NATURE TERRITORY

February 2012

Newsletter of the Northern Territory Field Naturalists Club Inc.

PO Box 39565, Winnellie, NT 0821

Club web-site: http://ntfieldnaturalists.org.au/

Meetings are *generally* held on the second Wednesday of every month, commencing at 7:45 PM, in Blue 1.14 (Business Faculty Building) on the Casuarina Campus of Charles Darwin University.
Subscriptions are on a financial-year basis and are: Families/Institutional - $30; Singles - $25; Concessions - $15. Discounts are available for new members – please contact us.

What all that noise is about: the wet-season mating games of the Green Tree Frog. There are more photos of Green Tree - Frogs on pages 4-6.

Photo: Martin Dziminski.

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Club activities

February meeting. Wednesday February 8, 7:45 PM. Blue 1.14 (Business Bldg.), CDU Casuarina.

Erica Garcia

"Seasonal monitoring and experimental manipulation involving insects, fish, algae and water quality in wet-dry tropical rivers"

River's across Australia's tropical north have largely unmodified flow regimes and are characterized by their strongly seasonal flows. Seasonal variability in the connectedness of rivers can either promote or limit the opportunity for animals to move up and downstream and from the river into the riparian zone. As part of a collaboration of TRaCK (Tropical Rivers and Coastal Knowledge) researchers, we sampled a range of aquatic biota over 16 months to investigate the peaks in the movements of animals in three rivers that differed in their seasonal connectedness. Additionally in one of these rivers we experimentally excluded fish and added nutrients (N & P) to examine which of these factors were most important in regulating benthic algae which are the main source of food that sustains life in the river.

Flux experiment on the Edith River. Photo: Michael Douglas.

Erica Garcia is a senior research fellow in the freshwater ecology and management theme in the Research Institute for the Environment and Livelihoods at Charles Darwin University. She moved from the US to Darwin almost four years ago lured by the opportunity to study biodiversity and aquatic species interactions in tropical river food webs.

February field trip. Sunday Feb. 12, 9:00 AM.

A meander along Rapid Creek's headwaters, Darwin Airport

Rapid Creek has its origins on Darwin Airport land. In contrast to the broad mangrove-lined creek that flows into the sea only a few kilometres away, upstream is a narrow creek lined by shady rainforest trees. Join us for a meander along the creek. It should be a good time for insects, birds and plants.

Meet at 9AM in the first car park on the left hand side of Charles Eaton Drive – this is approximately 150m from the McMillans Road turn off. Come prepared for possible rain. Biting insects may be present so please consider protection. Bring cameras and binoculars. Contact Tissa on 8921 8226 for more details.

Top End Native Plant Society activities

February meeting. Thursday Feb. 16. Phil Hickey: *Gamba Grass phenology*.

February field trip. Saturday Feb. 18. Sandsheets at the Territory Wildlife Park.

April field trip. Saturday April 21, Visit to the Ebsworth's place at Darwin River.

General meetings are held on the 3rd Thursday of the month at the Marrara Christian College, corner Amy Johnson Ave. and McMillans Road, and commence at 7:30 PM (speaker at 8 PM). Visit http://www.topendnativeplants.org.au/index.php or contact Russell Dempster on 8983 2131.

Club notices

Thank you: the previous issue was finalised by **Tissa Ratnayeke**, and collated and mailed by **Anne Highfield**. It was printed using equipment kindly made available by **Michael Gunner MLA** at his Fannie Bay electoral office.

Newsletter contributions welcome: Sightings, reports, travelogues, reviews, photographs, sketches, news, comments, opinions, theories ..... , anything relevant to natural history. Please forward material to Tissa at *tissa@imprintdesign.com.au* or the Club's postal address, or contact him on 8948 1293.

Deadline for the March newsletter: Friday February 24.

Newsletter editor needed: Your long-time editor is moving interstate and needs to be replaced urgently. Assistance will be available at least initially for any volunteer for this exciting position. If even vaguely interested or willing to be involved as part of a team, please contact Tissa, phone 8921 8226.

Need a Club membership form? Go to: http://sites.google.com/site/ntfieldnaturalists/downloads.

Club library: The Club's journal and book collection is available to members. Lists of holdings can be found on our web-site: http://sites.google.com/site/ntfieldnaturalists/library. The library is housed in two sections:

Books, reports and CDs: at the medical clinic of Dr. Lyn Reid in the Rapid Creek Business Village. This can be accessed directly between 9 AM and 2:30 PM Tuesday to Thursday, and 4–6 PM on Tuesday, or indirectly by phoning Lyn at work on 8985 3250.

Journals: in the office of Don Franklin at CDU Casuarina (Red 1.2.34). These can be accessed directly during working hours, or by ringing Don on 8946 6976 (w) or 8948 1293 (h).

***Northern Territory Naturalist*:**

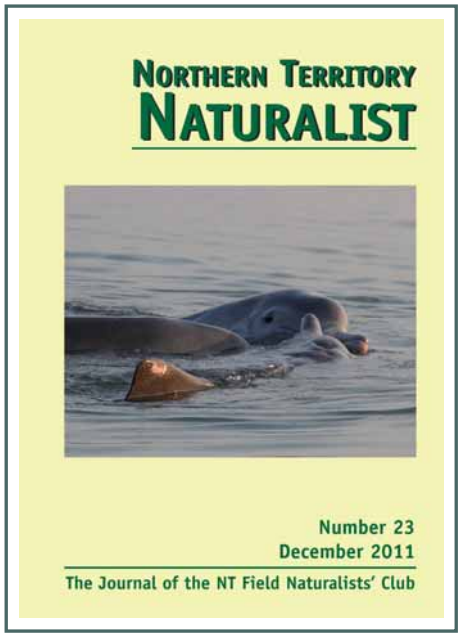
Issue no. 23 is now out (front cover below right). Some members may have already received a copy. We intend having it available for hand-out at the February meeting and the remainder will be posted in the near future.

The Editorial Committee of the Club's journal, the *Northern Territory Naturalist*, is now calling for manuscripts for issue no. 24. The journal publishes works concerning any aspect of the natural history and ecology of the Northern Territory or adjacent northern Australia. and may include Research Papers (Articles or Short Notes), Reviews, Species Profiles and Book Reviews.

The *Northern Territory Naturalist* is a registered, peer-reviewed journal (ISSN 0155-4093). Author instructions may be downloaded from our web-site: http://sites.google.com/site/ntfieldnaturalists/journal.

If possible, manuscripts should be submitted in digital form by email to *michael.braby@nt.gov.au*. Manuscript editors are Drs Michael Braby, Lynda Prior and Anke Frank. Louis Elliott is the production editor.

Originals are available of most back issues, some are available as photocopies only, and several recent issues are out-of-print but individual papers are available as pdfs. The journal page of the Club's web-site has an order form for back issues. Free pdfs of papers from issue 18 (2005) onwards are available from the authors or by contacting Don Franklin, email *don.franklin@cdu.edu.au*.



Leanyer Ponds: Access to Leanyer Ponds is available after induction through PAWC. Go to https://www.rapidinduct.com.au/powerwater/waterservices to commence the induction process. A key to the ponds may be obtained on payment of a $50 deposit. Only those who have undertaken the induction and signed an indemnity can enter Leanyer Ponds.

Bryan Baker has keys for the Alice Springs Sewage Ponds, available for collection in Darwin by members before they head south. Bryan can be reached in Darwin on 8948 2196.

Town frogs, bush frogs

Compiled by Steve Reynolds

The Green Tree Frog (*Litoria caerulea*, GTF for short) is a common frog around Darwin. It reaches very high densities in the suburbs - possibly the highest anywhere in Australia for this species. GTFs breed in the various ponds, pots and other receptacles that fill with water in the wet, and in the dry they find refuge in cavities and hiding places in moist gardens.

Many times I have been told by locals that if I need frogs for my research, then I should just come to their place. Inevitably people are referring to the GTF, but of course GTFs are just one of the many native species (approximately 20) that occur in the Darwin region. Other common species in Darwin gardens are the Marbled Frog (*Limnodynastes convexiusculus*) and the Brown Tree Frog (*Litoria rubella*), and slightly less common are the Rocket Frog (*Litoria nasuta*) and Roth's Tree Frog (*Litoria rothii*).

Above: ?smoking frog – living in the city can be unhealthy. The frog has somehow got a stick in its mouth. Photo: Francoise Foti.

Strangely enough, GTFs are not that common in the bush, they are generally hard to find, and they do not call very often. All this in contrast to their city cousins, who will begin calling at the slightest provocation. I would like to share some photos that I have been sent by various people in the past few years (and some I have taken myself) of GTFs in different situations.

Left: a Green Tree Frog in the lab adopting a water absorbing posture (on a moistened paper towel) - this posture enhances the ability of the frog to absorb water via the ventral skin surface. Photo: Steve Reynolds.

Town frogs

Below: Common Tree Snake (*Dendrelaphis punctulatus*) consuming a Green Tree Frog in a Darwin backyard. Photo: Barbara Salas.

Below: relaxed frog. Photo taken at Brunswick Heads, NSW by Steve Reynolds.

Frogs in exposed situations

Above left: an unusual daytime perch – the Nightcliff footbridge. Photo: Chris Tracy.

Above right: a more usual daytime perch, in *Pandanus spiralis* (Mickett Creek). Photo: Steve Reynolds.

Left: Green Tree Frogs may also use exotic trees; this one is on a leaf of an African Mahogany. Photo: Renkang Peng.

Bush frogs Above: perched on a branch (Mickett Creek). Right: in a tree hollow at East Point. Photos: Steve Reynolds.

More bush frogs

Above: Green Tree Frog in full calling stance (near Kununurra). Photo: Martin Dziminski.

Right: another frog-in-a-hollow (near Elliott). Photo: Don Franklin.

Tree-frogs and water during the dry season from *Recent Literature*, page 10

Given their "porous" skins, it is interesting that some frogs such as the Green Tree Frog remain active in waterless areas during the dry season. How do they maintain their water balance? Chris Tracy *et al.* (2011b) wondered if Green Tree Frogs did so by absorbing water that condensed onto their skin during the (relative) cool of night whilst they are in tree hollows where relative humidity is higher than the surrounding environment. They found that the water gained by this method was up to almost 1% of body weight, and calculated that this was more than enough to compensate for water losses.

Sun-bathing frogs from *Recent Literature*, page 10

It isn't uncommon for frogs to come out during the day, but most Australian reports relate to overcast and rainy condition. The Bilingual Froget (Crinia bilingua), however, appears to like sunbathing. Richard & Fleming (2010) report "repeated" observations of individual Bilinguil Froglets in the Victoria River District "basking in full sunlight on exposed rocks and open sections of stream banks, typically within a single leap of the water." These observations were throughout the day but in July, the coolest month of the year. The authors suggest that the frogs were warming up after cool nights – with the benefit of water close by so that they can maintain hydration.

Contributions from the Herbarium

From *Recent Literature*, page 11 in the December 2011 issue

Bladderworts (genus *Utricularia*) are small but often showy herbs mostly found in swampy places. They are notable (like sundews) for being carnivorous, the small bladders attached to their roots and stems being able to catch and digest microscopic aquatic animals. These animals presumably provide them with nutrients that they might otherwise be unable to extract from waterlogged soils.

Left and above: the Tawny Bladderwort (*Utricularia fulva*). Photos: Deb Bisa.

With 36 species, the Darwin area is exceptionally rich and home to more than half the *Utricularia* species found in Australia. The Herbarium has provided a six page document about them in the Northern Territory with background information, illustrations of structural features, and a key to and photographs of the species (NTH 2011). (For more detailed notes on several bladderworts of the Darwin area, see *Nature Territory* Aug. 2011 p. 4 (*U. singeriana*, a rare species) and *Nature Territory* Dec. 2008 p. 4 (*U. simmonsii*, the Red Dwarf Bladderwort).)

Herbarium staff have also produced a 10 page information document about cycads in the Northern Territory (Cowie *et al.* 2011). An updated checklist of the vascular plants of the Northern Territory is now available (Short *et al.* 2011), as also is volume 1 of the *Flora of the Darwin Region* (Short & Cowie 2011).

All the above can be downloaded from http://www.nt.gov.au/nreta/wildlife/plants_herbarium/resources.html.

Many bladderworts can be identified by a combination of the shape and colour of their flowers. This one is *Utricularia leptoplectra*. Photo: Deb Bisa.

New grass species

A new species of perennial grass, *Aristida jacobsiana*, has been described from Nitmiluk National Park by Simon & Cowie (2011). The specific name is in memory of the late Surrey Jacobs, a botanist who is first author of the book *Grasses of New South Wales*. *Aristida jacobsiana* has also been found in the Adelaide River area and at two locations in central Queensland. Although seemingly localised, it may have been overlooked in many surveys.

Christmas special

Report on the December meeting **Don Franklin**

The *c.* 20 members present were clearly in a Christmas social mood; the Chair had trouble getting the meeting underway. When he (me, acting in Tissa's absence) did succeed, Louise Finch and Meg O'Brien told us about the public consultation associated with the revision of the plan of management for Casuarina Coastal Reserve. There was much discussion about the impact of Cane Toads on the Frillneck Lizard population (mixed reports). And, amongst other notes and observations, I reported on a giant stick insect that took up residence for a day in a Nightcliff stairwell.

Do three years make a Christmas tradition? For the third year in a row, Sherry Prince kept us on our toes and well-entertained with a challenging natural history quiz.

Q: (multiple choice) What is a "Boodie"? *A*: a Bettong. (I hope you know what a Bettong is.)

Sherry led us from Darwin mangroves to Lake St Clair in Tasmania, and from frogs and trees to birds and comets. Did you know that a group of frogs is known as a "knot"? My Australian history was tested and found wanting with: *Why were the Emu and the Kangaroo chosen as the animals for the Australian National Emblem?* But some knew their history well: A. *because they can't move backwards.* Though I'm quite happy with these creatures as our emblems, I'm not so keen on the rationale. And you all know what creature goes by the scientific name of *Aegotheles cristatus*. Despite much head-scratching, a great time was had by all.

Above: out of habitat and not so well camouflaged – an adult female Darwin Stick-insect (*Eurycnemia osiris*). Photo: Don Franklin.

Left: the big, gentle eyes of *Aegotheles cristatus*, the Australian Owlet-nightjar. Photo: Trevor Collins.

Below: Australian emblem or Australian jingoism? Red Kangaroo (*Macropus rufus*). Photo: Brian Thistleton.

Interesting bird sightings

26 November 2011 to 20 January 2012 **Compiled by Ian Hance**

Sightings are as reported (unvetted, unconfirmed) and have been mostly compiled from the e-mail digest of the NT birder website (http://groups.yahoo.com/group/ntbirds) moderated by Niven McCrie.

Species	Date	Location	Observer/s	Nos./comments
Waterbirds and waders				
Spotted Whistling-Duck	27/12	Leanyer Sewage Ponds	Peter Kyne	1 still present 11/1/2012
Pink-eared Duck	11/12	Leanyer Sewage Ponds	Peter Kyne	5; 7 on 18/12; 9 on 28/12
White-browed Crake	1/01	Fogg Dam	Peter Kyne	1; & other sightings at this site - "lots"
Little Ringed Plover	11/12	Leanyer Sewage Ponds	Peter Kyne	2; 4 on 18/12/2011
Birds of prey				
Pacific Baza	28/11	Leanyer Sewage Ponds	Peter Kyne	1
~	5/12	Rocklands Drive, Tiwi	Louise Finch	1
Grey Goshawk	29/12	Leanyer Sewage Ponds	Marc Gardner & Peter Kyne	1, white morph
Spotted Harrier	26/11	Kakadu Highway, Kakadu	Marc Gardner	1
Wedge-tailed Eagle	*c.* 6/1	Darwin River Dam	Darryel Binns	1; & other sightings
Little Eagle	*c.* 6/1	Fogg Dam	Darryel Binns	1
Rufous Owl	5/12	Rocklands Drive, Tiwi	Louise Finch	1
Other non-passerines				
Rose-crowned Fruit-Dove	7/01	Fogg Dam	Darryel Binns	4; & sightings at East Point
Fork-tailed Swift	26/11	Chinaman Creek, Katherine	Marc Gardner	26
~	28/12	Buffalo Creek	Marc Gardner & Peter Kyne	20
Australian Bustard	26/12	Oolloo Rd.	Ian Hance	6
Channel-billed Cuckoo	27/11	Mt. Bundy Stn	Jessie & Jo Wright	5
Little Kingfisher	*c.* 6/1	Howard Springs	Darryel Binns	1
Passerines				
Mangrove Golden Whistler	*c.* 6/1	Mangrove Boadwalk, East Point	Darryel Binns	1
~	7/12	Adelaide River Bridge	Darryel Binns	2
Mangrove Robin	9/01	Leanyer Sewage Ponds	Peter Kyne & Micha Jackson	2
Buff-sided Robin	26/12	Douglas Daly Nature Park	Ian Hance	2
Gouldian Finch	26/11	Chinaman Creek, Katherine	Marc Gardner	20
Yellow Wagtail sp.	11/12	Leanyer Sewage Ponds	Peter Kyne	1

Cane Toads and the dry season from *Recent Literature*, page 10

The natural range of the Cane Toad in the Americas is not as seasonally dry as most of northern Australia, yet the species has done well (far too well!) in our region. Brown *et al.* (2011) explored the impact of seasonality on Toads in the Top End. Unsurprisingly, Toads were in better condition, grew faster and reproduced during the wet season. Less obviously, however, mortality rates were higher in the wet season. "The toads' ability to flexibly adjust their behaviour and ecology to local hydric conditions has allowed them to thrive even under climatic conditions that preclude activity, feeding and reproduction for most of the year."

Nevertheless, Cane Toads need access to moisture during the dry season to survive. In the drier inland fringes of their range in northern Australia, this suggests a mechanism for local and property-scale control – exclude them from water sources for a few days during the dry season. Florance *et al.* (2011) trialled exclusions from artifical watering points in the Victoria River District, with striking results. All 21 radio-tracked Cane Toads released outside an exclusion fence died within 3 days, whereas 19 of 20 released at a non-excluded watering point survived. At three excluded watering points where Toads were removed from within the exclosure, no toads were observed from 6 days after exclosure until the cessation of monitoring 70 days after exclosure. At the non-excluded watering points, 19 Toads radio-tracked for 12 days all visited the water and over half of all "fixes" were within 0.5 m of the water, though one individual was recorded up to 410 m from the watering point. Toads sheltered during the day in soil cracks and logs. Using information about the availability of permanent water, the authors estimate that these methods have potential for application over an area of about 850,000 km^2, a potentially massive boon for native wildlife. The possibilities for implementing these controls on a property scale are currently being investigated.

Recent literature about Top End natural history

REPTILES & AMPHIBIANS

Compiled by Don Franklin

Frogs

Anstis M, Parker F, Hawkes T, Morris I, Richards SJ. 2011. Direct development in some Australopapuan microhylid frogs of the genera *Austrochaperina*, *Cophixalus* and *Oreophryne* (Anura: Microhylidae) from northern Australia and Papua New Guinea. *Zootaxa* 3052: 1-50.

Nelson DWM, Crossland MR, Shine R. 2011. Behavioural responses of native predators to an invasive toxic prey species. *Austral Ecology* 36: 605-611. [Northern Trout Gudgeon & Dahl's Aquatic Frog]

Reynolds SJ, Christian KA, Tracy CR, Hutley LB. 2011. Changes in body fluids of the cocooning fossorial frog *Cyclorana australis* in a seasonally dry environment. *Comparative Biochemistry and Physiology A-Molecular & Integrative Physiology* 160: 348-354. [Giant Frog]

Richard J, Fleming D. 2010. An observation of diurnal basking in the tropical Australian frog *Crinia bilingua*. *Herpetofauna* 40: 37-38. [Ratchet Frog]

Tracy CR, Christian KA, McArthur LJ, Gienger CM. 2011b. Removing the rubbish: frogs eliminate foreign objects from the body cavity through the bladder. *Biology Letters* 7: 465-467.

Tracy CR, Laurence N, Christian KA. 2011a. Condensation onto the skin as a means for water gain by tree frogs in tropical Australia. *American Naturalist* 178: 553-558.

Cane Toads

Brown GP, Kelehear C, Shine R. 2011. Effects of seasonal aridity on the ecology and behaviour of invasive cane toads in the Australian wet–dry tropics. *Functional Ecology* 25: 1339-1347.

Crossland M, Brown G, Shine R. 2011. The enduring toxicity of road-killed cane toads (*Rhinella marina*). *Biological Invasions* 13: 2135-2145.

Crossland MR, Hearnden MN, Pizzatto L, Alford RA, Shine R. 2011. Why be a cannibal? The benefits to cane toad, *Rhinella marina* [=*Bufo marinus*], tadpoles of consuming conspecific eggs. *Animal Behaviour* 82: 775-782.

Florance D, Webb JK, Dempster T, Kearney MR, Worthing A, Letnic M. 2011. Excluding access to invasion hubs can contain the spread of an invasive vertebrate. *Proceedings of the Royal Society B-Biological Sciences* 278: 2900-2908.

Gonzalez-Bernal E, Brown GP, Cabrera-Guzman E, Shine R. 2011. Foraging tactics of an ambush predator: the effects of substrate attributes on prey availability and predator feeding success. *Behav. Ecol. & Sociobio.* 65: 1367-1375.

Phillips BL, Brown GP, Shine R. 2010. Evolutionarily accelerated invasions: the rate of dispersal evolves upwards during the range advance of cane toads. *Journal of Evolutionary Biology* 23: 2595-2601.

Shine R, Doody JS. 2011. Invasive species control: understanding conflicts between researchers and the general community. *Frontiers in Ecology and the Environment* 9: 400-406.

Pythons

Ujvari B, Madsen T. 2011. Do natural antibodies compensate for humoral immunosenescence in tropical pythons? *Functional Ecology* 25: 813-817.

Ujvari B, Shine R, Luiselli L, Madsen T. 2011. Climate-induced reaction norms for life-history traits in pythons. *Ecology* 92: 1858-1864.

Ujvari B, Shine R, Madsen T. 2011. How well do predators adjust to climate-mediated shifts in prey distribution? A study on Australian water pythons. *Ecology* 92: 777-783.

Parasites

Kelehear C, Spratt DM, Dubey S, Brown GP, Shine R. 2011. Using combined morphological, allometric and molecular approaches to identify species of the genus *Raillietiella* (Pentastomida). *PLoS One* 6: e24936. [parasites]

Kuzmin Y, Tkach VV, Snyder SD, Bell JA. 2011. *Camallanus* Railliet et Henry, 1915 (Nematoda, Camallanidae) from Australian freshwater turtles with descriptions of two new species and molecular differentiation of known taxa. *Acta Parasitologica* 56: 213-226.

Pizzatto L, Shine R. 2011. The effects of experimentally infecting Australian tree frogs with lungworms (*Rhabdias pseudosphaerocephala*) from invasive cane toads. *International Journal for Parasitology* 41: 943-949.

Pizzatto L, Shine R. 2011. You are what you eat: Parasite transfer in cannibalistic Cane Toads. *Herpetologica* 67: 118-123.

Pizzatto L, Shine R. 2011. Ecological impacts of invading species: Do parasites of the cane toad imperil Australian frogs? *Austral Ecology* 36: 954-963.

Miscellaneous

Fukuda Y, Webb G, Manolis C, Delaney R, Letnic M, Lindner G, Whitehead P. 2011. Recovery of Saltwater Crocodiles following unregulated hunting in tidal rivers of the Northern Territory, Australia. *Journal of Wildlife Management* 75: 1253-1266.

Price-Rees SJ, Webb JK, Shine R. 2011. School for skinks: can conditioned taste aversion enable Bluetongue Lizards (*Tiliqua scincoides*) to avoid toxic Cane Toads (*Rhinella marina*) as prey? *Ethology* 117: 749-757.

Recovery of Saltwater Crocodile populations We know that Saltwater Crocodiles (*Crocodylus porosus*) have bounced back since protection in 1971; now, data and analysis are available to demonstrate this. Fukuda *et al.* (2011) provided indices of density of Saltwater Crocodiles for 12 tidal rivers in the Top End for 1975 to 2009. They estimated a 2010 population of just over 5 crocodiles weighing an average of 388 kg each per km of river. This is close to the estimated carrying capacity – 5.58 crocodiles per kilometre of river – but well below the potential biomass capacity – an average of 519 kg per crocodile. In other words, numbers may not increase much more but the size of crocodiles will continue to increase.