

Next we walked over to the Flight Deck and saw a Black-breasted Buzzard, Barn Owl, Rufous Owl and an Osprey being put through their paces. It was wonderful watching them fly in just as if they had arrived from the wilds. Especially engaging was the buzzard smashing an artificial emu egg by throwing a stone at it. After that we had the opportunity to put on a glove and handle a couple of the birds ourselves.



*Images: clockwise from top left – Eastern Barn Owl *Tyto delicatula* (Natalie Davis); Flatback Turtle *Natator depressus* (Natalie Davis); Tissa having a great time with a Black-headed python *Aspidites melanocephalus* (Amanda Lilleyman); Wedge-tailed Eagle *Aquila audax* and Donna Jensen, Flight Deck Supervisor (Tissa Ratnayeke).*

By now it was time to have some lunch, and for some of us a stiff coffee. At this stage a few members left but the rest of us were in for the long haul. So after lunch we trooped off to be shown the behind-the-scenes areas of the park, starting with the kitchens where food is prepared for the wildlife, including the room that produces between 700 and 800 white mice a week — the food for an assortment of creatures in the park. The fruit and veg for the non-mice-eating residents is everything that we would eat — these animals are fed on only the very best.

We saw the quarantine centre where any animal coming into the park spends time before being moved into another cage. We met three incredibly cute baby sugar gliders that had only been at the park 10 days and were getting used to humans handling them — perfect photo opportunity for us. A baby salt water croc about 55 cms long was bravely handled by Natalie and Owen Gale's daughter Anika. Apparently for the first 10 years the saltie grows about a foot a year, after that it is a foot every 10 years, this means those huge crocs we see occasionally are very very old indeed.

One of the Park's many interesting activities is their Northern Quoll breeding program. When the cane toads arrived in the Top End, quoll numbers plummeted, so a breeding program was initiated along with a program to train young quolls not to eat cane toads. It seems that the behaviour learnt by the quolls in the Park is now being passed on by them to their offspring, and then onto the offspring's offspring. About 300 quolls have been released back into the wild since the program began five years ago.



Images: above left – Top end endemic Magnificent Tree Frog Litoria splendida (Tissa Ratnayeke); right - Damien with a Northern Quoll Dasyurus hallucatus from the TWP's successful breeding program (Amanda Lilleyman); below - Anika Gale with a Rufous Owl Ninox rufa, trying to determine who has got whom (Tissa Ratnayeke)

Next it was a wet walk through the Monsoon Forest via a number of aviaries, including what was once the biggest aviary in the Southern Hemisphere. Finally, a very interesting look at the Aquarium containing amongst other things some large elderly barras, a freshwater stingray that must have been at least 1.5 metres across and a couple of freshwater sword fish. And in his own cage, a 4 metre grumpy saltwater croc. Out the back there were a couple of eels including a white one that looked like a huge intestinal worm.



The day had been a fascinating look at not only the Park's animals but at what goes on behind the scenes. The enjoyment was due in no small measure to the enthusiasm, generosity and expertise of our hosts, Damien and Sarah.

Atlas Moth Recovery Network Forum

A public forum to provide up-to-date information on the conservation of the Atlas Moth and to discuss plans to restore habitat and reintroduce the moth back into Darwin.

To be held at the Museum Theatre, MAGNT, Bullocky Point, Saturday 22 February 2014. 9.00 am – 1.00 pm.



Key speakers will include Dr Don Sands AO (Richmond Birdwing Conservation Network, Brisbane), Dr Michael Braby (Department of Land Resource Management), Geoff Martin (entomologist), Johanna Martin (Conservation Volunteers Australia), Dr Greg Leach (Greening Australia) and representatives of local landcare groups.

The forum is free of charge and will be followed by a tour of three revegetation sites at Casuarina Coastal Reserve, Ludmilla Creek and East Point Reserve led by the various friends and landcare groups between 3.00 pm and 6.00 pm.

Enquires: Michael Braby, Phone: 8995 5015, email: michael.braby@nt.gov.au

Images: An atlas moth found while spotlighting near Iron Range NP, Cape York. Note the feathered antennae, indicating a male. Photos by Stuart Rae <http://stuartrae.blogspot.com.au/>



Literature reviews cont. from p11

Sea turtle nesting

Whytlaw et al. (2013) examined the effect of beach erosion, inundation and predation on sea turtle nesting success, and found a very high mortality (89%) due to pig predation. The study was done on the west coast of Cape York in Queensland but there are important nesting beaches for these turtle species (Flatback *Natator depressus*, Olive Ridley *Lepidochelys olivacea* and Hawksbill *Eretmochelys imbricata*) in the Top End of the Northern Territory and presumably feral pigs have a similar impact on sea turtle nests here. This further underlines the importance of nesting beaches on islands where feral predators and native predators like goannas do not occur and as a result nesting success is much higher.

Colombia Bird Festival, with Denise Goodfellow

Recently I spoke at the Colombia Bird Festival. Colombia is one of seventeen hugely biodiverse countries, having, for a start, nearly 1900 bird species (more are being discovered all the time as birders push into areas once considered dangerous).

The Festival was held in Manizales, a beautiful city that reminds me of Adelaide, except it is perched on a mountain ridge, and has more universities (twelve)! The Festival is the brainchild of Sergio Ocampo-Tobòn, past President of the Colombia Birding Network, and has the support of the Colombian Government and COTELCO, representing hotel chains, and coffee-growers.

Speakers covered a large range of topics. Some talked of conservation, an issue now Colombia is largely peaceful, but also in other South American countries as well. Andrea Ferreira, Sustainable Tourism Coordinator for a Paraguayan NGO, said that cattle are shifted around to allow the pampas to recover for nesting and feeding birds. Her organization is also helping farmers improve roads and vehicles so that they can host visitors to their country.

Another speaker, Juan Pablo Culasso, blind since birth, has some exceptional skills. He can identify countless bird songs, the time of day a bird is calling, and its environment. In grassland he once identified a dozen species singing at once, picking out 25 tones in one call. He works with birders all around the world including here in Australia. You can read about the project at <http://www.naturesoundmap.com/about-the-project/>.

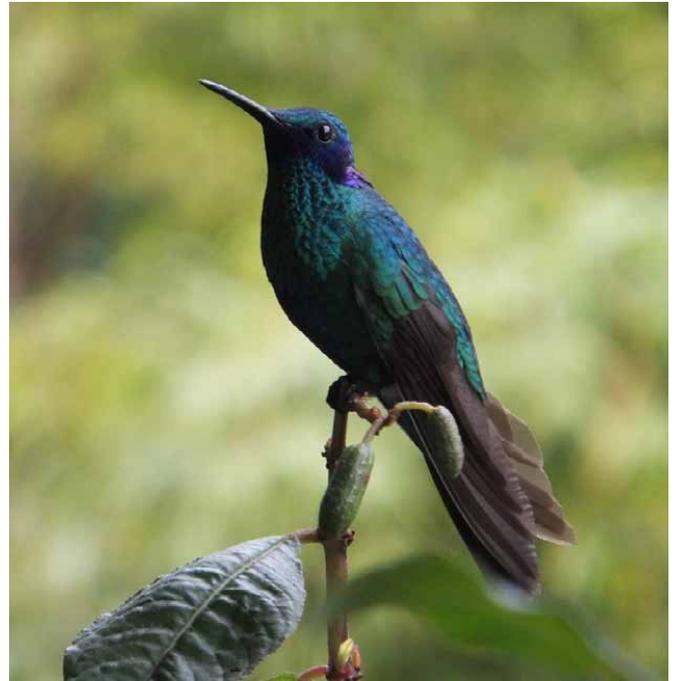
Uttej Rao of India, the only other intercontinental speaker, talked of birding in Gujarat. He said that locals considered it a sin to kill birds and so the birds were unafraid of humans and in large numbers.



Several speakers mentioned the importance of working with communities. One, Luis Fernando Jaramillo, spoke of his work helping Indigenous people repel attempts by miners and others to force them off their lands.

I spoke of threats to Top End bird habitats from weeds, destructive fires, and sea level rise, and the loss of Indigenous rangers who, with their specialist knowledge could mitigate some of these threats. I also mentioned my PhD research on US couples who travel internationally and watch birds. I was later interviewed on Colombian television about my research on this market.

Unfortunately, there was little time for birdwatching in the beautiful gardens of the Recinto del Pensamiento, where we speakers stayed and the Festival was held. But new species I snatched a look at between sessions included Southern Lapwing, White-collared Swift, Rufous-collared Sparrow, Pale-edged Flycatcher, Palm Tanager, and Great Thrush.



Images: Above a violetear in the gardens, left a Heliconius butterfly feeding on lantana, supplied by Denise Goodfellow

On my last day I walked up the rain-forested mountain to Recinto's hummingbird house. Glittering streaks of emerald, garnet, peridot, and amethyst buzzed around the red plastic bird feeders and potted purple and pink fuchsias on the porch - hummingbirds with the evocative names of Sparkling Violetear, Woodstar, Bronzy Inca and *Amazilia tzacatl*. Hopping around the potted shrubs was a little black bird with an upturned beak - White-sided Flowerpiercer.

Walking through the rainforest I spotted familiar-looking plants, reminding me of Australia's Gondwanan links with this family. One large purple flowered shrub, *Tibouchina urvilleana*, was obviously a member of the Melastomataceae, a family present in the Top End. A tiny chrome-yellow fungus on a rotting log resembled *Dacryopinax spathularia*, also found in the Top End and most likely related according to Dr. Tom May of Fungimap. A butterfly, *Heliconius* sp, (Nymphalidae) feasted on *Lantana camara* - endemic to South America this plant is also found in Australia. Brought in as an ornamental garden plant 150 years ago, it is now a weed of national significance.

I have no hesitation in recommending Manizales to birders and other wildlife enthusiasts. I'll be returning at the first opportunity! My thanks to Sergio Ocampo-Tobòn, Natalia and Claudia of COTELCO, and the Colombian Government for making this trip possible. Thanks also to Fungimap, Sergio Ocampo-Tobòn and to Ana Maria, for help with some fungi, flora and fauna identification.

New Frog Bible: Tadpoles and Frogs of Australia

by Marion Anstis

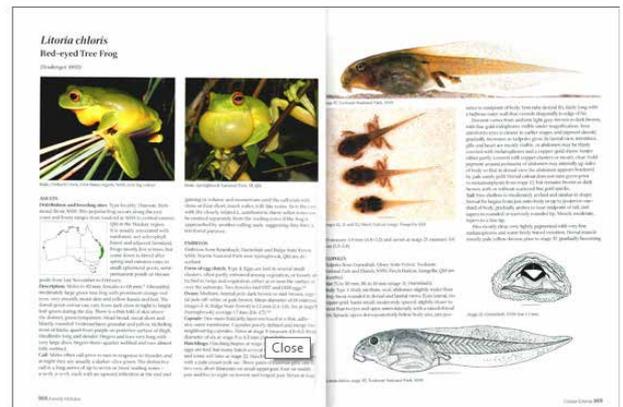
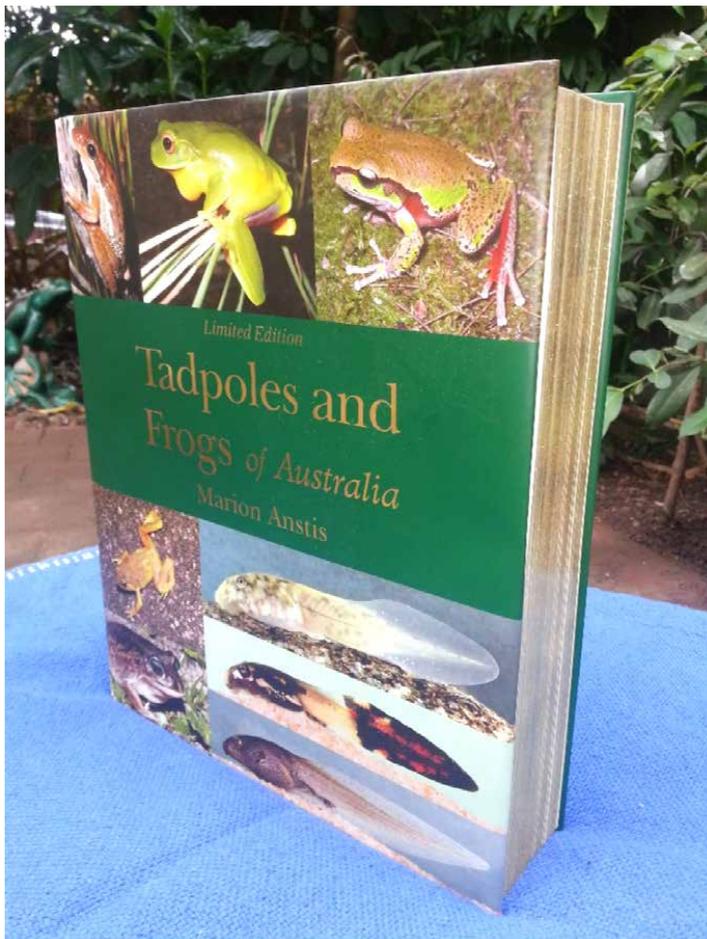
Book review by **Carla & Steve**

RRP AU \$125.00, available from Andrew Isles Natural History Books and CSIRO Publishing

Marion Anstis, otherwise known as the tadpole lady and the author of 'Tadpoles of South-eastern Australia', has now extended her reach to include the tadpoles and frogs of northern Australia and the rest of the country. She has recently published her *magnum opus* and life work 'Tadpoles and Frogs of Australia'.

This massive tome is a very comprehensive volume with photos of tadpoles and adult frogs and descriptions of all known species of amphibians in Australia. You can tell by the list of acknowledgements, which runs to two pages,

that Marion has spent an incredible amount of effort on this book. She has travelled all around Australia to document the life histories and photograph our amazing tadpoles and the frogs that they develop into. Marion recognises 23 tadpole types, and provides information about developmental stages (eggs to metamorphosis) and morphological features of tadpoles, before the main part of the book which comprises the species accounts (an example below).



The book is published in quarto size, extends to 829 pages and weighs a whopping 3.8kg. It is not meant to be light reading but as a reference volume for the frogs of Australia there is unlikely to be anything else that comes close.

Literature reviews cont. from p11

Burton's Legless Lizard

Pygopodids, or flap-footed lizards are related to geckos and share with them the characteristic of not having eyelids. Pygopodids are a very diverse group ecologically with roughly 40 species found throughout mainland Australia and southern New Guinea. This group is also known for being limbless or functionally limbless. Wall and Shine (2013) carried out an extensive ecological study of Burton's Legless Lizard *Lialis burtonis* in the Top End. This species ranges across most of the continent and is found in virtually every habitat type, yet very little is known about its biology. Their study involved the examination of museum specimens and telemetry of live animals near Fogg Dam Conservation Reserve. Mating occurred in the late dry season and egg-laying in the early to middle wet season. Females might be fertilized with stored sperm and can lay multiple clutches per year. Mostly diurnal, *L. burtonis* are sedentary (moving on average less than 5 meters a day), feed infrequently (only 21% of stomachs contained prey) and live 6-8 cm down in leaf-litter. They are ambush foragers and their main prey was other lizard species, especially skinks.

Interesting bird sightings

29 November 2013 to 21 January 2014

Compiled by Micha Jackson and Peter Kyne

Sightings are as reported (unvetted, unconfirmed) and have been compiled from emails sent to the NT Birds forum (<http://groups.yahoo.com/group/ntbirds>) moderated by Niven McCrie, postings on Birdline Northern Territory (<http://www.ereamae.com/>) and from correspondences with birdwatchers. Bird names follow the IOC world checklist.

Species	Date	Location	Observer/s	Numbers/comments
Waterbirds, Seabirds & Shorebirds				
Red (Grey) Phalarope	21/1/14	Leanyer Sewage Ponds	Mick Jerram & Gus Daly	1; rare vagrant; still present 27/1/14
Freckled Duck	23/12/13	Leanyer Sewage Ponds	Nigel Adlam	1; also 15/01/14
Lesser Frigatebird	15/1/14	Nightcliff	Fiona Douglas	21
Little Ringed Plover	21/1/14	Leanyer Sewage Ponds	John Rawsthorne	1
Long-toed Stint	9/12/13	Alice Springs Sewage Ponds	Rod Gardner	1
Oriental Pratincole	1/12/13	North of Cullen River	Marc Gardner	~100; hawking insects
Oriental Pratincole	9/1/14	Barunga	Marc Gardner	2
Pectoral Sandpiper	9/12/13	Alice Springs Sewage Ponds	Rod Gardner	1
Pink-eared Duck	1/12/13	Leanyer Sewage Ponds	Clive Garland	700+
Purple Swamphen	29/11/13	Casuarina Coastal Reserve	Gavin & Meg O'Brien	1; unusual in Darwin
Red-backed Buttonquail	12/1/14	Florina Rd, Katherine	Marc Gardner	3
Yellow-billed Spoonbill	3/12/13	Wongalara/Mainoru turnoff	Marc Gardner	2
Birds Of Prey				
Grey Falcon	9/12/13	Alice Springs Telegraph Stn	Rod Gardner	1
Spotted Harrier	20/12/13	Roper Hwy	Marc Gardner	1 chased by Aust Magpie
Spotted Harrier	12/1/14	Florina Rd, Katherine	Marc Gardner	2
Passerines				
Australian Magpie	20/12/13	Roper Hwy	Marc Gardner	1 chasing Spotted Harrier
Cicadabird	4/12/13	Mainoru Creek	Marc Gardner	1 male
Cicadabird	13/12/13	Katherine	Marc Gardner	1
House Sparrow	3/1/13	Katherine Central Shopping Centre	Marc Gardner	1 male
Gouldian Finch	4/12/13	East of Barunga	Marc Gardner	60+
Gouldian Finch	12/1/14	Florina Rd, Katherine	Marc Gardner	1
Grey Wagtail	8/12/13	Alice Springs Sewage Ponds	Mark Carter	1; also 11/12/2013
Oriental Reed Warbler	27/12/13	Fogg Dam	David Webb	1; also 28/12/2013
Star Finch	12/1/14	Florina Rd, Katherine	Marc Gardner	120
Yellow-rumped Mannikin	29/11/13	Casuarina Coastal Reserve	Gavin & Meg O'Brien	1; with Chestnut-breasted Mannikins
Yellow-rumped Mannikin	12/1/14	Florina Rd, Katherine	Marc Gardner	8



Duck duck goose?

Actually the bird at left is a Red (or grey if you are in Europe) Phalarope *Phalaropus fulicarius*. Looking somewhere between a gull and a duck, it is actually most closely related to sandpipers and plovers.

This individual (if the record is accepted by the Birds Australia Rarities Committee) will be only the fifth confirmed record in Australia, making this one of Australia's rarest birds.

And where was this photo taken? At our very own Leanyer Sewage Ponds, a haven for many a rarity over the years. Congratulations to Mick Jerram and Gus Daly for spotting this bird.

Photo by Micha Jackson

Recent literature about Top End natural history

REPTILES & AMPHIBIANS

Compiled by Carla & Steve

Crocodiles

- Austin BJ, Corey B. 2012. Factors contributing to the longevity of the commercial use of crocodiles by indigenous people in remote northern Australia: a case study. *The Rangeland Journal* 34: 239-248.
- Brien ML, Webb GJ, Lang JW, McGuinness KA, Christian KA. 2013. Born to be bad: agonistic behaviour in hatchling saltwater crocodiles (*Crocodylus porosus*). *Behaviour* 150: 737-762.
- Brien ML, Webb GJ, Lang JW, Christian KA. 2013. Intra- and interspecific agonistic behaviour in hatchling Australian freshwater crocodiles (*Crocodylus johnstoni*) and saltwater crocodiles (*Crocodylus porosus*). *Australian Journal of Zoology* 61: 196-205.
- Fukuda Y, Saalfeld K, Webb G, Manolis C, Risk R. 2013. Standardised method of spotlight surveys for crocodiles in the tidal rivers of the Northern Territory, Australia. *Northern Territory Naturalist* 24: 14-32.
- Fukuda Y, Saalfeld K, Lindner G, Nichols, T. 2013. Estimation of total length from head length of saltwater crocodiles (*Crocodylus porosus*) in the Northern Territory, Australia. *Journal of Herpetology* 47: 34-40.
- Seymour RS, Gienger CM, Brien ML, Tracy CR, Manolis SC, Webb GJW, Christian KA. 2013. Scaling of standard metabolic rate in estuarine crocodiles *Crocodylus porosus*. *Journal of Comparative Physiology B* 183: 491-500.
- Somaweera R, Shine R. 2013. Nest-site selection by crocodiles at a rocky site in the Australian tropics: *Making the best of a bad lot*. *Austral Ecology* 38: 313-325. [Lake Argyle]

Cane Toad impacts and parasites

- Britton ARC, Britton EK, McMahon CR. 2013. Impact of a toxic invasive species on freshwater crocodile (*Crocodylus johnstoni*) populations in upstream escarpments. *Wildlife Research* 40: 312-317.
- Pizzatto L, Kelehear C, Shine R. 2013. Seasonal dynamics of the lungworm, *Rhabdias pseudosphaerocephala*, in recently colonised cane toad (*Rhinella marina*) populations in tropical Australia. *International Journal for Parasitology* 43: 753-761.
- Price-Rees SJ, Webb JK, Shine R. 2013. Reducing the impact of a toxic invader by inducing taste aversion in an imperilled native reptile predator. *Animal Conservation* 16: 386-394.

Frogs

- Anstis M. 2013. *Tadpoles and Frogs of Australia*. New Holland Publishers, Sydney.
- Dostine PL, Reynolds SJ, Griffiths AD, Gillespie GR. 2013. Factors influencing detection probabilities of frogs in the monsoonal tropics of northern Australia: implications for the design of monitoring studies. *Wildlife Research* 40: 393-402.
- Reynolds SJ. 2012. Hydrated body fluid osmolality values for species of *Cyclorana*. *Journal of the Royal Society of Western Australia* 95: 171-174.
- Tracy CR, Christian KA, Burnip N, Austin BJ, Cornall A, Iglesias S, Reynolds SJ, Tixier T, Le Noëne C. 2012. Thermal and hydric implications of diurnal activity by a small tropical frog during the dry season. *Austral Ecology* 38: 476-483.

Lizards, Snakes and Turtles

- McDonald PJ, Luck GW, Pavey CR, Wassens S. 2013. Body sizes, activity patterns and habitat relationships of the orange-naped snake (*Furina ornata*) (Serpentes : Elapidae) in the MacDonnell Ranges, Northern Territory. *Australian Journal of Zoology* 61: 132-136.
- Price-Rees SJ, Brown GP, Shine R. 2012. Spatial ecology of bluetongue lizards (*Tiliqua* spp.) in the Australian wet-dry tropics. *Austral Ecology* 38: 493-503.
- Sanders K. 2013. Recent rapid speciation and ecomorph divergence in Indo-Australian sea snakes. *Molecular Ecology* 22: 2742-2759. [Hydrophiinae]
- Wall M, Shine, R. 2013. Ecology and behaviour of Burton's Legless Lizard (*Lialis burtonis*, Pygopodidae) in tropical Australia. *Asian Herpetological Research* 4: 9-21.
- Whytlaw PA, Edwards W, Congdon BC. 2013. Marine turtle nest depredation by feral pigs (*Sus scrofa*) on the Western Cape York Peninsula, Australia: implications for management. *Wildlife Management* 40: 377-384. [Cape York - flatback, olive ridley, hawksbill]

Invaded invasive toads

The parasitic nematode lungworm *Rhabdias pseudosphaerocephala* is a toad parasite that is thought to have been brought to Australia with the toads. It affects cardio-respiratory function, growth rates and survivorship, but tends to be left behind at the invasion front so toads there are parasite free for a year or two. Pizzatto et al. (2013) found that bigger toads had more parasites and that parasite 'prevalence and intensity were highest during drier times of year and in drier habitats (i.e. sites lacking permanent waterbodies).' They suggest that 'dry conditions induce toads to aggregate in moist dry-season refugia where conditions may be more conducive to direct transmission of infective parasitic larvae between hosts'. This may be a partial explanation for the somewhat sad and emaciated appearance of toads in the latter part of the dry season, although presumably lack of food is also a factor.

