



NATURE TERRITORY

May 2009

Newsletter of the Northern Territory Field Naturalists Club Inc.

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Meetings are generally held on the second Wednesday of every month, commencing at 7:45 PM, in Blue 1.03 (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. Part-year discounts are available for new members from January 1 each year.



The Charcoal-winged Percher (*Diplacodes nebulosa*) is a small, weak-flying dragonfly found fluttering amongst grass in swampy area. Dragonflies featured at last month's meeting and excursion; reports on pages 9–11. Photo: Brian Thistleton.

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Disclaimer: The views expressed in *Nature Territory* are not necessarily those of the NT Field Naturalists Club Inc. or members of its Committee.

Club activities

May meeting. Wednesday May 13, 7:45 PM. Blue 1.03 (Business Building), CDU.

Paul Horner

"Lizards of the Territory – secretive, spectacular and absolutely fascinating"

Paul is Curator of Terrestrial Vertebrates at the Museum and Art Gallery Northern Territory. He has spent more than 30 years studying the reptile fauna of the Northern Territory. Primarily interested in the taxonomy and biogeography of north Australian skinks, he has discovered and described over 35 new species of reptile.

Thorny Devil *Moloch horridus*.
Photo: Paul Horner.



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May field trip. Sunday May 17. Lizards of Holmes Jungle, led by Paul Horner.

Meet at the top car park at 8:30 AM.

Binoculars are handy for reptile spotting.

Don't forget sun protection and something to drink.

The Holmes Jungle reserve contains a variety of habitats and their associated lizards.

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Supplementary May activity. Tuesday May 12. As part of the National Heritage Trust's 10-day Heritage Festival (see page 12 for more detail), NTFNC will host a c. 1 hour Myilly Point nature walk; leader – Don Franklin. Meet at Burnett House, Myilly Point, at 9AM.

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June 2009 meeting. Wednesday June 10. Iain Field: *Shark research in the Top End*.

July 2009 meeting. Wednesday July 8. Bob Wasson: *Sedimentary landscapes*.

Top End Native Plant Society activities

May 2009 meeting. Thurs., May 21. Anna Richards: *Mixed species native rainforest plantations*.

June 2009 meeting. Thursday, June 18. Jon Schatz: *Arnhem flora, sandstone & savannas*.

General meetings are held on the 3rd Thursday of the month at the Marrara Christian College, corner Amy Johnson and McMillans Drives, and commence at 7:30 PM (speaker at 8 PM). For more information, contact Russell Dempster on 8983 2131.

Proposed changes to the Club's Constitution – invitation to comment

For the reasons outlined in detail on page 8, the Committee is proposing that the Club change its Constitution. A draft of the proposed changes has been prepared and your Committee is now seeking input from members. A copy of the Constitution, with the proposed changes marked, will be available on the Club's website – <http://www.geocities.com/ntfieldnaturalists> – shortly. You can also obtain a copy from Fiona Douglas – contact details below.

It is much easier to incorporate additional ideas at this stage than during the formalities of our Annual General Meeting in August – which is when your Committee proposes to put a formal motion for change to the meeting. If you have any comments, queries or suggestions, please forward them to Fiona Douglas no later than June 10. Contact details: Fiona Douglas, phone 8985 4179, email fiona.douglas@octa4.net.au.

Club notices

Upgraded newsletter format

We hope you noticed (and that you like it)! Your editor is grateful to Tissa Ratnayake of Imprint Design and Promotions for donating his time and expertise to the task.

Thank you

The previous issue was proof-read by Christina Maas and collated and mailed by Lyn Reid. It was printed by Stuart Young and Don Franklin using equipment kindly made available by Collections, Biodiversity and Biological Parks from the Department of Natural Resources, Environment, the Arts & Sport, and the School for Environmental Research at Charles Darwin University.

Newsletter contributions welcome

Sightings, reports, travelogues, reviews, photographs, sketches, news, comments, opinions, theories , anything relevant to natural history. Please forward material to Don at eucalypt@octa4.net.au or the Club's postal address, or contact him on 8948 1293.

Deadline for the June newsletter: Friday May 22.

Need a Club membership form? Go to: <http://www.geocities.com/ntfieldnaturalists/subscription.htm>.

Club library

The Club's journal, magazine and reference collection is available to members. Lists of holdings can be found on our web-site: <http://www.geocities.com/ntfieldnaturalists>. 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.

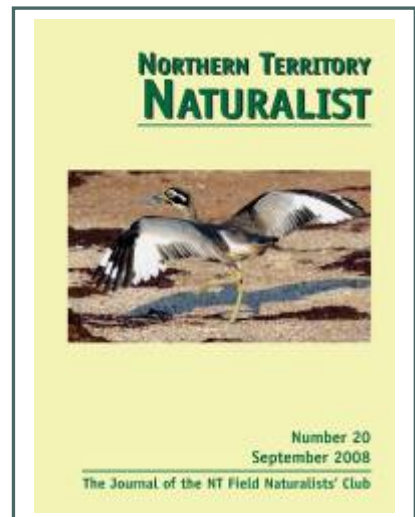
Journals: in the office of Don Franklin at CDU Casuarina (Red 1.2.34 = room 31.2.34). These can be accessed directly during working hours, or by ringing Don on 8946 6976 (w) or 8948 1293 (h).

Northern Territory Naturalist

The Editorial Committee of the Club's journal, the *Northern Territory Naturalist*, is now calling for manuscripts for issue no. 21. The journal publishes works concerning any aspect of the natural history and ecology of the Northern Territory or adjacent areas of northern Australia. and may include Research Papers (Articles or Short Notes), Reviews and Species Profiles.

The *Northern Territory Naturalist* is a registered, peer-reviewed journal (ISSN 0155-4093). Author instructions may be downloaded from <http://www.geocities.com/ntfieldnaturalists/journal.htm>. If possible, manuscripts should be submitted in digital form by emailing to lynda.prior@cdu.edu.au. Editors of the journal are Dr Lynda Prior and Dr Michael Braby.

Back issues of the *Northern Territory Naturalist* are available individually (some are out of print and available as photocopies only) or as a set. The cost of a set is \$50- for nos. 1-19 or \$60- for nos. 1-20. Contact Don Franklin, eucalypt@octa4.net.au.



Sewage Pond Keys - Leanyer and Alice Springs

NT Field Naturalists have access to this world-famous bird-watching spot. The key can be collected from Graham Brown (h) 8945 4745. A refundable \$50.00 deposit is required at time of collecting the key, which is available only to members. Conditions imposed by PowerWater Corporation apply to all visitors to the ponds. These are not onerous and are made clear at time of picking up the keys.

World's largest wetlands study visits the NT

Mark Ziembicki

Photos by Richard Kingsford

Described as the world's largest waterbird and wetland survey, the National Waterbirds Survey was conducted across Australia in late 2008. Led by Richard Kingsford and John Porter of the University of New South Wales, with support from federal and state government environmental agencies across the country, the project represented the first national, continental-scale effort to assess the status and distribution of the nation's waterbirds. More than just a survey though, the project aimed to develop national methodologies and guidelines to use waterbirds as indicators to measure wetland health, conservation values and the success of environmental flows to water-dependent ecosystems across the country.

Aerial waterbird surveys have been conducted annually in eastern Australia since the early 1980s. These broad-scale surveys are among the longest running, continuous monitoring efforts for fauna in the country and represent the most comprehensive databases for waterbirds. They have been instrumental in demonstrating distributions, movement patterns and population fluctuations of waterbirds across the region. The National Waterbirds Survey was an extension of these eastern surveys and followed the same general methods.



During October and November 2008 three separate teams in three light aircraft criss-crossed the entire country surveying waterbirds on most of the country's significant wetlands. Counts were made from a light aircraft flying at low altitude over a wetland with two observers, one on each side of the plane, estimating numbers of waterbirds of each species onto digital audio recorders. Total counts of entire wetlands were made whenever possible, but often when wetlands were large or complex, only a proportional count was made. Most waterbirds were identified to species, except for four groups that were not readily distinguished from the air (the small egrets, grebes, and small and large migratory waders). In total, the teams surveyed 56 of Australia's 64 Ramsar listed wetlands and 851 of the country's 904 listed wetlands of national importance. (Wetlands with concentrations of over 20,000 waterbirds, or >1% of global population of a species, are recognised within Australia and internationally as being of high conservation value.)

The Northern Territory legs of the survey took place in two parts with separate teams surveying the Top End coast and major wetlands in the north, and a team surveying the arid interior around Alice Springs and the Tanami Desert. As we all know, the Top End's wetlands are world renown for their abundant waterbird populations, particularly during the late dry season when birds are concentrated on remaining waterbodies – and they did not disappoint on this occasion. So great were numbers of birds on some wetlands during this survey that even the most seasoned veterans, with decades of experience surveying wetlands in south-eastern Australia, were astounded by the sheer magnitude of flocks. Among the most notable were tens of thousands of Plumed and Wandering Whistling Ducks, Brolga flocks numbering over 1000, and literally hundreds of thousands of Magpie Geese.

Wetlands and birds
along the Daly River.

In contrast to the north, in central Australia there was much less water and comparatively few birds. A feature of these arid landscapes is their inherent variability with boom-bust cycles occurring over irregular periods according to climatic conditions. Although most wetlands surveyed were largely dry on this occasion, one notable



exception were the Tanami Lakes near the West Australian border where tens of thousands of waterbirds were counted. Among the more numerous were Eurasian Coot, Grey Teal, Pink-eared Ducks, Black-winged Stilts, Black Swans and Glossy Ibis.

While the results of the national counts are still being analysed, on the basis of their waterbirds, it is clear that the wetlands of northern Australia are in good health. How the rest of the country compares remains to be seen. To follow results, and to view daily diaries and photos from each of the survey legs in the NT and beyond, visit the Australian Wetlands & Rivers website at:

<http://www.wetrivers.unsw.edu.au/index.html>.

Mark wishes to thank Richard Kingsford, Julian Reid, Ray Chatto & Phil Stainthorp.



Large flocks of Brolga were a stand-out feature.



The East Alligator River viewed from the air (late in the dry season).

Wildflower web-site for the Darwin region

Club member Ben Parslow, who won an ENI Excellence Award in Exit Art 2008, the contemporary youth art exhibition of NT year 12 students, has constructed a really useful flower identification website. If you have taken notes, or sketched or photographed an interesting flower, 'Wildflowers of the Darwin Region' URL <http://www.users.on.net/~bennnez/> enables you to search for it by colour. There are good quality photographs and the site includes grasses, sedges and a category called "Green and/or very small"! Holding the cursor over many of the images brings up various details about the flowers. It is very user-friendly and loads quickly, and the notes section is being expanded all the time.



Field guide to stick and leaf insects

Recently released by CSIRO, this book costs \$44.95 plus postage: Brock PD, Hasenpusch JW. 2009. The Complete Field Guide to Stick and Leaf Insects of Australia. CSIRO Publishing, Melbourne. 216 pages. For more information, go to <http://www.landlinks.csiro.au/nid/20/pid/6012.htm>.

Darwin Harbour

Darwin Harbour plan – opportunity for public comment

The Darwin Harbour Advisory Committee has prepared another round of reports including a review of the *Plan of Management* and a proposed *Strategic Framework* for 2009-2013. These are available at www.harbourplan.nt.gov.au or by ringing 8924 4139. Public comment is invited and due by Friday May 15.

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What keeps Darwin Harbour ticking? (from *Recent Literature*, page 13)

For any ecosystem to support life, it must have a source of nutrients and energy and the means to make use of these. However, not all sources of nutrients are desirable – fertiliser run-off from agriculture being an example. Burford *et al.* (2008) identified the sources of primary production and nutrients for Darwin Harbour, the authors hailing from the Australian Rivers Institute and Australian Institute of Marine Science, both based in Queensland. They found that “The main source of primary production was ... the extensive area of fringing mangroves” and that “Phytoplankton were the second largest primary producer”. The productivity of phytoplankton (minute, free-floating marine or aquatic plants capable of photosynthesis) was limited by the frequent muddiness of the water reducing available sunlight, and by low levels of nitrogen, placing added importance on cycling of nitrogen by mangroves. The largest source of “new” nitrogen to the system was the ocean because nitrogen levels on incoming tides were higher than that on outgoing tides.

The good news is that there was “no evidence” that pollution by run-off from the city of Darwin or other human sources was having any substantial effect on primary production.

The relevance of this to recently-announced plans for a giant marina at East Point has not eluded your editor, who notes that the plan appears to involved the demise of almost all of the East Point, Ludmilla Creek and Kullaluk Bay mangroves including the entire Ludmilla Creek estuary.



Mangroves keep the Harbour ticking. Photo: Don Franklin.

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Territories and mate choice in fiddler crabs (from *Recent Literature*, page 13)

Choosing a partner is a complicated business. In the fiddler crab *Uca mjoebergi* at East Point, females do the choosing – and they are choosy. But this involves moving around to check out the possibilities, in the process risking being taken by a predator. So regardless of preferences, there is a premium in choosing a mate that is close by. Booksmythe *et al.* (2008, in *Animal Behaviour*) found that females were less choosy when the risk of predation was greater. Males can and do increase their chances of being chosen by taking the risk for them – travelling around and presenting themselves at close range.

Males of the species convince females of their merits by waving their bright yellow claw (for photo, see Booksmythe *et al.* (2008, in *Northern Territory Naturalist*) – the larger the claw the better. Milner *et al.* (2008) found that it made no difference whether the environment was crowded with lots of crabs or not; females could always pick the best claw.

Waving a bright yellow claw doesn't only make you obvious to females; it also makes you obvious to predators. Presumably as a result, male *U. mjoebergi* are often forced to drop their main claw to survive, subsequently growing a new one. Neither females, nor competing males anticipating a fight, discriminated between original and regrown claws (Reaney *et al.* 2008). However, regrown claws are neither as large nor as strong as original claws. So when it comes to bluff and convincing a mate, a regrown claw is fine if it is large enough, but when it came down to a fight, males with regrown claws are at a disadvantage (Lailvaux *et al.* 2009). As a consequence, they were less likely to hold a territory and thus to attract a mate (Reaney *et al.* 2008).

Fayed *et al.* (2008) found that male *U. mjoebergi* territory holders win 92% of fights with other males, thus mostly retaining their territory. The reason: in a fight, it is an advantage to have a burrow. [The Abstract states only that the advantage was *mechanical*.]

New species of mudskipper (from *Recent Literature*, page 13)

Jaafar & Larson (2008) described a new species of mudskipper, naming it *Periophthalmus takita* - Takita's Mudskipper. The specific name refers to Prof. Toru Takita in honour of his contribution to the ecology of mudskippers. The type specimen is from Cameron's Beach at Shoal Bay. Other records of the species are from: many locations around the Darwin coastline including Ludmilla Creek, the mouth of the Elizabeth River and Buffalo Creek; Field Island in Kakadu National Park; and Port Hedland in Western Australia. Takita's Mudskipper is the most common mudskipper encountered in Darwin mangroves and rocky muddy spots, where it can be recognised by the orange spots on the side of its head.

Takita's
Mudskipper
*Periophthalmus
takita* is about
30–60 mm long.
Photo:
Toru Takita.



Environmental pre-history of the Gulf of Carpentaria (from *Recent Literature*, page 13)

The Gulf of Carpentaria is the largest recent marine incursion into a continental land mass in the world – the Persian Gulf is another example. Based on findings from six sediment cores, Reeves *et al.* (2008) have provided what is probably the most detailed history/pre-history of the area yet available. Complete separation of the current Gulf area from oceans was achieved when sea levels were 53 m lower than today, a situation that prevailed when the Aborigines first occupied northern Australia. Separation of the Gulf from the sea has implications for circulation in nearby oceans and associated transport of heat in water, and the movement of people between Australia and Papua New Guinea. The authors identified four major periods:

1. during the “Ice Age” prior to 130,000 years ago, the Gulf was a plain traversed by meandering rivers;
2. from c. 130,000 to c. 70,000 years ago, the Gulf was marine and then alternated between marine and estuarine conditions;
3. from c. 70,000 to 12,200 years ago, the Gulf was a lake of varying depth, area and salinity, expanding to a peak of about 190,000 square kilometres a mere 14,000 years ago when the monsoon revived after the most recent “Ice Age”; and
4. with rising sea levels following the most recent “Ice Age”, sea water began re-entering the Gulf from the Arafura Sea (Indian Ocean) about 12,200 years ago. Fully marine conditions were restored by 10,500 years ago. However, the connection with the Coral Sea and Pacific Ocean via Torres Strait was not restored until about 8,000 years ago.

Once was all dry land: the Gulf of Carpentaria at Cape Arnhem. Photo: Don Franklin.



Marine Wildlife Incident Hotline (WildWatch)

The NT Parks and Wildlife Service has established this hotline for the public to report incidents that may require P&WS attention such as strandings, injuries, net entanglements, ghost nets, unusual sightings, tagged animals or illegal activities relating to marine turtles, whales, dolphins, dugongs, sea snakes or sea birds. The hotline is also available for the public to ask questions of our marine wildlife. The Hotline no. is **1800 453 941**. For more info., go to www.nt.gov.au/marinewildwatch or email ray.chatto@nt.gov.au.

Proposed changes to the NTFNC Constitution

Several issues have arisen over the last year or so, prompting the Committee to review and amend the Constitution.

Issue 1. The timing of the Annual General Meeting (AGM). Under our current Constitution, it must be held within 60 days of June 30. This short interval creates a problem if a professional audit is required under the *Associations Act* (such as when our turnover exceeds a prescribed figure). This happened in 2008 because of the Australian Naturalist Network meeting and could occur again. The proposal is to change 60 days to 120 days in Section 5.3(a).

Issue 2. Meetings of the Committee (termed “Executive Committee” in the Constitution). Advice was received from the NT Government’s Business Affairs office that our Constitution should have a clause requiring a minimum number of committee meetings to protect members against a lazy committee. The proposal is for a minimum of four meetings a year; an extra sub-clause has been inserted at Section 9.2(g).

Issue 3. Special Resolutions and Special General Meetings (SGMs). Advice received from the NT Government’s Business Affairs office pointed to shortcomings in our Constitution regarding Special Resolutions, which are not defined in our Constitution, and to business requiring either an SGM or a Special Resolution.

Our Constitution had defined SGMs, although we realised during this revision process that the definition was not clear. The two “Specials” do not do the same thing.

A Special General Meeting is a general meeting called for specified purpose(s) only, usually matters of importance that are not considered appropriate for our usual General Meetings or an AGM and which merit involvement by all members (for example, discussion of financial management, major building works etc). Only business notified to members is to be discussed at an SGM. This class of meeting can be called by the Committee or by members (under a defined process).

A resolution may or may not be put at an SGM, but if arising from the discussion it could not have the status of a Special Resolution, as the required notice would not have been given to members. If the SGM decided that a resolution arising from the discussion was of sufficient seriousness that a Special Resolution was required, such a resolution would have to be put to a later General Meeting so that the notice requirement could be fulfilled.

A Special Resolution is required by the *Associations Act* (the Act) for revisions to Constitutions. The Club previously also had expulsion of members and disbandment of the Club as matters requiring a Special General meeting and these have now been specified as requiring a Special Resolution. Special Resolutions have specific notice requirements and a higher majority (75%) under the Act. These resolutions may also be used for other weighty matters (no confidence motions, enormous expenditure etc). As long as 21 days notice is given, such resolutions can be put at any General Meeting.

These changes have been implemented by redraft of section 5.4 (Special General Meetings) and insertion of a new section 6 (Special Resolutions) and Section 8 (Voting) which is moved from 5.5.

Issue 4. Clarification of methods of giving notice of meetings and Special Resolutions, to include giving notice by electronic means; a new Section 7 has been inserted.

Issue 5. Minor changes consequent on the above changes:

- Updating section 2 “Implementation” to reflect the changed chronology of our Constitution.
- Re-numbering all sections after section 5.
- Referring to Special Resolutions in the sections dealing with expulsion of members (section 4.4) constitutional change (renumbered as section 12) and disbandment (renumbered as section 13).
- A number of minor amendments to clarify intent and improve consistency of wording.

For more information, a copy of the Constitution with all proposed changes highlighted will be put on the website by mid-May. For a more detailed rationale for the changes, contact Fiona Douglas, phone 8985 4179, email: fiona.douglas@octa4.net.au.

Dragonflies

Reporting back on the talk by Brian Thistleton at the April meeting

Michael Braby

Brian works as an applied entomologist with the Department of Regional Development, Primary Industry, Fisheries and Resources and is section head of the Entomology Unit at Berrimah Research Farm. However, in his spare time he has developed a keen interest in the natural history of dragonflies, particularly the faunas of northern Australia, South-East Asia, mainland New Guinea and the Pacific islands such as the Solomons – areas where his professional work has taken him over the past three decades.

Brian gave an overview of the biology of dragonflies, which was followed by a snapshot of the more familiar species around Darwin. Brian is a keen photographer and the audience was privileged to see at first hand his superb photographs of these insects. After the talk there was considerable discussion during question time, which lasted for 30 minutes. The presentation was received with acclamation.

Dragonflies belong to the insect order Odonata and are characterised by having long, narrow bodies with two pairs of wings, which are usually transparent but sometimes brightly coloured, such as in the Papuan Jewel and Papuan Demoiselle from Cape York Peninsula. Phylogenetically, the order is very old with fossil records dating back to the Permian (280 Mya) of the Palaeozoic era. The Odonata are currently divided into two suborders: the Zygoptera (damselflies) and the Epiproctophora or Anisoptera (dragonflies proper). The two groups are distinguished by differences in the position of the eyes on the head (eyes widely separated in damselflies, but usually close together in dragonflies proper), wing shape and venation (fore and hind wings similar in damselflies, but dissimilar in dragonflies proper), and resting posture (wings held closed above body in damselflies, but spread out in dragonflies proper). The wing venation of dragonflies is complex and intricate, and this feature provides useful characters for distinguishing the various families and genera.



Left: a damselfly, the Common Bluetail (*Ishnura heterosticta*). Right: a dragonfly, the Blue Skimmer (*Orthetrum caledonicum*). Note how the wings are held differently. Photos: Brian Thistleton.

Dragonflies are predators and feed primarily on small flying insects (some species even feed on smaller dragonflies!). Flight is very fast and they catch their prey in flight. They have well developed mandibles that form a 'feeding basket' to devour their prey. The eyes are large and compound, comprising numerous smaller facets (with up to 30,000 facets in some species). This feature gives dragonflies a very wide field of vision, enabling them to see prey up to 360°. In flight, each wing appears to move independently, which contrasts with that of other insects such as butterflies and moths in which the fore and hind wings are coupled together. The males may perch on objects or patrol areas (referred to as 'hawking') to search for prey and establish mating territories. When perching, they may bask in the sun like butterflies to raise their body temperature in order to increase body metabolism (e.g. Common Glider). However, when conditions become too hot some species like the Palemouth raise their abdomen towards the sky to minimise incidence of the sun.

Dragonflies have an interesting method of mating. The male abdomen possesses a pair of claspers or anal appendages. When coupled, the claspers are attached to the back behind the head of the female (known as the 'tandem' position). The sperm, however, is transferred to secondary genitalia near the base of the abdomen. The female then attaches her abdomen to the secondary genitalia of the male (known as the 'wheel' position) to receive the sperm in her storage sacs. The sperm is then used later to fertilise the eggs during oviposition.



“An interesting method of mating”; here, a pair of Common Bluetails (*Ishnura heterosticta*). Photo: Brian Thistleton.

There are three development stages: the non-reproductive stages of the life cycle (i.e. egg and larva) are entirely aquatic, whereas the reproductive stage (i.e. adult) is terrestrial. After mating, the adult female lays her eggs either directly into water while resting on reeds or in flight, or into plant tissue submerged beneath the water. The larvae have gills (external in damselflies, attached to end of abdomen; internal in dragonflies proper) that allow them to breathe under water. They are also predators, feeding on small aquatic insects, worms, tadpoles and sometimes small fish. They have modified mouthparts in which the lower jaw is greatly extended and interlocks with the upper jaw. When fully developed and ready to emerge into adults, the larvae must leave the water to moult and spread and dry their wings. The duration of the life cycle is variable: some species develop

quickly, in a few months, while others take several years for the larval stage to be completed.

Dependency on water has allowed dragonflies to exploit many different kinds of habitats. They may breed in still water, such as lakes, lagoons, temporary ponds, puddles and even water in tree holes, or in moving water, such as rivers, small streams and fast flowing rocky mountain creeks.

Dragonfly larvae. Photo: Brian Thistleton.



Territorians are well

aware of the seasonal changes in abundance of dragonflies, with large numbers appearing towards the end of the wet season. The phenomenon is a good predictor that the dry season has arrived or is about to arrive. The large numbers of dragonflies seen in the Top End, such as the Wandering Glider, Graphic Flutterer, Common Glider and Water Prince, is thought to be mainly due to the arrival of individuals migrating from farther a field to exploit the good post wet season conditions. Some of these species migrate as far as south as Victoria. Brian explained that the nature of these migrations is poorly understood and the source of origin(s) of the migration is not known.

Of the 324 species of dragonflies currently recognised from Australia, 102 occur in the Northern Territory. Some examples of damselflies around Darwin include the Pygmy Wisp (*Agriocnemis pygmaea*), Aurora Bluetail (*Ishnura aurora*) and Common Bluetail (*I. heterosticta*). Among the common dragonflies proper in the Top End, Brian showed examples of the Wandering Glider (*Pantala flavescens*), Green Emperor (*Anax gibbosulus*), Lesser Green Emperor (*A. guttatus*), Common Glider (*Tamea loewii*), Slender Skimmer (*Orthetrum sabina*), Blue Skimmer (*O. caledonicum*), Fiery Skimmer (*O. villosivittatum*), Wandering Pennant (*Macrodiplax cora*), Red Swampdragon (*Agrionoptera insignis*), Wandering Percher (*Diplacodes bipunctata*), Scarlet Percher (*D. haematodes*), Chalky Percher (*D. trivialis*), Graphic Flutterer (*Rhyothemis graphiptera*), Yellow-striped Flutterer (*R. phyllis*), Painted Grasshawk (*Neurothemis stigmatizans*), Palemouth (*Brachydiplax denticauda*), Archtail (*Nannophlebia* sp.) and the Australian Tiger (*Ictinogomphus australis*), an unusual member of the Eiproctophora in which the eyes are widely separated on the top of the head. Brian also mentioned species that are restricted to the Northern Territory, including the Forestwatcher (*Huonia melvillensis*), which is endemic to Melville Island; it belongs to a genus otherwise known only from Indonesia and New Guinea. This species was discovered and jointly described by Club member Dr Graham Brown.

The recent availability of good field guides means that some species can now be identified on the wing with the aid of binoculars. Three important books on dragonflies are:

Corbet PS. 1999. *Dragonflies. Behaviour and Ecology of Odonata*. Harley Books, Colchester, UK. 829 pp.

Theischinger G, Hawking J. 2006. *The Complete Field Guide to Dragonflies of Australia*. CSIRO, Melbourne. 366 pp.

Watson JAL, Theischinger G, Abbey HM. 1991. *The Australian Dragonflies. A Guide to the Identification, Distributions and Habitats of Australian Odonata*. CSIRO Australia, Canberra. 278 pp.

Dragonflies & butterflies @ McMinns

Reporting back on the April field trip

Lyn Reid

At about 9.00am on what felt like a superb dry season day, 20 adults and two very interested children started to explore the block – a 5 hectare property on the edge of McMinns Lagoon. The search was on for butterflies and dragonflies – 18 butterfly species were identified, 2 of which had not been recorded there before. Fourteen dragonfly (including 3 damselfly) species were found and this list will form the basis of an ongoing record for the site.

There was major excitement when a Black Falcon (*Falco subniger*) was spotted cruising overhead.

Brian Thistleton led the expedition and was of great help in identification and in increasing our understanding of the Odonata. Many thanks Brian for your time and wisdom. It was also great to have Sheryl and Arthur Keates along while they were visiting Darwin. Thanks to Sheryl for keeping the lists. The dragonflies are listed below; the butterfly list is available from Lyn for anyone who'd like a copy.

We found that, even with amateur cameras, it is possible to photograph dragonfly wings well enough to use the venation keys.



Dragonfly identification is a social affair – here centred on Sheryl Keates. Photo: Tissa Ratnayake.



Above: the Painted Grasshawk.
Photo: Brian Reid.

Right and below: Wandering Pennant,
male and female respectively.
Photos: Brian Thistleton.



The morning concluded with some refreshments and lots of animated discussion.

Dragonfly (incl. *damselfly) species identified

Emperor *Anax* sp.

Wandering Pennant *Macrodiplex cora*

Blue Skimmer *Orthetrum caledonicum*

Slender Skimmer *Orthetrum sabina*

Wandering Percher *Diplacodes bipunctata*

Chalky Percher *Diplacodes trivialis*

Painted Grasshawk *Neurothemis stigmatizans*

Graphic Flutterer *Rhyothemis graphiptera*

Water Prince *Hydrobasileus brevistylus*

Common Glider *Tamea loewi*

Wandering Glider *Pantala flavesens*

* Common Bluetail *Ischnura heterosticta*

* Colourful Bluetail *Ischnura pruinescens*

* Redtail *Ceragrion aeruginosum*

Interesting bird sightings

21 March to 23 April 2009

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 & waders				
Black Bittern	7/04/2009	Old Stuart H'way, Adelaide R.	Peter Kyne	2
Chestnut Rail	7/04/2009	Field island, Kakadu Nat. Park	Don Franklin	1
Beach Stone-curlew	7/04/2009	Field Island, Kakadu Nat. Park	M Mace <i>et al.</i>	1 & 2 old nests
Wood Sandpiper	20/04/2009	Leanyer Sewage Ponds	Fiona Douglas & Ian Hance	1
Diurnal & nocturnal raptors				
Black-shouldered Kite	13/03/2009	Anzac H'way, Fogg Dam	J Stenning <i>et al.</i>	2 ad., 3 chicks near fledging
~	27/03/2009	~	F Douglas, B Thistleton	2 chicks still in nest
Black-breasted Buzzard	15/04/2009	Oolloo Road	Peter Kyne	3
Grey Goshawk	13/04/2009	Howard Springs	Trish Bate	1
~	15/04/2009	Ferguson River	Peter Kyne	1, white morph
Eastern Marsh Harrier	c31/3/2009	Ski Club	Louise Finch	2, probable sighting
Wedge-tailed Eagle	18/04/2009	Coolalinga	Fiona, Ian Brian	2
~	18/04/2009	McMinns Lagoon	Darryel Binns	1
Peregrine Falcon	19/04/2009	Gunn Point road	Ian Hance	1
Rufous Owl	29/03/2009	Humpty Doo area	Eric ter Laare	1 taking Kookaburra
Eastern Barn Owl	c. 6/4/2009	Anzac Highway, Fogg Dam	Jeff Stenning	1; also 8 on 13 th , 7 on 20 th
Other non-passerines				
Partridge Pigeon	21/03/2009	Umbrawarra Gorge	Peter Kyne	7
~	21/03/2009	Old Stuart H'way, Adelaide River	Peter Kyne	1
Fork-tailed Swift	27/03/2009	Anzac H'way near Fogg Dam	J Stenning, F Douglas, I Hance	50+
Hooded Parrot	21/03/2009	Umbrawarra Gorge	Peter Kyne	4
~	22/03/2009	Pine Creek Cemetery	Peter Kyne	2
Channel-billed Cuckoo	24/03/2009	Darwin Airport	Dicaeum	1
~	21/04/2009	East Point	Colin Trainor	2
Little Kingfisher	13/04/2009	East Point Boardwalk	Ian Hance <i>et al.</i>	1
Rainbow Bee-eater	13/04/2009	Fogg Dam	F Douglas, B Thistleton, I Hance	100 +
Passerines				
Rainbow Pitta	15/04/2009	Oolloo Crossing	Peter Kyne	1
Singing Honeyeater	18/04/2009	nr. Sandpalm Roadhouse	Don Franklin	2, ?a northerly population
Banded Honeyeater	15/04/2009	Ferguson River	Peter Kyne	1
Mangrove Golden Whistler	20/04/2009	East Point boardwalk	F Douglas <i>et al.</i>	nest with 1 chick
Arafura Fantail	15/04/2009	Oolloo Crossing	Peter Kyne	1
Mangrove Grey Fantail	13/04/2009	East Point boardwalk	F Douglas <i>et al.</i>	nest with 1 chick
Zitting Cisticola	13/04/2009	Fogg Dam	F Douglas, B Thistleton, I Hance	2
Australian Reed-Warbler	21/03/2009	Old Stuart H'way, Adelaide River	J Stenning, F Douglas, I Hance	1
Gouldian Finch	15/04/2009	Ferguson River	Peter Kyne	1
Additional for last month				
Chinese Pond Heron	24/02/2009	Granites Gold Mine, Tanami	J Riley, D Kellett	1

National Trust Heritage Festival, "Ten Days at the Top"

This festival takes place in Darwin from 8 - 17 May. It includes the NTFNC Myilly Point walk listed on page 2 (Tuesday May 12), which is part of a Conservation Volunteers day "Better Earth – Darwin beaches project". Some other feature of possible particular interest to field naturalists include:

- a tour of Darwin Harbour on the evening of Sunday May 10;
- a seminar: "Mapping the land and charting the sea to defend Australia's North in the Second World War" in the late afternoon of Wednesday May 13; and
- a bus tour of Manton Dam on Saturday May 16.

For more information including the complete program, go to www.nationaltrustnt.org.au, email events.ntnt@internode.on.net or phone 8981 2848.

Recent literature about Top End natural history

MARINE & COASTAL

Compiled by Don Franklin

Crabs

- Booksmythe I, Detto T, Backwell PRY. 2008. A field guide to the fiddler crabs of East Point Reserve, Darwin, Northern Territory. *Northern Territory Naturalist* 20: 26-33.
- Booksmythe I, Detto T, Backwell PRY. 2008. Female fiddler crabs settle for less: the travel costs of mate choice. *Animal Behaviour* 76: 1775-1781.
- Fayed SA, Jennion MD, Backwell PRY. 2008. What factors contribute to an ownership advantage? *Biology Letters* 4: 143-145.
- Lailvaux SP, Reaney LT, Backwell PRY. 2009. Dishonest signalling of fighting ability and multiple performance traits in the fiddler crab *Uca mjoebergi*. *Functional Ecology* 23: 359-366.
- Milner RNC, Jennions MD, Backwell PRY. 2008. Does the environmental context of a signalling male influence his attractiveness? *Animal Behaviour* 76: 1565-1570.
- Reaney LT, Milner RNC, Detto T, Backwell PRY. 2008. The effects of claw regeneration on territory ownership and mating success in the fiddler crab *Uca mjoebergi*. *Animal Behaviour* 75: 1473-1478.
- Salgado Kent CP, McGuinness KA. 2008. Feeding selectivity of searaid crabs from northern Australian mangrove forests. *The Beagle, Records of the Museums and Art Galleries of the Northern Territory* 24: 23-31.
- Slatyer RA, Fok ESY, Hocking R, Backwell PRY. 2008. Why do fiddler crabs build chimneys? *Biology Letters* 4: 616-618.

Miscellaneous fauna

- Jaafar Z, Larson HK. 2008. A new species of mudskipper, *Periophthalmus takita* (Teleostei: Gobiidae: Oxudercinae), from Australia, with a key to the genus. *Zoological Science* 25: 946-952.
- Jacups SP, Currie BJ. 2008. Blue-ringed Octopuses: a brief review of their toxicology. *Northern Territory Naturalist* 20: 50-57.
- Kott P. 2008. Biogeographic implications of Ascidiacea (Tunicata) from the Wessel Islands (Arafura Sea). *The Beagle, Records of the Museums and Art Galleries of the Northern Territory* 24: 63-77.
- Larson HK. 2008. Weber's Mudskipper *Periophthalmus weberi*: new record for the Daly River. *Northern Territory Naturalist* 20: 19-21.
- Willan RC. 2008. The taxonomic and nomenclatural status of the Northern Australian Greater Blue-ringed Octopus (*Hapalochlaena* sp.): a correction with potentially significant consequences. *Northern Territory Naturalist* 20: 47-49.

Commercial fisheries

- Dichmont CM, Deng A, Punt AE, Ellis N, Venables WN, Kompas T, Ye Y, Zhou S, Bishop J. 2008. Beyond biological performance measures in management strategy evaluation: Bringing in economics and the effects of trawling on the benthos. *Fisheries Research* 94: 238-250.
- Fry G, Milton DA, Van Der Velde T, Stobutzki I, Andamari R, Badrudin, Sumiono B. 2009. Reproductive dynamics and nursery habitat preferences of two commercially important Indo-Pacific red snappers *Lutjanus erythropterus* and *L. malabaricus*. *Fisheries Science* 75: 145-158.
- Pascoe S, Okey TA, Griffiths S. 2008. Economic and ecosystem impacts of illegal, unregulated and unreported (IUU) fishing in Northern Australia. *Australian Journal of Agricultural and Resource Economics* 52: 433-452.
- Punt AE, Buckworth RC, Dichmont CM, Ye Y. 2009. Performance of methods for estimating size-transition matrices using tag-recapture data. *Marine and Freshwater Research* 60: 168-182. [Northern Prawn Fishery data]

Miscellaneous topics

- Burford MA, Alongi DM, McKinnon AD, Trott LA. 2008. Primary production and nutrients in a tropical macrotidal estuary, Darwin Harbour, Australia. *Estuarine Coastal and Shelf Science* 79: 440-448.
- Reeves JM, Chivas AR, Garcia A, Holt S, Couapel MJJ, Jones BG, Cendon DI, Fink D. 2008. The sedimentary record of palaeoenvironments and sea-level change in the Gulf of Carpentaria, Australia, through the last glacial cycle. *Quaternary International* 183: 3-22.
- Tregoning P, Lambeck K, Ramillien G. 2008. GRACE estimates of sea surface height anomalies in the Gulf of Carpentaria, Australia. *Earth and Planetary Science Letters* 271: 241-244.



Sea squirts

Surveys in the Arafura Sea around the Wessel Island (off the coast of Arnhem Land) revealed 25 species of sea squirts (ascidians) (Kott 2008). Of these, 20 species are colonial and 5 solitary. The larvae of many colonial species are free-swimming for 10 minutes or less so can't move far, whereas some of the solitary species have a tailed planktonic larval stage capable of travelling longer distances. One might thus expect colonial species to be unique to the area but solitary species to be widespread, but this was not the case. Most species of both groups are widespread in tropical regions or at least in both the eastern Indian and western Pacific oceans.