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ACTHA News

Feb — Mar 2007

*Newsletter of the
ACT Herpetological
Association Inc.*



Main contents in this big issue

OPMV alert for snake keepers

Some recent information on this deadly virus which is causing major concern amongst all herpetologists, page 2

CSIRO Sustainable Eco-systems Facility tour at Crace, North Canberra

ACTHA members held their Christmas party on 19 December 2006 at this exceptional facility. The tour of the facility by John Wombey is highlighted on page 3

Snakes Alive! Exhibition 15—21 January 2007, at the Australian National Botanic Gardens

Accounts from some of our members, including display photos, talks and observations. See from page 5

Water Dragons, Sex Determination, and Climate Change

Sean Doody, UC, gave a talk on this subject at the *Snakes Alive!* Exhibition 2007. It appears some reptiles may have the capacity to adapt to climate change. See page 10

Water for a Healthy Country—the Murray

Dr Sarah Ryan is the Murray Regional Co-ordinator for Healthy Water, CSIRO. Her talk to ACTHA members during the *Snakes Alive!* Exhibition 2007 is presented on page 13

Challenges for the Freshwater Reptiles of the Murray-Darling Basin and Challenges for us

Professor Arthur Georges gave a talk on this challenging subject to ACTHA members during *Snakes Alive!* on Wednesday evening, with the same presentation given to the general public the following day. Read all about it on page 14

Captive bred and nearly extinct Spotted Tree Frogs survive their first year since release into Kosciuszko National Park

Their amazing story appears on page 17

Your Committee

President:	Dennis Dyer
Vice President:	Ric Longmore
Secretary:	Joe McAuliffe
Treasurer:	Margaret Ning
Newsletter Editor:	Mandy Conway
Public Officer:	John Wombey
Excursion Officer:	Ric Longmore
Committee Members:	Chris Brown Christian Robertson

Diary date

The *bi-monthly* meetings of the ACT Herpetological Association are normally held on the *third Tuesday of the month* at 7.30pm, Western Districts Rugby Club, Catchpole Street, Macquarie, Belconnen.

Upcoming meeting

Tuesday 20 February 2007 at 8pm

Guest speakers:

Jacqui Richardson and Alex Quinn

Jacqui Richardson, IVC Production Colonies, John Curtin School of Medical Research, ANU, will give members the opportunity to look at a colony of lizards, comprising of Bearded dragons and related species, which are used in the study of temperature determination in sex of young. The plan is to have small tours and hopefully Alex Quinn, the PhD student involved in the project, will be able to explain the project.

CHANGE OF VENUE AND TIME

We need to meet in the Car park at the front of building 3, off Allawoona Street, at the University of Canberra at 7.45pm sharp.
Please see back page for directions.

OPMV Alert for snake keepers

Ric Longmore

(as passed to him by a Veterinarian friend)

OPMV has raised its ugly head in several parts of Australia, causing the cancellation of some reptile shows and much concern amongst herpetologists. All reptile keepers have been told to report unexplained deaths as soon as possible, enabling diagnostic autopsies. (See end of this article.)

Dr Elliott Jacobson, University of Florida, is considered to be the foremost authority on OPMV. Below is an excerpt from a message sent to Ric Longmore on 24 December 2006.

Ophidian Paramyxovirus, or OPMV as it is commonly known, has recently appeared in parts of Victoria. Several reptile displays have been cancelled as herpetologists throughout Australia try to quell this virus.

OPMV has 18 known strains and is a member of the PMV group of viruses which include myxo of rabbits, mumps and measles of man and the particularly lethal Hendra and Nipah viruses carried by flying foxes.

It is thought to have originally been a non-pathogenic symbiotic in an isolated snake population, probably in the Americas. It was first isolated in a Swiss reptile collection following the importation of 'Feur-de-Lance' in 1972 and has since spread to many collections in many countries.

The first known cases here trace back to the Australian Reptile Park following the importation of a pair of King Cobras in 2001. It has now been isolated from dead or diseased captive lizards, pythons, viperids and elapids.

To date mortalities have occurred in Australian Tiger Snakes, Death Adders, Red-bellied Black Snakes, Taipans and Carpet Snakes: this list is certainly not complete.

Diagnosis

OPMV causes two quite different patterns of disease. In young or neonate snakes it presents as an acute neurological disorder, commencing with unusual posture or activity, then restlessness as is usually seen in overheated animals, followed within a day or two by convulsions and death.

In acute cases the virus can cause sudden death in previously healthy animals.

In most adults the disease is a chronic respiratory disorder, with increased respiratory rate and often some purulent nasal discharge accompanied by lethargy, loss of appetite and weight loss, lasting for over 12 months and usually ending in gasping and death.

The latent period, from introduction of carrier to first appearance of symptoms, as far as we know, is mostly 2 months or less, but longer quarantine periods are being recommended as a number of adult reptiles act as symptom-less carriers. The disease is spread by contact, be it with infected animals or indirectly by contact with contaminated containers, hands, catching or feeding equipment or mites. How long the virus can survive outside a host animal is not known.

Confirmation of identity of the virus in any case requires laboratory testing of lung and brain tissue samples using either a Haemagglutination-Inhibition Test or an Immunoperoxidase Test.

Treatment

There is no effective cure for OPMV. A vaccine was developed in 1991, but this was found to give immunity only for a short time and sometimes not at all.

The development of a vaccine using genetically modified non-pathogenic virus appears to be the most promising avenue of research, but this is a costly and time consuming process.

Alternatively, studies of the comparative pathology of the 18 naturally existing strains may show one or more to be non-pathogenic and potentially of use as a vaccine if it induces cross-immunity against lethal strains.

Strict quarantine in individual containers for as long as possible is recommended for new additions to any collection and any items coming into contact with them should be boiled or washed with Betadine or Sugar soap.

Information on the availability of testing reagents in Australian laboratories can be sought in the first instance from the **CSIRO Australian Health Laboratory in Geelong, VIC.**

Phone 03 5227 5000 or Fax 030 5227 5555.

CSIRO Sustainable Ecosystems Tour of facility on 19 December 2006

Article by Mandy Conway



John Wombey and members in front of a couple of the cabinets

Our final meeting/Christmas party was held at this facility, which is located in the Belconnen suburb of Crace on the grounds of the Gungahlin homestead.

After some delicious food and various drinks, we heard from Dennis Dyer, ACTHA President, who summarised the events of the year.

John Wombey, CSIRO Fellow, and active ACTHA member, then welcomed us and proceeded to take the group through the collection.

"Welcome to the Australian National Wildlife Collection, which has been my 'home away from home' since 1969. This

is a "research museum", housed in a controlled and safe environment, as opposed to State and Territory "display museums". This collection, held by the CSIRO, concentrates at the overall Australian federal level. Fauna specimens from Papua and New Guinea have been taken into

account since the early 1960's as these specimens are synonymous with our animals".

This valuable collection has steadily grown since the 1960's, with Warren Hitchcock and Richard Shoddy as curators over the years. Leo Joseph is the current curator, a geneticist from the Philadelphia Museum.



Pull-out shelves in each section

Among its earliest achievements was the development of Myxomatosis through mosquito, not flea, research in the control of

plague proportions of rabbits. Other pests have been looked at since and associated research has found new fauna species (eg the Little Raven in Kosciuszko) as well as other undescribed species.

Fauna surveys in the 70's concentrated on environmental impacts relating to mining companies and the defence forces. This involved collecting specific data which led to justification of specific programs.

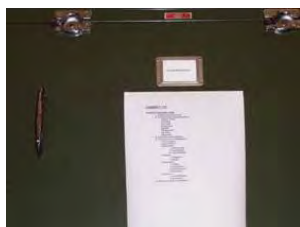
The 1980's work concentrated on molecular and chromosome research which involved the collection of heart muscle tissues of many species.

The bird collection has been 20-30 years in the making and is considered the best in the world. The Papua New Guinea collection held here received many samples in the 1960's when Dick Rhuddy, a former plant man, apparently decided to collect birds whilst everyone else played cards!

The facility accepts specimens from many sources including wildlife carers and the general public. John highlighted once again the importance of "exactly where found and under what circumstances" to ensure the specimen will be a useful addition to the collection. (see a previous article in the Aug-Sept 2006 ACTHA Newsletter).

Fauna skeletons are useful in modern versus ancient studies. Animals change their outside features over millions of years, however internal characteristics of species remain consistent.

Most specimens are stored in vaults: except reptiles which are stored as whole specimens in glass containers of spirit in a dedicated room.



The contents of each cabinet are clearly identified



Long-beaked Echidna, from PNG

All rooms are sealed to reduce damaging UV light and kept cold to reduce insect infestations. With so much flammable liquid present, the facility has state of the art sensors to ensure the protection of the collection as well as staff. Each room was built with a step down into it to prevent any accidental overflow of toxic liquid to other areas.

All specimens are fumigated in a chamber and then 'processed' depending on pertinent criteria for each animal. Was it the DNA, or the feather/skin colour, etc, which needed to be recorded.

We were shown Cassowaries, where John recounted a tale of one of these birds eating 56 apples in 6 mins at David Fleahys Wildlife Sanctuary in 1964.

The mammal show and tell included the striped possum: their skins are fixed in alcohol with their skull. Dentition, or teeth samples, may then need to be acquired. Only 2 mammals need the use of skins to differentiate them: the Eastern and Grey Kangaroos.



A much admired Thylacynus cynocephalus or Tassie Tiger skull

A highlight of the tour, apart from the reptiles, was the viewing of the 1969 (Thylacynus cynocephalus) Tassie Tiger skull from Yerrongabilly Caves region- awesome.

Poison use was also mentioned: a ten-eighty compound exists in a Western Australia pea making it fairly benign as a pest eradicator in WA. It kills eastern fauna, however, so foxes in our region are quite susceptible.



We entered the 'skin and fix' room where many birds were on trays in their various process stages. A bank of fridges

(-20°C) held many specimens and bits, and a special Cryo freezer held tissue samples at -80°C.

We then moved through to the egg collection of which the blue ones looked the prettiest. Seriously though, a very important section.



Taxidermy and Cryo storage area



Painstaking identification of each sample

The reptile collection came last and everyone dissipated once in the room. Snake people congregated in the snake section and lizard people found their babies. I was left all alone searching for the turtles and eventually sat looking at non see-through buckets visualizing their contents - sniff.



A head count was necessary to retrieve members, after which we all moved back to the reception/food/drink area. Goodness it was 9.45pm. Time does fly when you're examining bodies - of animals.

Everyone wished everyone else a happy and safe Christmas and then we all motored nose to tail through the grounds to the gate where John gladly waved everyone good-bye.



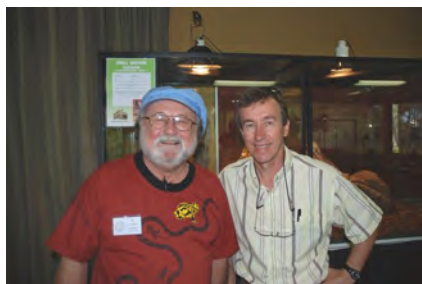
Snakes Alive! Exhibition 2007

Our annual *Snakes Alive!* Exhibition took place during the week 15–21 January 2007 at the Australian National Botanic Gardens.

Once again the venue proved popular, with queues forming well before 10am openings. The heat on most days ensured the reptiles on display were active and entertaining. Unfortunately the same can't be said for some of the really tired herpetologists present.

Joe McAuliffe, ACTHA Secretary, writes...

It is quite fitting that our Exhibition event coincides with the height of summer when our ectothermic friends are in full swing. Fitting too, in that it is now that we need to reach out to the public to help them understand and hopefully appreciate and respect our herpetofauna. The tragic loss of a young boy's life recently, and the negative flow-on effects from it and other incidents, demonstrates that our work as educators will never end.



Ric Longmore with Garry Clarke

Our *Snakes Alive!* Exhibition this year kicked off with Gary Clark, known for his comic strip 'Swamp'. Gary provided an entertaining live drawing of a water

dragon at the opening, as well as a herp-related comic strip that ran in the Canberra Times throughout the week.



The professional talks by Dr Sarah Ryan, Prof. Arthur Georges, Sean Doody and Donna Douglass were captivating and highly informative.

The theme of the event this year tackled the topical climate change issue as it affects the Murray Darling Basin, and how, or if, its'



The display tanks looked awesome

herpetofauna will cope. To back this up, we talked up the conservation message throughout the event, provided displays and information on threatened herpetofauna and ran an educational quiz.

As in previous years, our herps were the stars of the event. People loved the opportunity to get close and appreciate the beauty and sensation that our reptiles offer. However this year we approached this sort of experience with great caution. The ominous threat of viral diseases such as OPMV and consequent concern about it in the herpetological community forced a rethink of the event and an adoption of tightly enforced hygiene protocols.

We were greeted by long lines of people in the mornings which was perhaps due to the expected hot weather in the afternoon.

Morning talks and feeding times were packed. Somehow we all made it to the end of the week still standing, which was a good thing considering a record 996 visitors went through the exhibition on Sunday.

In all, 4,275 people went through the exhibition. Perhaps that's 4,275 more people with a greater appreciation of our herpetofauna, perhaps it's one less shovel and one more camera that will be used in the next brown snake encounter, or just a heightened awareness of the importance of environmental flows in our river systems. Whatever the educational experience, I'm confident that this was another display ACTHA can be proud of.



A young visitor with a Bearded Dragon



Members like Phil were inundated with questions



Dierk von Behrens is ready to convince the first child through the doors to enter the Snakes Alive! Exhibition Quiz



Margaret Ning greeted everyone with a smile



*Raffle prizes included a \$300 reptile enclosure **1st prize**, the book 'A Complete Guide to Reptiles in Australia' (Wilson & Swan) **2nd prize**, and another book A Field Guide to Reptiles of NSW (Swan, Shea, Sadler) as **3rd prize***



Ric Longmore in yet another photo...

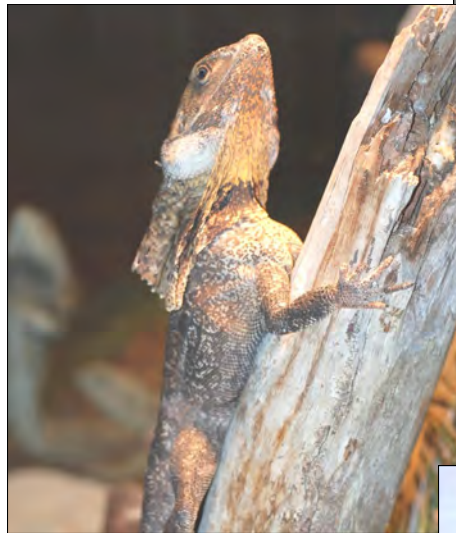




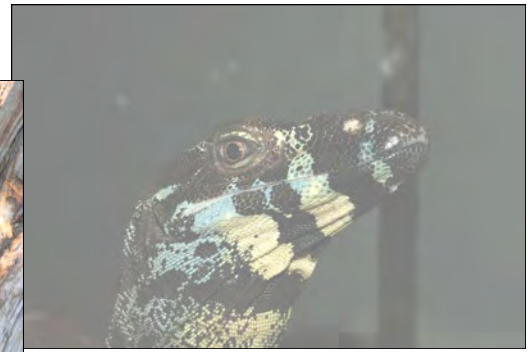
The Corroborree frog was a crowd favourite once again



Ric's baby Woma, first public appearance...



ACTHA Members provided many excellent photos.



Frill-Necked Lizard (left) and Lace Monitor (above) "psssst... you're letting the side down!". "I don't care, I'm bugged" Ernest the Water dragon replied.



Clangers during the week...

- Margaret who subtly said one morning "I'll work the line." Meaning she would sell raffle tickets to unsuspecting people in the entry queue.
- As recounted from Cheryl (the cane toad woman - ie the woman from CSIRO who came every day to clean their cage and also did a bit of displaying).
"Cheryl said she was showing a very young child one of the cane toads and the child reached out to touch it. So Cheryl said words to the affect of 'don't touch it sweetie - it's not nice', to which the mother responded, 'I'm the parent and I said she could touch it'!!! So then Cheryl said to the mother, 'do you think my gloves are a fashion statement?'"
- There was one other occasion that created a giggle (or indeed hysterical laughter from Cindy), when Geoff was organising the crowd in preparation for one of the feedings, and I heard him say "can everyone see, is everyone comfortable?" Given the huge crowds, standing room only and the high temperatures, we all know the honest response to that!
- Ric, who was so sick of people asking to buy the baby blue-tongue lizards, finally cracked and said they would cost \$350 each. Kids were still keen however the parents were gob smacked.



The Centralian Carpet Python, going blue



Two Long-necked turtles (left) and a Macquarie Short-necked turtle (right)



Baby Blue-tongued lizards

Baby Water Dragons

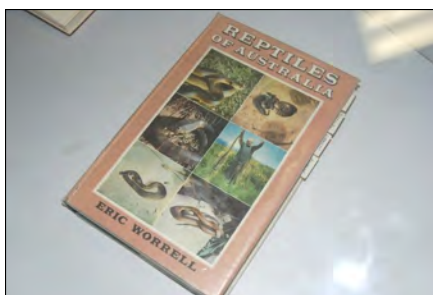


The only venomous snake on display, the Death Adder



A Black-headed Python examining its tank

Ric Longmore displayed some beautiful, rare old books including his 1869 copy of Gerard Kreft's *Snakes of Australia*, the first comprehensive book written on Australian snakes.



Peter Childs, Canberra Exotic Pets - creator of the magnificent enclosures

Water Dragons, Sex Determination, and Climate Change

Sean Doody, Institute for Applied Ecology, University of Canberra, with this write-up by Mandy Conway.

Soon after Sean Doody was asked to draw a water dragon alongside Gary Clarke, 'Swamp' Creator, who opened the *Snakes Alive!* Exhibit for 2007, Sean gave an informative presentation on his just completed work on climate change, geographic distribution and sex determination of the Eastern Water Dragon. The Water Dragon population within the Australian National Botanic Gardens was included in his study.

In opening, Sean described how glaciers advance and retreat over time, and every major one today is retreating as the global air temperature rises. Thoughts are the global air temperature will rise 1-8°C within the next 100 years, with 2-7°C expected in South-eastern Australia.

Climate warming has direct and indirect impacts on society, including sea level rises, food production and drinking water. The impact on biological systems include geographic distributions, population growth, immigration rates and the onset of reproduction, just to name a few.

Genetic sex determination occurs amongst mammals, birds and most invertebrates. Environmental sex determination, however, occurs in animals like reptiles, some fish and some invertebrates. With Temperature-dependent Sex Determination (TSD), egg temperatures directly influence offspring sex. Thus, TSD animals are burdened with the additional challenge of producing viable offspring sex ratios. Hundreds of species of turtles, lizards, crocodiles and fish possess TSD.

TSD species are model systems for understanding biological responses to climate change which makes the Eastern Water Dragon (*Physignathus leuseurii*) an ideal study candidate. Do these animals adapt to climate warming by evolution of 'when', 'where' and 'how deep' to nest? Is there evolution of nesting temperatures that divide the sexes?

The intention of Sean Doody's study was to investigate geographic variation in Water Dragons to answer this question as well as help us to understand how TSD animals spanning different climates can persist, how they might respond to climate change, what advantages TSD confers, or why TSD evolves or is maintained.

The Eastern Water Dragon is found along the East Australian coastline from Cooktown to near Melbourne. Seventeen populations across 5 sites, spanning 10° latitude and higher than 1200m elevation, were included in the study. The principle sites were in/near Cairns, Brisbane, Sydney, Canberra and the Southern Highlands.

Water Dragons nest in open areas with lots of sunlight and along waterways, although often a fair distance away from the actual water. They usually dig a hole about 7-10cm deep and cover the eggs after laying.

Hemispherical photography and gap light analysis, as used by forestry personnel, provided much data.

325 nests were found in the 17 populations across the 5 sites. Nesting data was collected from 305 nests, including nest temperatures from 36 nests. An incubation experiment included 85 clutches containing a total of 583 eggs.

Results showed that mean nest temperatures were not related to latitude, mean monthly maximum or minimum temperatures, or mean monthly soil temperatures.

So, how are the lizards compensating?

There appeared to be major compensation in the 'where' to nest, minor compensation in the 'when' to nest and no compensation in 'how deep' to nest or in 'pivotal temperatures'.

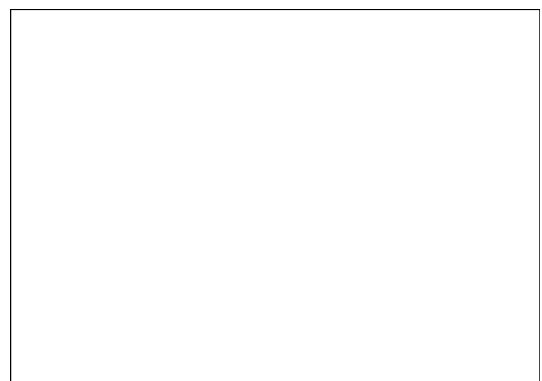
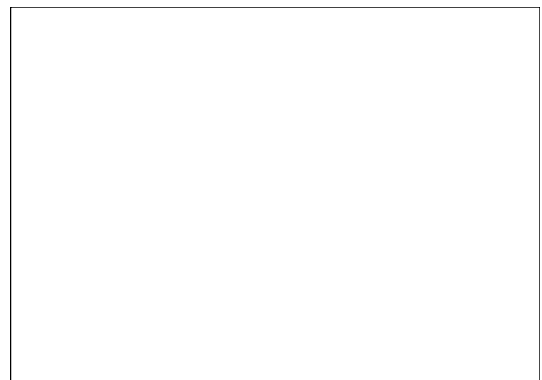
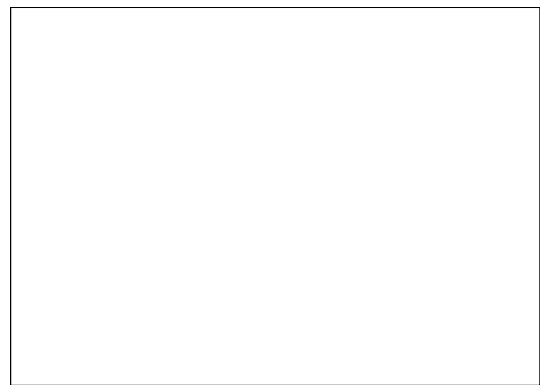
Lizards appeared to be "as smart as lichens". At the coldest site lizards nested only at north-facing aspects: choosing a nest site seemed to be particularly challenging in cold climates.

In conclusion, Water Dragons compensated for climatic differences by adjusting where they nested and to a lesser extent when they nested. Maternal nesting behaviour reflects the repertoire Water Dragon populations possess to deal with climate warming. The study extends to the egg stage with the notion that behaviour is the chief compensatory mechanism for reptiles occupying areas with differing climates.

Sean then went on to briefly explain his current project 'Making offspring of choice', which is to investigate the 'other' way in which mothers can adjust sex ratios (sex allocation). Would-be mothers may be able to make the sex of choice by assessing adult sex ratios or male fitness in the population and producing the 'sex of choice' by nesting at a site with a particular thermal regime.



Garry Clarke (left), 'Swamp' creator, encourages Sean Doody (right) to draw a Water Dragon caricature. Not bad!



Sean Doody will again present a talk on his recently completed Water Dragons, Sex Determination and Climate Change Project at the ANU, Gould Building, off Daley Road, **at 8pm on 1 March 2007.**

Jake Brown (11 year olds category)
1 Rowoldt Place
Kambah ACT 2902

Ms Danielle Merlino (15 year olds category)
20 Webb Street
Mittagong NSW 2575

Congratulations! to the two winners of the Association's **2007 Quiz**, conducted during the recent ***Snakes Alive! Exhibition*** in the Crosbie Morrison Building at the National Botanic Gardens in Canberra.

A certificate, personally signed by Dennis Dyer, President of ACTHA, as well as prizes including a *2007 Australian Wildlife Calendar* for Jake and the highly acclaimed book: *An inconvenient truth* by Al Gore for Danielle was awarded, along with a sheet of *Dangerous Australians* stickers and a *Community Frogwatch Census Kit*.

Thanks go to Dierk von Behrens, ACTHA member, for organising and marking all the entries!

Wednesday, 17 January 2007, *Snakes Alive!* evening talk to Members

Dennis Dyer, President, ACTHA, welcomed Dr Sarah Ryan and Professor Arthur Georges to the evening's presentations, and started by stating it was indeed an honour and quite amazing to have two academics willing to give talks at the same time and place. ACTHA, Australian National Botanic Gardens and Monaro Amphibian and Reptile Keepers Inc members were well represented.

Dennis described how ACTHA endeavors to highlight an important topic as a theme at our annual *Snakes Alive! Exhibition*. In 2006 the theme was the Northern Corroboree Frog and the efforts of people like Gerry Marantelli, Amphibian Research Centre in Victoria, to ensure the survival of this species.

This year the topic concerns the environment and the effect climate change is having on water resources and the reptiles who depend on it. Both speakers are leaders in their respective fields and continue to study the effects of climate change on the Murray-Darling Basin.

Water for a Healthy Country

— the Murray

Dr Sarah Ryan, Murray Regional Co-ordinator for Healthy Water, CSIRO, with this write-up by Mandy Conway

Dr Sarah Ryan started by saying that the interest, dedication and knowledge of groups such as the ACT Herpetological Association added to the knowledge base within the ACT Environment and was appreciated. She then cut straight to the chase.

Climate change: some questions to be asked.

1. When? Has it already started?
2. How much has that climate change been?
3. What will the effect be on our water eco-systems in the Basin?

A decrease in rainfall has been particularly noticeable in our region over the past 50 years. A pattern is more difficult to interpret and the significant complications for the amount of water flowing down the waterway 'system' difficult to assess, as yearly rainfall patterns vary quite markedly. In data from 1989 it was shown that in some years heaps of water fell and in other years barely any.

The Murray system was producing a flow of water, however the Darling River produced very little flow in to the Basin and in some years none.

Temperatures in the Murray-Darling Basin have been rising since 1920. Rainfall has also been affected, and the current situation is drier than that of the drought in the 1940s.

It appears too early to say whether the current drought is due to climate change or normal patterns experienced over time. Climate variability makes any analysis difficult, although average rainfall over the Basin at this stage cannot be solely blamed on climate change.

The East coast of Australia has had the biggest change in trends: rainfall is among the lowest 10% recorded, and inflows are only 56% of the previous recorded minimum in 1902 and only 7% of the long term average.

Is the current situation a 1 in 1,000 year event? How big might the change be? We are entering territory where there is no significant recorded data. The best hydrological and water monitoring done so far suggests a 3-7% impact on water resources by 2020. "We are not sure how the world climate or weather systems are going to change when temperatures continue to rise."

Sarah described how Lake Victoria is an important water supply source for Adelaide. She highlighted the connection to our region, as surface water is generated in uplands, along Eastern Australia, and 'used' along the way to the Murray mouth.

A 'big picture' which included rainfall to water generation and how it spreads through the Basin was presented. We followed a film clip of the water's path from Mount Kosciuszko, through the Hume Weir, Albury/Wodonga, past Rutherglen where floodplains still had iconic red gum forest sites, and Echuca. As we headed South, it became evident how arid the region was and how some floodplains and irrigation has 'greened' some locations.

A sad fact highlighted was that mankind used so much water that water flows through the Murray mouth occurred once in ten years.

Each year 15,000GL is released from storages such as the Hume dam, 11,000GL of which is diverted for human use, mostly by irrigators, etc.

Wetland demographics have been quite intermittent in the period 2000-2005.

Risks to water resources were identified in an exercise undertaken by the Murray Darling Basin Commission. The study predominantly covered areas in the upland/Southern Highlands region.

Risks identified included water holdings in local farm dams, young trees replacing grasslands, groundwater extraction, bushfires where new vegetation growth demanded more water, and existing plant, animal and human use.

The climate isn't the only thing which will affect water availability or flows in the future.

In regards to the three main questions raised: global temperature has increased although significant reduced rainfall is a maybe at this time, the impact on water resources is likely to be 3-7% by 2020, our CO2 emissions have not been reduced enough.

Some things we can do something about, as it's not just the climate which affects water availability for plants and animals that live along the Murray system, all the way to the mouth.

Plants and animals in wetlands and floodplains have evolved in a variable climate, but do depend upon a good drink from time to time. In the last 10-15 years not only has there been a lack of rainfall but weir construction and the natural salty groundwater have added to the area's woes: many trees are facing salinity problems as well as drought.

General discussion and much thought then followed, before our next speaker was welcomed.

Climate Change Challenges for the freshwater reptiles of the Murray-Darling Basin, and challenges for us

Professor Arthur Georges, Institute for Applied Ecology, University of Canberra, with this write-up by Mandy Conway

Professor Arthur Georges started by saying the tradition of having a *Snakes Alive!* Exhibition every year was applaudable and a valuable contribution in educating the public about our herps.

Arthur then proceeded to give a talk on climate change challenges to freshwater reptiles of the Murray-Darling system.

Arthur introduced the 4 turtle species living in the region:

- *Emydura macquarii*, Murray Short-necked Turtle, whose habitat extends to Burrinjuck Dam
- *Chelodina longicollis*, Eastern Long-necked Turtle which inhabits many parts of Eastern Australia, even extending to Cooma where it has managed to reproduce at this altitude
- *Chelodina expansa*, Broad-shelled River Turtle, a true ambush predator, who's numbers are in decline
- *Elseya bellii*, a snapping turtle which is related to the Saw-shelled Turtle, and is an endangered species due to viral issues.

The Eastern Water Dragon also made mention.

An outline of research currently being undertaken to explain what effect our activities

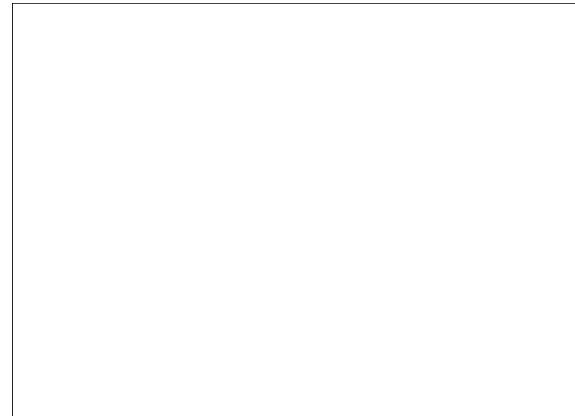
might have on reptile's ability to survive if rainfall continues to decline and the demands we place on our waters continue to increase followed.

A temperature anomaly slide clearly showed a significant temperature rise on our planet from the early 1900s, which scientists predict will extend

beyond

'recent' experiences.

The slide on the right shows the Arctic Sea Ice in decline. (A global temp average of 13°C is set as a modelling base.)

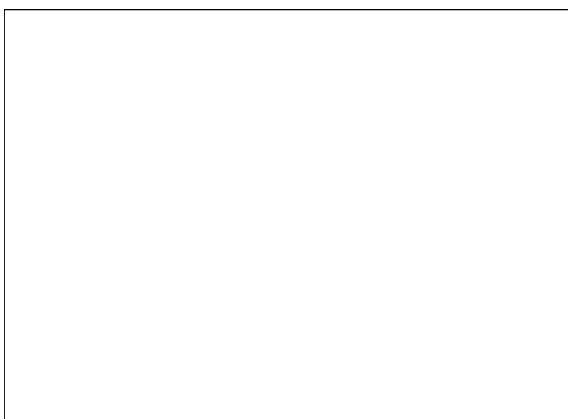


The Federation drought was worse than the drought of 1983. Meaning? the subtle effects of climate change can be shown in studies of the Jervis Bay region, where ephemeral swamps and lagoons yielded 400 turtles per hectare in 1983 (incredible densities), and Mulligan's Flat has shown that its areas can capitalise on these environments.

The prediction is that repeat conditions will be greater than in the past. A 50km per year front movement is envisaged.

Temperature variability has been quite considerable over the past 400,000 years (see slide below left). It should be kept in context that climate change has occurred throughout history: several questions arise:

1. What pressures does climate change, temperature and rainfall, bring to bear?
2. How has the biota historically responded?
3. What are we doing to interfere with fauna's ability to respond?
4. What are the implications of the contemporary landscape and temporal contexts to climate change?



A complex system exists and assessment of climate change issues, eg rainfall and temperature, should include other factors like the modification and fragmentation of the landscape through agriculture and urbanisation, which is foreign to most organisms.

A rather disturbing slide of dead turtles lying on a dried and desolate Lake Numella was shown: 10,000 turtles are believed to have perished that year.

Some animals are known to shift their habitat ranges in response to global warming and cooling. Butterflies in Great Britain have been moving north since the 1970s. The Macquarie Turtle has retreated up the Murray-Darling Basin and then moved back down in drier times.

An example of the tenacity of reptiles included the example shown of some turtles (radio-tracked) who spent 16 months in a forest, in good condition, awaiting decent rainfall rather than moving 1147m to another location. Turtles in another area happily scampered to and fro 139m between areas.

Chelodina expansa, a turtle listed as endangered, was observed in Horseshoe Lagoon. 42 were caught, so are they actually abundant in areas? were they wide ranging or restricted? do they need to live in a river? radio-tracking of 9 (potentially 30) will hopefully provide answers.



Significant challenges to note:

- In times of range contraction, where are the refugia responsible for regional persistence and are we adequately managing them in this role?
- What have we done to impede re-expansion should good times return?
- How are drier conditions brought about by climate change impacting on population dynamics, in the context of the many other pressures we are bringing to bear? (some would include the introduction of pest species like foxes, and agriculture and urbanisation).

Arthur then presented the work undertaken by two of his students on Temperature-dependent Sex Determination (TSD) in Water Dragons (also see page 8). He highlighted how these reptiles altered where (altitude) and when (time) they nested, to overcome the temperature changes relating to sex determination.

Another challenge was highlighted: What are we doing to interfere with the scope of TSD reptiles to accommodate climate change as they have done in the past? How much will our interference affect these animals? What have we done to prevent them coping in a changing environment?

If the reptiles are challenged within the current climate, then it would be fair to say that humans will also face challenges. The take home messages would be:

- Climate change, including a relatively rapid shift to higher temperatures and altered patterns, is upon us.
- The freshwater biota of the Murray-Darling will be impacted, but has coped with climate change in the past.
- We need to ask ourselves: what is it we are doing that will impede the ability of the biota to respond to climate change in the context of a landscape that we have highly modified?

A note from our President, who recovered enough to write..

The Annual *Snakes Alive!* Exhibition, held at the Australian National Botanic Gardens (ANBG), has concluded and ACTHA is pleased to report that a total of 4,275 people attended over the 7 days. \$13,515 was collected from entry fees together with a raffle and the sale of some mementos. This resulted in \$4,835 being donated to ANBG to support their educational program (see below).

This event was judged by all as the best which the Association has conducted, which in itself is an outstanding achievement.

The inclusion of ten large glass display cabinets enabled the reptiles and amphibians to be exhibited in conditions close to their native environment. The enclosure containing the Northern Corroboree frogs also helped make the entire exhibition appear most professional.

The ability of the general public to handle pythons and Blue-tongue and Shingleback Lizards again enabled the Association's messages to be effectively communicated to all.

A feature of this year's event was the lunchtime feeding of different herps each day and this taxed members who were obliged to control large numbers in such a manner that all could view the event as well as listen to the advice being provided by the feeders.

This year's theme involved making the public and members aware of the impact of climate change on herps in the Murray Darling Basin, and to this end Dr Sarah Ryan, of CSIRO, and Professor Arthur Georges, of the University of Canberra, gave most informative and attention capturing talks on this topic. Each gave their perspectives on the issues and consequences, which complemented each other. The Association expresses its appreciation of them for this.

Thanks to all those members and their families who contributed so much during the Exhibition.

The Association wishes to place on record its appreciation to the following, without whose assistance and support this event would not have been possible:

Canberra Exotic Pets

ACT Department of Environment

Australian National Botanic Gardens.

In conclusion,

*"this was the very model of a modern herpetological festival,
in matters both theoretical and practical,
in orders of categories of reptiles splendid,
for this display was much extended".*

Dennis Dyer

President,

ACT Herpetological Association Inc

6 February 2007

At a morning tea at the Botanic Gardens on Tuesday, 13 February ..

Members of ACTHA and ANBG who had volunteered during the Exhibition congregated for brunch and exchanged stories from the Exhibition.

Dennis Dyer reiterated that ANBG was a great venue, with beautiful surroundings and added that the security provided for the display was much appreciated. Crowd numbers on Sunday totalled nearly 1,000 people: a record for any one day ever.

As in the past, Dennis was very happy to pass a cheque from ACTHA over to Anne Duncan, Director of ANBG, who joined us for coffee. The \$4,835 sum was half the Exhibition door takings.

Anne gratefully accepted the cheque on behalf of ANBG's Education Programs. She went on to say how amazed and indeed flabbergasted she was at crowd numbers both through the display and within the actual Gardens. "The Exhibition facilitated people learning about wildlife, flora, etc, and the dedication and commitment of ACTHA members was amazing. The ANBG is very happy to be part of an Exhibition like *Snakes Alive!* as it works well within the Gardens framework. I congratulate ACTHA and look forward to next years event."



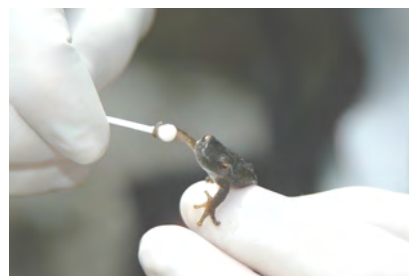
Future improving for near extinct frog in Kosciuszko National Park

News Release from the NSW Department of Environment and Conservation, 9 January 2007

The NSW Department of Environment and Conservation (DEC) and the Amphibian Research Centre (ARC) are celebrating the first year of survival in the wild for a group of about 40 captive bred Spotted Tree Frogs whose original population in Kosciuszko National Park had been almost completely wiped out by disease almost ten years ago.

The last male spotted tree frog in NSW was rescued from a Kosciuszko National Park creek by a team of DEC scientists in 1998 after a spectacular population crash which saw the colony, which once numbered in the thousands, dwindle to a single animal.

Research since then has convinced DEC scientist, David Hunter, that the amphibian chytrid fungus, believed to be responsible for the demise of many frog species world wide, was also the culprit in this case.



The lone NSW male nicknamed “Dirk Diggler” was mated with a number of females from a nearby Victorian colony and their off-spring, which were released back to Kosciuszko National Park, have survived in numbers far exceeding expectations.

Mr Hunter said that the success of this reintroduction has encouraged them to try another release in the next few days.

“Our monitoring has shown that as many as 20% of the one year olds we released last summer have survived. Initially we’d have been very happy with 5% survivorship so this is a great result and really very encouraging.

“The release of captive bred frogs into the wild has been tried many, many times in other parts of the world with extremely limited success so we think we are onto something here. Whatever we are doing, we are doing it well and are being given considerable room for optimism about the potential for re-establishing a healthy breeding population in this creek.

“In the next few days I and my colleague Gerry Marantelli will release a further 200 one year olds that were bred and reared at the ARC from Dirk himself.

“We will continue to monitor the population but right now we are feeling fairly confident that this is working.

“There is much international interest in this project because the captive breeding and reintroduction of amphibians is currently being recommended as a technique to combat the increasing rate of amphibian extinctions throughout the world.

“This project was originally kicked off with the financial support of the Government and Snowy Hydro but captive breeding is an expensive process and any other sponsors will be very welcome,” Mr Hunter said.



*Design by Garry Clarke for an
ANBG colouring-in competition to
correspond with the 2007 Snakes
Alive! Exhibition*



Some Web sites worth looking at:

<http://frogs.org.au/>

www.aussiereptilekeeper.com

www.mark.org.au

www.canberraexotics.com.au

http://www3.environment.nsw.gov.au/pdfs/hygiene_protocol_snakes.pdf

ACTHA News

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