHAIR:** In terms of the public submissions, that there needs to be literature targeted to children, because of the danger of the handling, and
- Ms BACKERS:** And that brochure that you have got where you've got the different, the things that look similar.
- Madam CHAIR:** Yes.
- Mr DUNHAM:** Yes, that has gone out of print, but they are going to do another one.
- Madam CHAIR:** Yes, there needs to be an updated version of that, because there is new information since that one was produced.
- Mr DUNHAM:** And it has got those lines saying Darwin 2008, I think, or something.
- Madam CHAIR:** ... 2004. And also we saw literature in Kakadu that was very useful, so we will be passing that on basically to the departments saying, this is what has been going on in Kakadu and it is informative, it is easy to read
- Ms WALSH:** What is the drug thing and with kids and like, is it an issue using it as a ?
- Mr BACKERS:** The drug thing.
- Madam CHAIR:** Well, it has been raised, it has been raised. There have been deaths, there have been examples of deaths to people from smoking it, drinking it
- Mr BALDWIN:** And licking it. There is a law somewhere overseas that it is against the law to lick a cane toad, because it is a hallucinogenic.
- Mr BACKERS:** Smoking ...
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- Mr DUNHAM:** Apparently the people that do it, only do it once. That's what they tell us.
- Madam CHAIR:** So that is however an issue in terms of use that, 'Oh, I dare you to lick a cane toad' the scenario is quite a scary scenario.
- Mr BACKERS:** How do you smoke one?
- Madam CHAIR:** They dry them out.
- Mr BALDWIN:** When it dries they fold it up
- Mr WOOD:** Bring out a new brand of cigarettes.
- Madam CHAIR:** I didn't even touch it. They remain toxic after death, so you have to be very careful.
- Mr BONSON:** The Canadian I think it was scientist, the American scientist I can't remember now, he said that basically, you smoke it, you die, that was from the American.
- Mr BALDWIN:** The real danger for kids is to get a bit of the toxin that lands on you, wipe your eye, immediately there will be severe damage to the eye and if you actually swallow some of that stuff, it is very, very toxic to humans and particularly small humans like kids.
- Mr DUNHAM:** What Dave Lindner was saying because they did something on the Jabiru rag about ...
- Ms WALSHE:** Is he still around is he?
- Mr DUNHAM:** Yes. If your kids pick it up, you know, chastise them. He said no, you shouldn't really, if your kid has got a cane toad, you should go and grab them and take them to the tap and wash their hands so they do not touch their face and then talk to them because it really is that urgent, it is no good giving them hurry up while the danger is still around, so I thought that was a pretty good point actually.
- Ms BACKERS:** I think Gerry's idea with the feral dogs and the Litchfield dog problem is a good one.
- Madam CHAIR:** Does that mean the savings you make you put into cane toads
- Ms WALSHE:** We could invest into land care. Yes, we can do that because they are not spending any money on it anyway, are you?
- Madam CHAIR:** But the whole issue of appropriations is an important one.
- Ms WALSHE:** Mmm. I think that is a reasonable one.
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- Madam CHAIR:** Any other comments or questions?
- Mr VISENTIN:** Is there likely to be a scenario where you introduce legislation like the *Weed Act* for example and then it becomes the landowner's responsibility to eradicate weeds or eradicate frogs or ...?
- Madam CHAIR:** There are some submissions we received in terms of legislation but it is not gone to that but it has not gone to that it's gone to upgrading it from being a pest to a menace and also a submission we received from Environment Australia that says it could be identified as a threatening process which foxes, rabbits and other species have been identified as in the past and if that is accepted by, the committee takes, anyone can nominate it, the government could for example or an individual could. There is a federal committee that deals with the nomination that then makes recommendations to the federal minister. That in itself, Environment Australia believes would attract some more resources to the fight against cane toads.
- Mr BALDWIN:** So it actually means that there is an action planned to ameliorate the impact of that species or that threat so there is a practical side.
- Mr VISENTIN:** But is it likely to say, come out that it is going to be some sort of legislation that says ...
- Mr BALDWIN:** Impacts on landholders.
- Mr VISENTIN:** Yeah. So that the landholder ...
- Mr BALDWIN:** It would be a very brave ...
- Madam CHAIR:** No one has suggested that.
- Mr VISENTIN:** I was just going to say, the weed situation now is such that technically the landowner is responsible for the weeds yet in many cases the landowner wasn't responsible for introducing the weeds, now here is a typical example, you have got an animal here instead of a plant it is a similar scenario. So are we likely to see another piece of legislation in ten years time that said the landowner is going to be responsible to eradicate the toad on their land.
- Madam CHAIR:** We can't talk about ten years time.
- Mr WOOD:** Will it be as effective as what we had?
- Mr VISENTIN:** Well it might be as effective, I do not know.
- Madam CHAIR:** I cannot talk about ten years time but I can assure you that we have not received a single submission calling for such
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legislation.

Mr VISENTIN: No, I am not even complacent, but I am asking you whether you are likely to come up with this option?

Mr BALDWIN: But now that you have proposed it.

Madam CHAIR: No, no, we are looking at assisting people to tackle the problem not punishing people for a problem that they

Well the public awareness brings and attracts funds as well, we were advised by a professor involved in the *Sixty Minutes* program and then after *.Sixty Minutes* viewed the cane toad episode, Channel Nine received over 100 calls from people offering to donate money to a fund or a trust to be spent on combating the cane toad, so there is certainly, Rio Tinto had put up funds to World Wide Fund for frog research so it may be that they are ait may be there are corporate funds as well as government funds.

Mr VISENTIN: But why has it taken 70 years to get to this point, if you are saying that there are people out there that are prepared to give money to try and solve this problem, it has been around for 70 years, it has gone through the whole of Queensland, I am not sure what impact it has had in Queensland really ...

Mr BALDWIN: One of the reasons would be the environmental conscious being raised in society in the last decade or two, so that accounts for the first 50 years, it was seen as a pest then and it certainly was not on the march, well it was on the march always but you could not see the damage or the extent to which it had gone so, yeah it just was not seen as the big priority I guess.

Madam CHAIR: We have received arguments on that issue and I guess we could spend our time as a committee looking backwards, instead of trying to focus forward and as a committee we would be bi partisan in focusing forward. We have had to do some delving backwards ...

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Mr VISENTIN: I guess the issue that I am trying to say is that it has been around for 70 years, maybe people are saying that the impact isn't really as bad as it is and therefore, is it only in the last few years that there is somebody is trying to make it a bigger issue than it probably has been or is and therefore now people are saying, oh let's give it some money. But if it has been around for 70 years and we don't sort of have enough evidence or we do not have sufficient evidence to say it's a huge impact. Maybe it is not a big issue, I do not know.

Madam CHAIR: The scientists in Kakadu are saying it is a significant impact, they use the word significant.

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- Ms WALSH:** That's the thing. It is Kakadu too, I mean everyone around Australia.
- Mr BONSON:** I think it is a combination of what Tim was saying about environmental conscience developing, I think there was a bit of a laid back, you know, this is going to happen, you cannot do anything about it and I think it was a lack of scientific drive I suppose and I think one of the main things that has come out of this is the scientists are saying well we haven't had the funds to target this issue but all of them have definitely said, 'We think this is a big issue, big problem but we never had the funds to government
- Mr BALDWIN:** But your point would be quite pertinent and in fact they do not know to what extent the species, any variety of species in Queensland were damaged because they have never numbered base-line data but up here, the same thing, we have removed some northern quolls, they look like being very threatened but in ten years time there could be a sustainable population still there and we won't know until we get to that point because we are now in the Territory, have quite a few people are doing that baseline data and one of the points that has come out is that there is still time in that western area to go and do some really good base-line data as it moves to the west, so go to some of our parks, like Keep River and Gregory and so forth and do some really good studies which still you won't have the results on for another ten years.
- Madam CHAIR:** That all requires funding.
- Mr DUNHAM:** But there has been money, I mean Environment Australia, they have had \$5m go in, just to look at biological control. There is another million going so there is \$6m there, just looking at one element of it. Defence are putting money into Bradshaw and to Mt Bundi, so they put a fair bit of money to baseline and other and most of the organisations that line up have actually had a go at it. The Territory has been doing it probably since it crossed the border in the late '80s so there is a fair bit of research that goes back to late '80s and we talked to ...
- Mr VISENTIN:** So there is some studies going at present?
- Mr DUNHAM:** Yes. We took evidence from two of them. There is an Aboriginal ranger at Borroloola and the lady in charge of Parks and Wildlife in Katherine both did surveys in '87 or something and they came and gave evidence to us, so it hasn't been, you know, nothing I guess.
- Mr BALDWIN:** One of the best studies is what ERISS has done in its past form. With Ranger because the Mageela Creek area, the whole area has been monitored for uranium impact and therefore they have all their base-line data for that small
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area for every species, every species, plant and animal, the whole lot and the other one that has been studied for years and years and years now is the Fogg Dam snakes.

Madam CHAIR:

Also the fresh water crocodiles in the McKinlay River.

Mr BALDWIN:

So there is historical data there that will be good baseline data, when the toads come through. The trouble is there is an argument that says back in the north of Queensland somewhere this data should have been done then on their species, so you would have a good little relationship to your own.

Mr BONSON:

There is no doubt in my mind that from the scientific evidence is all saying 'yes' these things have a dramatic effect on native wildlife and some of the species are going to disappear.

Madam CHAIR:

On lifestyle as well

Mr BONSON:

And so it is just a matter of getting the data and what the scientists are saying is that look, in a way it is negative, but we need this information if we are going to find something down the track. This should have been 20 years ago.

Mr DUNHAM:

The scientists also say give me money. The bloke who fenced the rat out of New England or wherever it was he is listed half a million bucks for the next two years and get my visa extended. So and I mean there are a lot of people here saying really you need me and I am on the white charger, here I am give me money and I will fix it up. I think some of the scientists that have been around longer, like we took really good evidence from Mike Tyler, and he is the one Tim said has been up here looking at frogs since the 1960's. He was very level headed and he has been to its native habitat, and he has been to Fiji and places like that and I think if you read his transcripts which are available, it will give you an idea of

Mr BALDWIN:

a balanced argument

Mr DUNHAM:

a balanced scientific view of it, and it is good reading.

Madam CHAIR:

He held the view that fundamentally something could be done.

Mr BALDWIN:

Yeah you had to try anything.

Mr DUNHAM:

Give it a bash.

Mr BALDWIN:

Yeah, give it a bash.

Mr BONSON:

And wait for not a *fait accompli*, you know and I suppose that is from where I am standing but his stuff, on the

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- pheromones.
- Ms BACKERS:** So, do they spurt, or is ...
- Madam CHAIR:** Yes.
- Ms BACKERS:** They do?
- Mr DUNHAM:** Two big glands.
- Ms BACKERS:** Because I think growing up in Queensland I did not realise the harm ...
- Ms WALSH:** the potential danger
- Ms BACKERS:** Yes.
- Mr DUNHAM:** They turn their back and if they are really agitated, they turn their back and it can, I asked him how far, you know would it get to someone's eyes, but he said no but it can be a metre or something.
- Mr BONSON:** When we were in Katherine I went up to one and it looked like it did a wee, but basically it oozing out of the skin.
- Mr BALDWIN:** Spray out of the pores if there is enough pressure put on the animal, the animal puts its own pressure on when it gets really agitated hunching down pulling skin, or just puts pressure on those glands and it will fly it through the pores of the skin, but it won't go meters and meters, but normally what they do is they just hunch and the stuff secretes out, it looks like lanolin in
- Ms WALSH:** I was going to say is it ... ?
- Mr BACKERS:** That is the bit that is poisonous. How do you identify the male from the female, is there a difference?
- Madam CHAIR:** No one stops and asks.
- Are there any more questions or suggestions?
- Ms WALSH:** How long do you reckon before you have your recommendations in?
- Madam CHAIR:** As soon as possible bearing in mind we make recommendations to sittings of parliament. We have the budget sittings in May, the estimates sittings in June.
- Ms BACKERS:** Is this the last forum?
- Madam CHAIR:** The last public hearing. We are taking more information during the May sittings from some experts and that will close the information gathering stage. We will then go into report
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- making phase.
- Mr BACKERS:** So when is the ETA?
- Madam CHAIR:** Hopefully it will by August.
- Mr DUNHAM:** You know what I reckon, I reckon he is here now.
- Mr WOOD:** Yeah, what I heard is, is that it's at Manton Dam.
- Mr DUNHAM:** One of the problems is that they are very competitive. What they will do, is they will be the ones in the rock and the hollow log, not the native animals. So they have found the frog will displace, the toad will displace a native animal and they are more vulnerable to fire than the toad is. But the reason they got here so quick is because they hitchhiked, inadvertently or people bringing them, and I reckon now that they are so close to Darwin, basically on the highway, every piece of heavy earth moving gear, every swag, every boat has potentially got some little toads in the swag.
- They are in the Katherine basin, and that goes down to over here right, Daly, it is not far away. You only have those wetlands coming back this way and you are basically back in Darwin.
- Madam CHAIR:** So it is a guess that the front will be in Darwin next wet, but I agree that with the long weekends we have had recently with people coming down and camping in Katherine and what have you that it is highly likely that some hitched
- Mr DUNHAM:** There will be a couple of little buggers here now I reckon.
- Mr BALDWIN:** So there is still time to dig a big ditch around Darwin?
- Ms WALSH:** When I went down to the dump checking on frogs once and I heard all these different noises, and when I played the sound off the Internet, I could have sworn I heard that noise.
- Mr DUNHAM:** Like a water pump they reckon.
- Ms WALSH:** It was a funny one and there was ...
- Mr DUNHAM:** There is a native one that makes a similar sound
- Mr WOOD:** Can someone actually do it for us?
- Ms WALSH:** The Internet one is a good one, it is really good.
- Madam CHAIR:** Are there any other questions, suggestions, ... nothing. I thank you all on behalf of the Committee for coming along this evening, it has been an entertaining and informative discussion, and I formally close the Public Hearing, Litchfield.