ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC

NEWS BULLETIN

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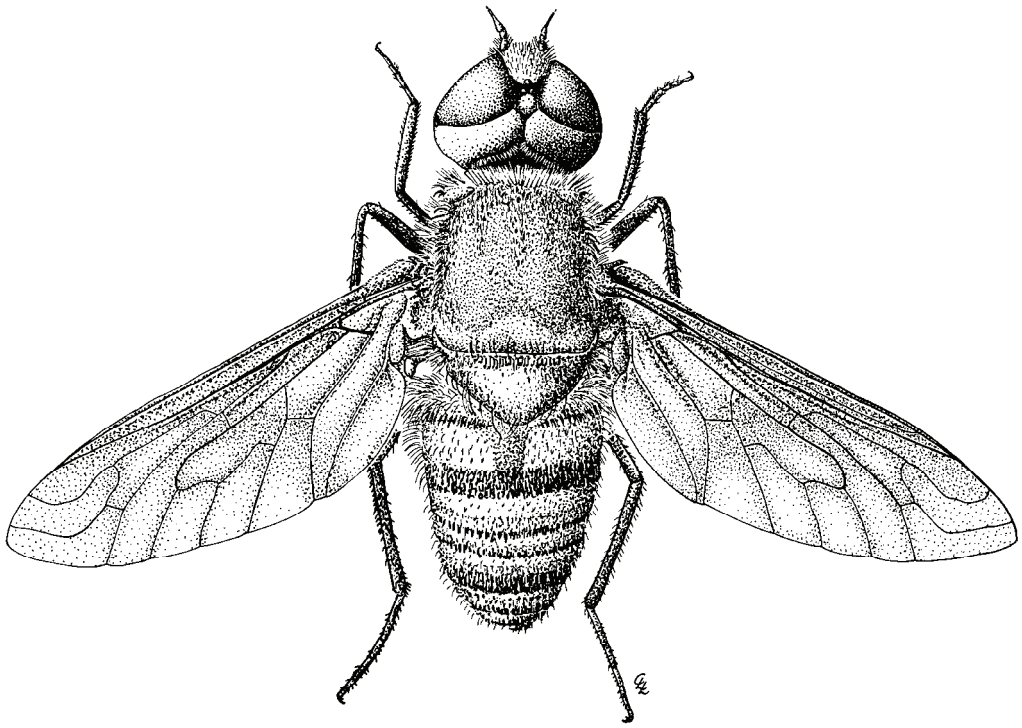

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THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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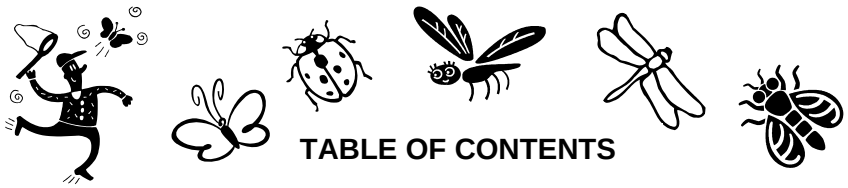

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The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. Membership is open to anyone interested in Entomology. The Society promotes liaison among entomologists through regular meetings and the distribution of a *News Bulletin* to members. Meetings are announced in the *News Bulletin*, and are normally held on the second Monday of each month (March to June, August to December), or on Tuesday if Monday is a public holiday. Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society.

Contributions to the *News Bulletin* such as items of news, trip reports, announcements, etc are welcome and should be sent to the News Bulletin Editor.

The Society publishes **THE AUSTRALIAN ENTOMOLOGIST**. This is a refereed, illustrated journal devoted to Entomology in the Australian region, including New Zealand, Papua New Guinea and the islands of the South Western Pacific. The journal is published in four parts annually.

EMBLEM: The Society's emblem, chosen in 1973 on the 50th anniversary of the Society, is the king stag beetle, *Phalacrognathus muelleri* (Macleay), family Lucanidae (Coleoptera). Its magnificent purple and green colouration makes it one of the most attractive beetle species in Australia. It is restricted to the rainforests of northern Queensland.

Editorial

You will notice a change of layout in this issue of the News Bulletin from a full width to a double column style, which I hope improves the general appearance of the Bulletin. The content of the front and back inside covers has been rearranged also in an effort to de-clutter these pages.

This issue also introduces a new section called '**Entomologists in Action'** where, each issue, an entomology-focused group is given a forum in which to introduce its members, and their activities, to our readers. I find that the people behind the work are where the real stories can be found. I invite any leader/manager of an entomology-focused group to round up the troops and ask them to write a few words about their role within the group, and also about themselves; it can be kept light (I especially encourage the inclusion of humorous anecdotes).

Lastly, I wish to emphasise that the ESQ News Bulletin is for all people active in entomology in Queensland (and Australia for that matter). I consider all contributions, from articles about institution-based scientific projects to interesting observations or discoveries made during a private collecting trip. As insects are the most diverse of the complex life-forms on our planet, so too should the untold stories about them be just as diverse and interesting.
Keep em' coming!!!!

Justin Bartlett
News Bulletin Editor

All contributions should be sent direct to:
justin.bartlett@deedi.qld.gov.au

Minutes of General Meeting

Meeting held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on Tuesday, 9th June, 2009, 12.00 midday.

Chairman: Chris Lambkin

Attendance: Christine Lambkin, Richard Bull, Geoff Monteith, Justin Bartlett, Noel Starick, Matt Purcell, Desley Tree, Alisha Steward, Shaun Winterton, Don Sands, Tim Heard, Felix Bianchi, Mark Schutze, Stephen Francis, David Merritt, Amy Carmichael, Graham Forbes, Ross Kendall, Murdoch De Baar, Federica Turco.

Visitors: Greg Harper, Nate Hardy, Allan Morrison.

Apologies: Geoff Thompson, Mike Furlong, Judy King, Morris McKee, Gary Fitt, Stephen Johnson

Minutes: The minutes of the last General Meeting, were circulated in the News Bulletin Vol. 37, Issue 3 of May 2009.
Moved the minutes be accepted as a true record: Desley Tree
Seconded: Noel Starick.

Nominations for Membership: The following nominations for Membership were received and approved by Council, and put before the meeting for election:
Mr David Cartwright of Wandana Heights, Victoria
Mr Andy Wang of Indooroopilly, Brisbane
The chairman called for members to vote for their election by a show of hands.
Those in favour? Carried unanimously

General Business: The Chairman asked if any member knew the present location of Prof Doug Kettle. A member advised he was in a retirement village and would forward the address to the Chairman.

There was no further general business.

Main Business

Five talks were given and one set of posters presented at the Notes and Exhibits meeting.

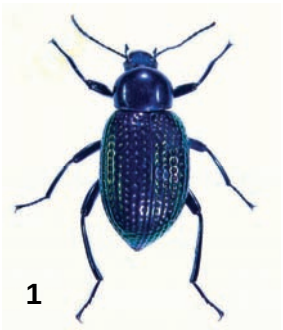
Noonbah *Axynaon*

Noel Starick

In 1882 two British gentlemen migrated to Australia. One was Reverend Canon Thomas Blackburn, who took charge as Rector of St Thomas in Port Lincoln in South Australia. The other was Herbert James Carter, who became an assistant mathematics tutor at Sydney Grammar School. They both independently became interested in beetles here in Australia. These two men were about to encounter a shiny rotund beetle that hadn't been seen before.

In 1897 Thomas Blackburn was sent a specimen from North Queensland. He named it *Axynaon championi*. In 1917 Herbert Carter was also sent a specimen of this beetle from near Julia Creek, Queensland. He assumed that it was a new species so he named it *Catomerus corpulentus*. He did not know that Blackburn had already described this species. Years later Carter became aware of his error and restored Blackburn's original name, *Axynaon championi*.

When Blackburn died in 1912 his collection, along with *Axynaon championi*, was sent to the British Museum of Natural History in London, England. Herbert Carter died in 1940 and his collection was donated to National Museum of Victoria. Since these two collections, very few specimens of this beetle have been found. Up until recently only nine specimens were known in the following collections.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The South Australian Museum.
One pinned specimen but badly damaged. It has a hand written label by Blackburn with the name of the beetle and his abbreviated name, also has the words co-type, but does not include a locality.

Museum Victoria.
Three specimens: one having been sent from Julia Creek and named by Carter; two labelled only as Queensland.

Queensland Museum (South Brisbane).
Three specimens: one collected from Hughenden in 1960; one from Julia Creek, Dec. 1964; one from Corona Station near Winton, 1998.

Australian National Insect Collection.
Two pinned specimens with only the following details: Julia Creek, Qld, July 1932; and, Hughenden, Qld, 1959.


2

Figs. 1-2. *Axynaon championi* from Noonbah, collected by Angus Emmott (Fig 2: photo Jeff Wright, Qld Museum).

Recently (2009) a live specimen was delivered personally to the Qld Museum by Angus Emmott from Noonbah Station South of Longreach. He also has two other pinned specimens in his collection. All were collected from the Waterloo Station section of Noonbah.

- A live specimen collected 14 January 2009 under fence debris following a flood.
- A specimen collected from under tin on the edge of the Thompson River, 1 February 1997.
- A specimen collected from under tin near the shearing shed, 17 February 2009.

All were collected in the cracking grey clays of the Thompson River floodplain. Angus knew from reading Geoff Monteith's notation on page 131 in the Queensland Museum's 'Discovery Guide to Outback Queensland' that the species was rare.

Fig. 3. Black cracking soil country near Noonbah.

In April 2009 a specimen was collected in a mammal pitfall trap in the Diamantina National Park by Queensland Parks and Wildlife service NRA Team. This specimen is in the Queensland Museum.

This fascinating beetle has an interesting history. One wonders what other treasures await collection in the outback areas of Queensland where very little collecting has been done.

Acknowledgements. Geoff Monteith (QM), Eric Matthews (SAM), Adam Slipinski (ANIC), Ken Walker (MV), Angus Emmott.

A brief jaunt through the Queensland mangroves and a view of some of the insects

Murdoch De Baar

A collection of slides and a storebox display of **mangrove insects** with particular reference to Queensland, was presented for "notes and exhibits". The presentation covered aspects such as: views of the mangroves; insect leaf feeders; pollinators; stem borers; predators; opportunists; stem suckers; butterflies; ants and other surprises.

Mangrove plants can be hard to define, but in Queensland we consider about 35 trees as mangroves (ie. those which can survive in saline intertidal zones or washed by seawater) but actually there are more plants that can be included in the mangrove environment. **Some species included** in the mangroves are *Aegialitis* (club mangrove), *Aegiceras* (river mangrove), *Avicennia* (grey mangroves), *Bruguiera* (orange mangroves), *Ceriops* (yellow mangroves), *Excoecaria* (milky mangrove), *Lumnitzera* (black mangroves), *Nypa* (mangrove palm), *Rhizophora* (stilted mangroves), *Sonneratia* (mangrove apples), *Xylocarpus* (cannonball mangroves).

As you travel northwards into north Queensland, the mangrove species & associated fauna increases. Antplants (*Myrmecodia spp*.) which grow on tree trunks or branches, perhaps with the associated Apollo Jewel butterfly (*Hypochrysops apollo*) in striking orange-red colours, may be seen occasionally in the mangrove environment. About 30 species of mangrove trees occur around the Cape York area, and reducing to about 7 species in the Maryborough area, southern Queensland, but this does not include peripheral species (ie. *Hibiscus tiliaceus, Allocasuarina glauca)* and associated mangrove plants (ferns, lichens, saltwater couch, orchids, lily, chenopods including several saltbushes or samphires, several mistletoes, and vines such as *Derris trifoliata*, *Cynanchum*

carnosum and *Capparis lucida*). The little lycaenid butterfly, the Saltpan Blue (*Theclinesthes sulpitius*) feeds on chenopod foodplants such as the seablight *Suaeda australis* which grows on the mudflats and sometimes in amongst the mangroves.

Hibiscus tiliaceus foliage often display Cotton Harlequin Bugs (*Tectocoris diophthalmus)* washed in shining blue, green and orange, and in north Queensland, the shining-green Christmas beetle (*Anoplognathus smaragdinus*) that chew the *Hibiscus* leaves. This tree can do well on the edge of mangroves as well as in other environments, as we all have observed. On Dauan Is., in the northern Torres Strait, Queensland, I noted this tree growing between tide levels.

Mangroves on Dauan Island, Torres Strait.

A rich fauna of ants occur within the mangroves, and mainly nest in borerholes in branches or in hollowed out trunks, or occasionally between sewn leaves, but a few venture onto the mangrove mud between tides. One such species (*Polyrhachis sokolova)* occurs from Maryborough area, Qld., northwards and is one of a few species worldwide that nests between low and high tide mark, venturing onto the mangroves during low tide. Some ants tend scale insects or butterfly larvae. In the case of a *Crematogaster* sp. ant, a strange relationship occurs whereby the ants tend the larvae of the butterfly *Acrodipsas illidgei*, caring for it in the larval chambers, but the butterfly larvae devour the immature stages of the ant, an unequal exchange indeed. I thought I heard the little Illidge's Antblue larva whisper to the waiting ants "I'll give you some little sweets, and if you don't mind me eating your children, there'll only be a few dried up skins left, you won't even notice, & then soon, I'll leave quietly".

The cicada *Arunta interclusa* on a grey mangrove trunk.

A number of **cicadas** feed and sing in this environment, and includes the genus *Arunta*. The nymphal exuvium of *Arunta perulata* have also been observed on mangrove stems. This would suggest that this cicada's nymph might endure tidal exposure.

There are often **mistletoes** (such as *Amyema mackayense*) abounding in the mangrove environment, and azure and jezabel butterflies feed on these. Only a few mistletoes are confined to mangroves, but the mistletoe genera *Dendrophthoe*, *Lysiana*, *Amyema*, *Notothixos* and *Viscum* (within the Loranthaceae & Viscaceae) have been represented in the mangrove environment.

An impressive variety of **moths** are present as foliage feeders, flower chewers, stem borers, lichen feeders, mistletoe feeders and adding to the biodiversity. An irregular

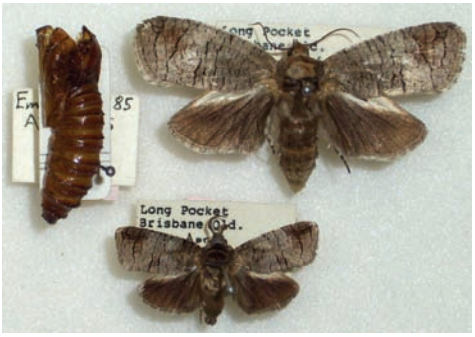
visitor to the mangroves, the Emperor Moth (Saturniidae: *Syntherata janetta)* oviposits on Yellow-leaved Spurred Mangrove *Ceriops tagal* and river mangrove *Aegiceras corniculatum* leaves. Perhaps the Mistletoe Emperor Moth (*Opodiphthera loranthi*) also feeds on the mangrove mistletoes occasionally?

Mangrove fruit is sometimes tunnelled by the larvae of pyralid and gelechiid moths and other insects. The fruitfly *Euphranta marina* (Tephritidae) with its patterned wings, has been bred from the fruit of *Avicennia marina*.

The fruitfly *Euphranta marina*.

Stem borers include **cerambycid** (longicorn) beetles (such as *Platyomopsis, Phoracantha, Pseudoplites, Aridaeus, Disterna, and Acalolepta*), **buprestid** beetles (or jewel beetles) of the genus *Melobasis*, **weevils** (Cossoninae, Cryptorhynchinae and other groups), **cossid** and **xylorytid** wood moths (such as *Macrocyttara* and *Echiomima* respectively).

The tunnel entry of the stemborer moth larva (*Echiomima* sp.) was discovered inundated by the tide in the Port Alma area, south of Rockhampton, Queensland. The larvae of the cossid moth (*Macrocyttara expressa*) are a bright red, and can be found damaging the trunks of the river mangrove *Aegiceras corniculatum*.



The cossid *Macrocyttara expressa* which bores into trunks of river mangroves.

Dead trunk portions and damaged branches can be extended by cerambycids such as *Pseudoplites (Macrotoma)* sp. (a larger brown Prioninae), creating large rot pockets for secondary beetles to follow in such as flower chafers (Cetoniinae), stag beetles (Lucanidae) and others. I have observed the large flower chafer beetle (*Trichaulax marginipennis*) flying around a dead trunk in mangroves in the mouth of the Pine River, northern Brisbane. This chunky, glossy black beetle is decorated with whitish velvet pile on its wing covers.

Predators such as dragonflies, spiders and papernest wasps are commonly seen in this environment. Occasionally large huntsman spiders can also be found in hollowed out trunks.

Colourful jewel butterflies in the genus *Hypochrysops* that are found in this environment include: *epicurus, apelles, digglesii* and *narcissus*; and then sprinkle in brilliant blue flashes of the azure butterfly *Ogyris amaryllis hewitsoni* (particularly from Tin Can Bay, southeast Queensland northwards). The Copper Jewel often displays bright-orange flashes as it darts amongst the foliage.

The Swamp Tiger (*Danaus affinis*), a majestic black, white and orange-brown butterfly flies around mangroves and surrounding estuarine habitats where it's foodplant,

the Apocynaceae vine *Cynanchum carnosum*, grows. Other nymphalid butterflies such as the Lesser Wanderer (*Danaus chrysippus*), the Blue Tiger (*Tirumala hamata*), and the Common Crow (*Euploea corinna*) may also occasionally feed on this vine.

The Swamp Tiger, *Danaus affinis.*

Brilliant blue flashes of **oakblue butterflies** (Lycaenidae: *Arhopala* spp.) fly in the north Queensland mangroves, and other habitats, wherever Green Tree Ants (*Oecophylla smaragdina*) are present. The butterfly larvae eat many foodplants, but hide in the Green Tree Ant nests during the day, and are vigorously protected by the ants. It's a case where the butterfly is more interested in the boarding house than the food!

Other **foliage feeders** may include the tettigoniid grasshopper, *Ephippitytha trigintiduoguttata* otherwise known as the 32-spot Grasshopper, which can occasionally be found eating River mangrove foliage.

Opportunists such as cockroaches like *Ellipsidion* sp. suck on sap flows, nectar or whatever. Passing visitors may stop to visit the 'flowers of the day'.

The downside of mangroves can be papernest wasps, mud, mosquitoes and biting midges, but even this has **not** been a deterrent to **marina developments** which threaten these environments. The new residents then demand the insecticide treatment of the remaining adjacent mangroves to control biting midges and mosquitoes, or the poisoning of view-blocking trees. Therefore peripheral buffer zones must be considered before approval is given to develop marina estates near sensitive areas because of consequential pressures imposed by the new property owners.

However, the **aroma** of nectar-rich **flowers** like those of the River mangrove, the **colour** of mistletoe and other flowers, the interesting variety of **fruit shapes** like that of the Cannonball mangrove, the wrinklepod mangrove, the river mangrove's pods, red, yellow & orange mangrove's curious elongated pods & others, the spectacle of **insects** and **birds** like the mistletoe bird and honeyeaters, the impressive **stilt roots** of the *Rhizophora*, the flashes of **brilliant colours** from passing butterflies, all help to offset any downsides.

In the northern mangroves, one must always be ready to jaunt out of the mangroves at a moments notice. Remember the speed of a crocodile is "x squared", where x equals the speed of a human in mangrove mud.

Mangroves can be an interesting and biologically diverse environment.

Moths eating moths in spider webs

Geoff Monteith
Queensland Museum

Around the world there is a sprinkling of moths which are known to have larvae which live in spider webs, moving freely around on the strands of silk and feeding on either dead leaves trapped in the web or on bits of dead insects, and sometimes, on both (e.g. Robinson, 1978). The only record of this happening in Australia seems to be a citation, in Ian Common's "Moths of Australia", of Densey Clyne's observations on the small noctuid, *Enispa plutonis* (now *Heterorta plutonis* in Ted Edwards' checklist). Densey notes that its unusual larvae have

only two pairs of prolegs, feed on both insects and leaves, and pupate nakedly attached to a strand of the web. Common gives a photo of apparent *Heterorta* larvae he saw in webs of the sheet-web spider, *Dendrolycosa icadius*, at Yeppoon.

Fig. 1. Web of the tent-web spider, *Cyrtophora moluccensis*. (Photo: R. Raven)

Coastal Queenslanders know well the giant, complex, 3-dimensional webs of the tent-web spider, *Cyrtophora moluccensis*, and few Brisbane gardens were without them during the past wet summer (Fig. 1). I found that all four webs in my St Lucia garden were inhabited by brown, stick-like caterpillars (Fig. 2) which wandered freely about the web feeding on both leaf fragments and dead insects. They were reared indoors on segments of webbing captured on cardboard circles and were faithful to the webbing substrate, never straying onto the cardboard perimeter. They fed readily on leaf bits, but even more so on dead insects, both fresh and dried out. Though they resembled the photograph in Common's book, they deviated from Densey Clyne's observations, firstly in having the normal quota of four pairs of prolegs, and secondly in eventually pupating, not nakedly, but inside rolled leaf fragments hanging in the web.

When close examination of Common's putative *Heterorta* larval photograph showed his caterpillar also had four pairs of prolegs, the penny finally dropped that Common's larval picture, and the larvae I was rearing , though

Fig. 2. Larva of *Parilyrgis concolor* on a strand of spider web. (Photo: GBM)

identical to each other, were actually not *Heterorta* but some other species of moth. This was confirmed when the pupae finally hatched to a fine, triangular, khaki-coloured noctuid with magnificently enlarged labial palps (Fig. 3). I later found living adults of the same moth resting quietly in tent-webs in the field, looking for all the world like leaf pieces. Ted Edwards kindly identified the species as the noctuid, *Parilyrgis concolor*, a rare species from NG and NQ recorded only once from southern Queensland. Nothing was previously known of its habits or life history.

Fig. 3. Adult female of *Parilyrgis concolor*. (Photo: GBM)

These *Parilyrgis* larvae were absolutely ubiquitous in scores of *Cyrtophora* webs I examined in many parts of western Brisbane last summer (wet and hot). It is difficult to imagine that they have not been noticed previously in Brisbane (I've lived with tent–

webs in the same garden for nearly 40 years) and it may be another of the many tropical insects which have moved southwards down the Queensland coast in recent times, presumably under the influence of global warming.

Fig. 4. Larva of *Heterorta plutonis* feeding on dead moth in spider web. (Photo: GBM)

Later I found just a few of another type of larvae in the webs, both in my garden and at Long Pocket (Fig. 4). These were also raised and observed on the same cardboard webbing rings. These fitted all Densey Clyne's notes on true *Heterorta* larvae: two pairs of prolegs, white patches along sides. When mature they attached themselves to a webbing strand by their claspers and prolegs, then dropped out of their skin to become a naked pupa suspended by their last exuvium from the web. They look for all the world like a small dried flower bud or berry, with stalk still attached. These hatched to moths which were confirmed by Ted Edwards as being true *Heterorta plutonis*. These larvae fed much more strictly on insect carcasses than did *Parilyrgis*. They have a unique form of "looping" progression along the silken strands. The hind body is brought forward to the forebody so that the body forms a high loop, then the forebody is pushed forward by the straightening of the body with the thoracic legs encircling the strand and running along it like a pulley.

So next time you contemplate taking vengeance on that tent-web with a broom after you became entangled in it while collecting the morning paper, spare a thought for the non-spider world that exists in these spectacular webs.

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Edwards, E.D. 1996. Noctuidae, pp 291-333. In Nielsen, E.S., Edwards, E.D. & Rangsi, T.V. Checklist of the Lepidoptera of Australia. *Monographs on Australian Lepidoptera* 4: 1-529.

Robinson, M.H. 1978. Symbioses between insects and spiders: an association between lepidopteran larvae and the social spider *Anelosimus eximius* (Araneae: Theridiidae). *Psyche* 84: 225-232.

Stretching the trinomials: What are the limits for recognizing a subspecies?

Don Sands

Although internationally recognised as a trinomial taxonomic tool, the subspecies concept, as applied to morphologically-distinctive taxa, has often been synonymised or ignored in a less systematic way when compared with the species concept.

Not surprisingly, the use of the trinomial concept evolved historically when names were needed to describe animals that were distinct and very closely related, but were not sufficiently distinctive to be considered separate species. Invariably subspecies names in animals were given to populations with distinctive characteristics, usually allopatric populations, and many subspecies have subsequently been shown by revisers to represent separate species (especially when sympatric). When populations of distinctive subspecies were geographically separated, for example on islands separated by seas, there has often been the inclination

to regard them as separate species, but when subspecies were separated by other land-based geographical boundaries (for example, mountain ranges) the subspecies distinctions were not so easily defined. Most complex are decisions whether or not to recognise a subspecies already described, if the overall similarities progressively and geographically blend or overlap in intervening populations, forming clines. This has been taken by some authors as a good reason to, with stroke of a pen, synonymise a subspecies but without the consideration given and required for synonymising a species. Taxonomic editors mostly ask revisers to justify synonymies but the trend to treat subspecies lightly is continuing without recognising the current and potential values of the taxonomic category, especially in the Lepidoptera, the best-known morphologically, of the Orders of insects.

One potential use of the subspecies is to provide a name for morphologically separable populations that are known between two separate species. These are sometimes suspected as being part of "hybrid", "intermediate", or "tensions" zones (sensu M. White), where two species may interbreed to produce individuals intermediate in morphology between the adjoining species. These zones of possible hybridisation often contain individuals that grade in appearance from one species towards another. The question arises as to whether such suspected "hybrid" populations represent a taxon in their own right and if they do, do they deserve a name that gives them taxonomic identity, to separate them from one or other of the two, otherwise-distinctive, "parent" species.

While reviewing taxa that were likely to fit this geographical distribution of intermediates in morphology between few well known taxa (Sands and New 2002), I now believe there is an opportunity to apply the trinomial system to intermediate populations without knowing if the taxon is really a species in its own right. In the examples examined there are usually morphological, biological or seasonal differences that align the intermediates more closely to one than the other of the two "parent" species. On this basis I believe we have grounds to describe the "intermediate" populations in a conventional way, selecting those types for a new subspecies as best representatives of an "intermediate" population and aligning the subspecies with the species most similar. It has already been done with some subspecies of the sword grass brown butterfly, *Tisiphone abeona*, where intrinsic values of the concept can best be appreciated.

***A Note from the President*:**

I stated at the last General Meeting that I thought the International Code of Zoological Nomenclature did not consider subspecies to be valid. Upon checking The Code (available at http://www.iczn.org/iczn/index.jsp) I discovered that **subspecies** is considered the lowest rank at which names are regulated by the Code.

Every name within the scope of the Code is permanently attached to a name-bearing type. For species and subspecies this name-bearing type is either a single specimen or a number of specimens that together constitute the name-bearer.

As in previous Codes, the present edition retains the requirement that Latin or latinized adjectival species-group names must always agree in gender with the generic name with which they are combined. A proposal was considered that would have allowed the names of species and subspecies to be treated as though they were arbitrary words (i.e. they were never to be treated as Latin adjectives), so that their spellings would be invariable irrespective of the gender of the generic name with which they are combined at any time. The proposal would not only have eased the burden on those without Latin, but would also have facilitated electronic searching. But, because the various ways proposed of achieving

unchanging spellings were all considered to have drawbacks by the majority of respondents, and were not acceptable to them, the proposal was dropped. However, some changes are made in the latest edition to simplify the identification of gender in genus-group names, and the formation of stems for family-group names, and the Commission hopes these will reduce some of the difficulties of those without knowledge of Latin.

Article 5. Principle of Binominal Nomenclature.

5.2. Names of subspecies. The scientific name of a subspecies is a combination of three names (a trinomen, i.e. a binomen followed by a subspecific name). The subspecific name must begin with a lower-case letter.

Article 47. Nominotypical taxa.

47.1. Definition. When a species is considered to contain subspecies, the subspecies that contains the name-bearing type of the nominal species is denoted by the same species-group name as the species, with the same author and date; this subspecies is termed the nominotypical subspecies.

For more details, see ICZN: The Code at http://www.iczn.org/iczn/index.jsp.

Chris Lambkin

Backyard Explorer

Christine Lambkin, Christine Milne & Allan Morrison

The Backyard Explorer is a teacher resource developed at the Queensland Museum (QM) that contains insect trapping and identification activities to use as a measure of biodiversity of schoolyards and backyards. Images and data collected by students from different schools can be compared using a collaborative learning space known as a Virtual Field Trip in the Wild Backyards project room in Education Queensland's (EQ) Learning Place online community (See www.learningplace.com.au/vft/vftcentre.asp?pid=25047 > Wild Backyards > View our project > Group work > All reports).

Chris and Allan speak to Year 6 and 7 students on air through Charleville School of Distance Education with teacher Kate Lofthouse. (Photo: N. Starick)

Backyard Explorer contains a comprehensive guide for students to complete a survey of their schoolyard or backyard, and incorporates a scientific examination of the habitat, vegetation, vertebrates, and invertebrates applying the techniques used by QM staff in biodiversity surveys. The guide contains basic keys and web addresses for other resources to identify the insects caught. Best scientific practices are incorporated at all stages. Using a hypothesis driven approach, Backyard Explorer directs the students to gather scientific evidence to consider what the collected invertebrates' roles are in the environment.

Students are encouraged and guided to develop a digital story for their area from images of their study group, survey area, vertebrates observed, collection methods and invertebrates collected (see LouisesStory.wmv). Students of schools registered with Wild Backyards are directed to post Backyard Explorer digital stories, images, and results using specially developed Excel spreadsheets on the Learning Place website allowing students from different schools in very different environments to appreciate environments other than their own.

Students from Thargomindah SS set up pitfall traps and look for insects in their schoolyard. (Photo: N. Starick)

Teachers, students, and the general public can choose to download the Backyard Explorer PDF freely from the QM Wild Backyards website at http://www.qm.qld.gov.au/ and complete any of the activities, or teachers can register their class with the Wild Backyards program on the EQ Learning Place and complete the program.

Teachers of schools registered with the Wild Backyards program are able to organise online blogs between their students and QM staff, including Biodiversity curators, to help students with identifications and discuss their results. During National Science Week, students from chosen registered schools visit the Learning Place website to communicate with scientists on the public floor at the Queensland Museum about their findings.

Backyard Explorer activities were developed for upper primary and lower secondary students, however with teacher guidance, primary students at all levels have already been involved at Eromanga SS and Thargomindah SS. In contrast, Babinda Secondary Department (SD) used Backyard Explorer to engage previously disengaged students in Year 9.

The Backyard Explorer was developed at the QM by Christine Milne (Senior Project Officer (Biodiversity), Strategic Learning (QM) 2006-2008; Senior Education Officer, Curriculum Branch, Department of Education, Training and the Arts (EQ); currently with Education Queensland International, Doha Qatar), Christine Lambkin (Entomologist, Biodiversity Curator, QM) and Allan Morrison (Museum Magnet Schools Project Officer, QM) and promoted in schools across Queensland from late 2008. The QM team has visited schools and conferences discussing Backyard Explorer with both students and teachers, demonstrating collection techniques, using interactive identification keys for invertebrates, and increasing understanding and awareness of the unique Australian invertebrate biodiversity.

Eulo SS stayed after school to meet the QM crew and were fascinated investigating dung beetles with Noel. (Photo: A. Morrison)

Chris Lambkin, Noel Starick (QM Volunteer), and Allan toured South West Queensland in May promoting the Backyard

Explorer project in the Wild Backyards program at schools from Miles, Charleville, Charleville School of Distance Education, Thargomindah, Eulo and St George by talking to over 200 students and hosting professional development workshop sessions for 66 teachers from surrounding schools and environmental centres including Miles SHS, Columboola Environmental Education Centre, Amaroo Environmental Education Centre, St Mary's Parish School, Miles, Charleville SHS, Charleville SDE, Charleville SS, Thargomindah SS, Eulo SS, St George SHS, St George SS, Dirranbandi SS, and St Patrick's School, St George.

Chris showing Eulo SS students some SW Qld insects. (Photo: N. Starick)

Chris, Allan, and Christine Milne have submitted the Backyard Explorer project for an Australian Museum Eureka Award for Promoting Understanding of Science.

Backyard Explorer has been accepted well by the target audience, teachers in upper primary and lower secondary schools, with nine schools, 32 teachers, and more than 800 students already registered in the program. Direct communications have been made with a further 350 students and another 125 teachers in an extremely effective teach the teachers approach. Thus 24 schools, over 1160 students and, most importantly, over 150 teachers are now involved in the Backyard Explorer program already.

Screwworm posters

A set of two posters, illustrating the lifecycle of screwworms and outlining their impact on human and animal health, were displayed at the meeting.

The posters were developed by Drs Udo Feldmann, Jorge Hendrichs and Marc Vreysen from the Insect Control Division of the IAEA based in Vienna, Austria, and funded by the International Atomic Energy Agency and Food and Agriculture Organisation. Richard Piper from Scientific Advisory Services, based in Tully, Qld, was engaged to put the posters together. For more information about the posters contact Richard Piper: richard@saspl.com.au

Vote of thanks to speakers was given by Justin Bartlett.

Chairman's closing statement:
The next meeting will be held at this venue on Monday, 10th August, 2009 at 5 pm with Prof. Gerry Cassis, UNSW to present the Perkins Memorial lecture, followed by a BBQ and drinks. Attendees were requested to RSVP by 7th August to facilitate catering.

Notice of Next Meeting

Perkins Memorial Lecture

Frederick Athol Perkins (1897-1976)
This biennial lecture celebrates the memory of Frederick Athol Perkins, a founder of the Entomological Society of Queensland, first lecturer in entomology at the University of Queensland (1926), and first Head of the Department of Entomology (1952). Athol Perkins influenced entomology in Queensland for half a century in a way that no other entomologist has yet emulated.

Professor Gerry Cassis (UNSW)

Mr Darwin's little Gumbug: Systematics, host associations, and biogeography of the mirid genus *Setocoris*

Monday, 10th August 2009, at 5 Pm

Large Conference Room
CSIRO Long Pocket Laboratories
120 Meiers Rd, Indooroopilly

ALL WELCOME
(visitors please sign in at reception before meeting)
Lecture will be followed by a BBQ. $5. RSVP by 7th Aug. to matthew.purcell@csiro.au or 07-32142847

News from CSIRO Entomology (Long Pocket Laboratories)

Dr Shon Schooler [CSIRO Entomology Tropical Invasive Weeds] & his team (**Richard Chan**, **Céline Clech-Goods** & **Gio Fichera**) are currently host testing and endeavouring to elucidate the life history of the aquatic weevil *Hydrotimetes natans*, an agent against the invasive submerged aquatic plant, *Cabomba caroliniana*, an aquarium escapee. The larvae of the strongly swimming weevil tunnel in the stems of *Cabomba* causing rotting & fragmentation of the stems. Feeding damage by adults appears as pits in stems and holes in the very thin leaves. The latter causes the affected segment to separate from the rest of the plant and float freely in the water column. Oviposition sites are yet to be confirmed. In trials completed to date, the insect appears to only prefer *C. caroliniana* and a close relative, *C. aquatica*. Our only Australian native Cabombaceae, *Brasenia schreberi*, appears to be an unsuitable host, although a few minor windows through the leaf lamina and pits in the leaves' elongate petiole, that may be feeding scars, were observed. Starvation trials with *Brasenia* and *Cabomba* are underway with choice tests to be commenced shortly.

Systena nitentula, a flea beetle injurious to Alligator Weed (*Alternanthera philoxeroides*), a serious invasive species of periodically inundated land & waterways, is also being reared in LPL Quarantine. Adults feed primarily on plant leaves while newly hatched larvae appear to find their way into the tough, thick, energy rich roots and subterranean stems via the fine adventitious roots. Each of the three instars feeds within the stem/roots, with the last instar also pupating there. Refined rearing methodology has resulted in improved adult emergence. It is expected that the growing number of adults will shortly allow the start of testing the insect's specificity and suitability as a biological control agent.

USDA ARS Australian Biological Control Laboratory

In May **Matthew Purcell** travelled to Mississippi and Florida in the US to present an overview of ABCL research to collaborating USDA ARS scientists and funding bodies. A new project on exploration for biological control agents of Downey Rose Myrtle, *Rhodomyrtus tomentosa*, has been started with the Florida Fish and Wildlife Conservation Commission. A second smaller project has also been initiated on Australian Tree Fern which has become a major pest in Hawaii. **Jeff Makinson** conducted field surveys in Hong Kong for the *Lygodium microphyllum* borer, *Lygomusotima* sp. He also surveyed stands of Downey Rose Myrtle which has some interesting herbivores. On returning, Jeff visited north Queensland to search for a stem-boring weevil on *Lygodium* spp. In June, **Bradley Brown** travelled with **Richard Chan** to Malaysian Borneo to search for biological control agents of the submerged aquatic weed, *Hydrilla verticillata*.

News from School of Biological Sciences (BIOL), The University of Queensland

Several UQ entomologists were involved in the Genetics Society of Australia (GSA) meeting in Brisbane (7-10 July, UQ). **Beth McGraw** was an organiser, and members of several groups (**Chenoweth, McGraw and O'Neill** labs) presented talks and chaired sessions.

David Merritt attended the 18th Australasian Conference on Cave and Karst Management at Margaret River, Western Australia, where he presented a talk entitled *Bioluminescence in Cave Glow-worms: Signs of Altered Circadian Rhythmicity*, co-authored with Arthur Clarke. **Claire Baker**, who completed her PhD on glow-worm phylogenetics and species identities at UQ in 2004 also attended the meeting. **Rebecca Morley's** (Honours student in Merritt lab) project on light receptivity in glow worms has been progressing well.

The **Entomology Curriculum Australia** development team met at UQ from 8-10 July. The first four third-level courses are on track to be rolled out in 2010. For more information see the Entomology Australia website (www.entomology.edu.au/).

Nigel Beebe is off to the EMBO workshop "Molecular and Population Biology of Mosquitoes" in Crete in July. He has two Honours students (Rayon and Weibin) starting when second semester begins at the end of July. Each will be studying the evolution and distribution of a cryptic species of malaria vector (*Anopheles*) in Papua New Guinea.

Several students finished major entomology projects in BIOL mid-year. **Penny Mills** (**Cook** lab) has completed her Honours degree and presented her work at the GSA meeting. Penny used morphological, chromosomal and DNA sequence data to determine if the scale insect, *Apiomorpha minor*, represents a cryptic species-complex. The molecular data showed the presence of at least six cryptic species, several of which were morphologically distinguishable. Diploid chromosome counts did not correspond directly with the six cryptic species, with considerable variation present within each of the genetic groups. The extent of chromosomal variation may indicate additional species to the six identified in her study. **Desley Tree** (**Walter** lab, & QPIF) presented the results of her major MSc research project on the thrips of leaf litter and bark in different forest types in the Brisbane area. She found a greater abundance and species diversity of thrips associated with dry sclerophyll forest than in wet sclerophyll or rainforest. There was also a difference in abundance and species richness in thrips associated with bark of two different trees, *Eucalyptus major* and *Acacia melanoxylon*. Thrips species associated with leaf litter are thought to feed on fungi, however little is known of the biology of thrips associated with bark of living trees. **Justin Bartlett** (QPIF) completed his major project which concerned a taxonomic revision of Australian clerid beetles. He built a matrix of adult characters in Lucid Builder ver. 3.4' software and 'natural language' descriptions exported from the matrix helped to redefine genera. He produced a key to genera, a checklist of Australian species, and summarised the status of exotic taxa in Australia. Proposed taxonomic changes include fifteen species-level synonymies, one genus-level synonymy, thirty-nine new combinations, return of two species to their original combinations, the removal of four species from synonymy, and the description of two new genera.

ABRS supports a new exciting Queensland-based project

Hi fellow members,
I'm Federica Turco and I've been a member of the Entomological Society of Queensland for the last two years. I moved in 2007 from Italy where I completed my PhD on the systematics of a Palaearctic tribe of blister beetles (Meloidae, Cerocomini).

For these two years, I've been working at the Queensland Museum (Entomology) doing many different things and learning so much from everybody. Finally, after passing through different larval stages (I've been taught by my hypermetamorphic friends, the blister beetles) I managed to pupate in the shade of an ABRS application… and here I am, emerged on the last 1st of July as a post-doc fellow at the QM working with

Christine Lambkin and Adam Slipinski (CSIRO, Canberra).

My "mission" will be reviewing the taxonomy of the Australian Zopheridae, which are poorly known cosmopolitan saproxylic beetles. I will determine biodiversity patterns within Australia and assess the phylogeny and biogeographical connections of 4 genera distributed in the southern hemisphere (*Ablabus*, *Pristoderus*, *Norix* and *Notocoxelus*).

All the information collected during this 3-year project, taxonomic, phylogenetic, biogeographical and ecological, will provide a solid basis for the development of this family, within the saproxylic guild, as a management and conservation tool for ecological studies of Australian forests health. During the project I will also contribute to the *Beetle Tree of Life* (BToL)[1] and *Atlas of Living Australia* (ALA)[2] projects, as well as create an Australian Faunal Directory[3] for the zopherids and contribute to MorphBank[4] and Tree of Life web project[5].

[1]: insects.oeb.harvard.edu/ATOL/
[2]: www.ala.org.au/
[3]: www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home
[4]: www.morphbank.net/
[5]: tolweb.org/tree/phylogeny.html

In the bush with George (aka *Zopherosis georgei* White, 1859).

ENTOMOLOGISTS IN ACTION

The aim of this new section of the News Bulletin is to introduce you to Queensland based entomological groups and their members. In this edition we are pleased to feature the QUT Entomology team.

Entomology at QUT

Staff working with insects at Queensland University of Technology (QUT), Brisbane, work within the School of Natural Resource Sciences, which resides in the Faculty of Science and Technology. While QUT has traditionally not had an entomology programme, in recent years there has been a steady growth in the number of Natural Resource Science staff applying their expertise to insect systems. This stems from both the active appointment of entomologists at QUT to work in applied ecological entomology, as well as a spread of interest as colleagues work out what a wonderful system insects are with which to work. This is their story…

Dr Mark Schutze
Mark is a Research Fellow with the CRC for National Plant Biosecurity. He is part of a research group that is using morphological, molecular, and ecological approaches to further resolve the Oriental Fruit Fly, *Bactrocera dorsalis*, species complex (Diptera: Tephritidae). Mark recently completed his PhD studying geographic variation of the Eucalyptus Tortoise Beetle, *Paropsis atomaria* (Coleoptera: Chrysomelidae).

Dr Tanya Scharaschkin
Tanya is a Lecturer at QUT, whose principal research interests are plant ecology, systematics and evolution. She incorporates morphological and molecular approaches in phylogenetic studies. Tanya's research extends to insects as she is interested in pollination biology (especially of the plant families Annonaceae and Eupomatiaceae), growth responses of damaged plants with applications for identification of biocontrol agents, and the systematics of insects such as whiteflies.

Amanda Mararuai
Amanda is a completing PhD student at QUT, whose project was to investigate host plant use and ecology of the pest Banana Fruit Fly, *Bactrocera musae*, in Papua New Guinea. Amanda will soon be returning to PNG to continue her career in Fruit Fly research.

Amy Carmichael
Amy is working on the Plant Biosecurity Toolbox project with the CRC for National Plant Biosecurity. This project is developing a web-accessible national diagnostic database to help users quickly assess suspected incursions. The toolbox is accessible via the PaDIL website (www.padil.gov.au/pbt), and provides access to other linked biosecurity diagnostic tools, such as the Remote Microscope Diagnostic Network and the Biosecurity Bank. Amy is also in the final stages of completing her Masters on the taxonomy and diagnostics of fruit fly infesting Opiine braconids in Australia and the South Pacific.

Dr Grant Hamilton
Grant is a Lecturer in the School of Natural Resource Sciences at QUT, whose research focuses on risk analysis, biological invasions, ecological modelling and statistics, and pest management. Part of his current work is with CRCNPB on improving sampling protocols for post-harvest grain pests in the Australian export grains industry.

Left-Right: Mark, Tanya, Amanda (behind), Amy (front), David, Tony, Grant (front of Tony), Matt (back), Sakuntala (front), Susan, Faheem.

David Elmouttie
David is a Research Fellow in the School of Natural Resource Sciences at QUT. Currently, David's research is focused on the development of a flexible statistically based sampling strategy for the detection of post harvest grain storage pests in the Australian export grains industry.

Associate Professor Tony Clarke
Most of Tony's research focuses on insect pest management in tropical and subtropical systems, with an emphasis on horticultural crops. Tony has participated in several ACIAR projects, working with colleagues in Bhutan, PNG, Fiji and Samoa. His current research focuses on tropical fruit flies, with personal or collaborative projects (such as with the CRCNPB) that cover fruit fly systematics, basic and applied ecology, market access and parasitoids.

Matthew Krosch
Matt is a third year PhD student at QUT working on reconstructing the evolutionary history of the Gondwanan Orthocladiinae (Diptera: Chironomidae). Broadly, this project aims to infer a molecular phylogeny for members of the Gondwanan orthoclads, testing relationships proposed by morphological data and comparing the effect of historical fragmentation between Gondwanan landmasses. Matt will also be assessing fine scale dispersal patterns for selected north Queensland chironomid populations.

Sakuntala Muthuthantri
Sakuntala is a PhD candidate at QUT and member of the CRC for National Plant Biosecurity, whose interest to work in the fruit and vegetable industry began during her undergraduate years studying agriculture. Sakuntala has been researching the Queensland Fruit Fly (*Bactrocera tryoni*) for a few years, and is now investigating the ecology of *B. tryoni* by focusing on the role of host-plants on regional population dynamics for her doctoral thesis.

Dr Susan Fuller
Susan is a Lecturer in Conservation and Wildlife Management in the School of Natural Resource Sciences at QUT. Her research integrates field-based population studies with innovative molecular techniques to deliver ecological management outcomes. Susan's research interests in entomology include molecular phylogenetics (phylogeography of allodapine bees) and invasion genetics (for invasive aphid pests of crops).

Faheem Ahmad
In the 2nd year of his PhD, Faheem is working on the field ecology of the stored grain pest, *Tribolium castaneum* Herbst (Coleoptera: Tenebrionidae) and its implications to phosphine resistance. The broad aims of Faheem's study include identification of host use pattern by the flour beetles, and using Gas-Chromatograph-Electroantennograph techniques in the identification of nutritional and semiochemical mechanisms involved.

UPCOMING EVENTS

Sunday September 13

Bug-Catch
Brisbane Koala Bushlands

The 16th Bug-Catch will be held at the **Alperton Rd Visitor Centre** in the Brisbane Koala Bushlands at Burbank, 15 km SE Brisbane, organised in conjunction with Stacey McLean Senior Program Officer, Biodiversity Planning Natural Environment and Sustainability Branch, Brisbane City Council.

About Bug-Catch
"Bug-Catch" is a program of collecting trips run by the Entomological Society of Queensland, in conjunction with the Queensland Environmental Protection Agency.

The object of the trips is to utilise the specialist insect collecting and identification skills of Society members to assist DERM to compile lists of invertebrates for protected areas (National Parks, Forest Reserves, State Forests, etc). Target areas are chosen jointly by ESQ and DERM. DERM then facilitates permits for collecting during these trips. ESQ members attending the trips are required to sign DERM volunteer forms to give them access to these permit privileges. Members are asked to supply lists of species collected, and these are included by DERM in their faunal databases. The Bug-Catch Program is arranged by Jenny Greenland, on behalf of DERM, and by Geoff Monteith and Christine Lambkin, on behalf of ESQ.

Brisbane Koala Bushlands

The **Alperton Rd Visitor Centre** is in the Brisbane City Council's Brisbane Koala Bushlands at Burbank, 15 km SE Brisbane. See http://www.brisbane.qld.gov.au/bccwr/environment/documents/track%20map_brisbane-koala-bushlands.pdf

Brisbane Koala Bushlands is a series of conservation parks extending from the Daisy Hill area to Logan City and the Redland Shire. Most of the parks are linked and total 800 hectares of Eucalypt forest, creating invaluable habitats for the koala. An estimated three to five thousand koalas reside in the Bushlands that remain relatively undisturbed. Other animals can be spotted in the parks, including grey kangaroos, red-necked wallabies, a variety of frogs, squirrel gliders, peregrine falcons, and white-bellied sea eagles.

The **Stockyard Creek** circuit track and boardwalk and Horse trail at the Alperton Rd Visitor Centre give good access to permanent freshwater, riparian habitat, spotted and scribbly gum, *Casuarina* stands, and some stringybark and ironbark. Malaise traps and baited pitfall traps will be set up beforehand. Sweep netting, beating, bark spraying, and hand searching will be used from 10am during the day, and light sheets set up at dusk.

Date/Time.

It all happens on Sunday, September 13 from 10 am. We will have some organised activities for students at around 11 so we would like them to muster by that time. We will remain all day and will run some light traps in the evening for a couple of hours until perhaps 9pm. Participants may come and go at anytime.

Please Note. **The gates to the Visitor Centre will be locked at 6pm.** If you wish to attend only for the night activities, please arrive by 6 pm. Participants will be able to leave with their vehicles after this time, as we will have keys.

Getting there

The Alperton Rd Visitor Centre (UBD page 203) is in the Brisbane City Council's Brisbane Koala Bushlands at Burbank, 15 km SE Brisbane.

You can take a bus, but if so, please let us know so someone can pick you up from the corner of Mt Cotton Rd & Alperton Rd.

Buses

Route 130—Parkinson Bus 130 (Brisbane Transport): **Departs 9:55am** from Queen St Bus Station A6, **arrives 10:08am** at Griffith University Busway; then take Route 280—Pt Talburpin 280 (Veolia): **Departs 10:15am** from Griffith University Busway, **arrives 10:32am** at Mt Cotton Rd & Alperton Rd.

Food

You are responsible for all your own food and drink. There is no drinkable water at the site. There are electric BBQs available, power, tables and benches, large shelters and toilets. We will have a couple of gas stoves to boil water for those wanting tea/coffee.

Registration

Our access to the reserve is dependent on ALL participants registering as a volunteer under DERM guidelines and being acquainted with Workplace Health and Safety

issues. Those who have done so on earlier Bug-Catch outings will be covered. If you have not then you MUST sign the forms. Jenny Greenland, from DERM, will have this paperwork and will give advice.

What to Bring
Bring all your collecting gear. A daypack could be useful as there is the opportunity to walk and explore quite a way into the reserve along the tracks. There is some water to collect in so bring dip nets and some white trays. A torch or headlight and jumper will be good if you are staying for the evening.

Let us know by phone or email if you are coming....

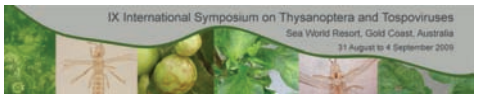
Geoff Monteith and Christine Lambkin
Bugcatch Coordinators
Queensland Museum
Telephone 38407699
Email christine.lambkin@qm.qld.gov.au

UPCOMING CONFERENCES

August 16-21, 2009

The 10th International Congress of Ecology:
Ecology in a Changing Climate
Brisbane, Queensland
http://www.intecol10.org/default.asp

August 31—September 4, 2009



IX International Symposium on Thysanoptera and Tospoviruses
Gold Coast, Queensland
http://www.australasianplantpathology society.org.au/Special_Interest_Groups/ix_international_symposium.htm

September 25-28, 2009

DARWIN 200:
Evolution and Biodiversity
Darwin, Northern Territory

The Combined Australian Entomological Society's 40th AGM & Scientific Conference / Society of Australian Systematic Biologists / 9th Invertebrate Biodiversity & Conservation Conference

The year 2009 marks the 200th anniversary of the birth of Charles Darwin and the 150th anniversary of his work *The Origin of Species*. The CHARLES DARWIN SYMPOSIUM is being held immediately prior to the joint Conference, has a thought provoking, exciting program and **there is no registration fee** - so consider going to Darwin a few days earlier to discover how Charles Darwin has shaped our science, society and future.

DEADLINE FOR ABSTRACTS
25 July 2009
BEST STUDENT PRESENTATION AND PHOTOGRAPHIC AND ILLUSTRATION COMPETITION
Register or read more about the proposed program and symposia at the website
www.evolutionbiodiversity2009.org

Register or read more about the proposed program at:
www.evolutionbiodiversity2009.org and
http://www.cdu.edu.au/cdss2009/index.html

NOTICE

Interested in gaining field experience?

Volunteers wanted for field collection of dry-stream system invertebrate samples.
Contact Alisha Steward on 0402 091 863 or a.steward@griffith.edu.au

Nomination for membership of the Entomological Society of Queensland

Title____ Initials_____Preferred name _____

Surname_____

Address_____

_____

_____ Postcode _____

email_____@_____

Nominated by_____

Seconded by_____

☐My cheque/money order is enclosed

☐Please charge my credit card
☐ Bankcard ☐ Visa ☐ Mastercard

Name on card_____

Expiry date___/___signature_____

☐ I would like a receipt

☐ general membership $30.00
☐ joint membership $36.00 ☐ student membership $18.00

I would like to receive the bulletin by
☐ normal mail (Australia Post) ☐ e-mail as a PDF file

Return to
Honorary Secretary,
Entomological Society of Queensland
P.O. Box 537
Indooroopilly 4068
Queensland

QUESTIONNAIRE TO NEW MEMBERS

As a new member, Entomological Society of Queensland would appreciate learning more about you and your interests in entomology. Please take a few minutes to complete the voluntary questionnaire below. Information is confidential and for the exclusive use of the Entomological Society of Queensland enabling us to form policy that better serves the interests and needs of our members. Information will not be accessible to any other agency.

*Please mark appropriate squares with **X***

Why did you join ESQ?

- ☐ Always interested in entomology
- ☐ New interest through studies
- ☐ New interest through entomologist friend/associate
- ☐ Work related
- ☐ Saw literature promoting ESQ
  - ☐ News Bulletin
  - ☐ ESQ flier
  - ☐ ESQ website
  - ☐ The Australian Entomologist
  - ☐ Other publication

Your interest in entomology is?

- ☐ Professional (your job)
- ☐ Non-professional (hobby)
- ☐ Other

Entomological groups of interest to you?

List: ……..

Your status?

- ☐ School student
- ☐ Tertiary student
  - ☐ Undergraduate
  - ☐ Post-grad student
- ☐ Teacher/lecturer
- ☐ Researcher
- ☐ Self employed
- ☐ Employed in non-ento area
- ☐ Retired

Are you a member of another entomological Society?

- ☐ Australian Entomological Society
- ☐ NSW Ent. Soc.
- ☐ Vict. Ent. Soc
- ☐ Overseas entomological society

Please add comments or additional information about yourself (Optional) :

……..

……..

DIARY DATES 2009

Meetings held 2nd Monday of the month
(or Tuesday if Monday is a public holiday)

MAR—Monday 9th	Dr Mike Furlong (UQ)	AGM & Presidential Address
APR—Tuesday 14th	Nate Hardy (QDPI)	Mealybug Classification
MAY—Monday 11th	Mary Whitehouse (CSIRO Narrabri)	From Lynx Spider to Cotton
JUN—Tuesday 9th	Student Award and Notes & Exhibits	Notes and Exhibits session
AUG—Monday 10th	Perkins Memorial Lecture: Professor Gerry Cassis (UNSW) and BBQ	Mr Darwin's little Gumbug
SEP—Monday 14th	Trevor Lambkin (QDPI)	The butterflies of Torres Strait
OCT—Monday 12th	Chris Burwell (QM)	
NOV—Monday 9th	Myron Zalucki (UQ)	
DEC—Monday 14th	Notes & Exhibits and BBQ	

SOCIETY SUBSCRIPTION RATES

GENERAL:	Person who has full membership privileges	**$30pa**
JOINT:	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT:	Students and others at the discretion of the Society Council	**$18pa**

Student membership conveys full membership privileges at a reduced rate.

THE *AUSTRALIAN ENTOMOLOGIST* SUBCRIPTION RATES

AUSTRALIA:	Individuals	**A$25pa**
	Institutions	**A$30pa**
ELSEWHERE:	Individuals	**A$35pa**
	Institutions	**A$40pa**

Subscriptions should be sent to the Business Manager,
The Australian Entomologist PO Box 537, Indooroopilly QLD 4068.

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

NEXT MEETING

5:00pm ~ Monday 10th August
Large Conference Room, CSIRO Long Pocket laboratories
120 Meiers Road Indooroopilly

Perkins Memorial Lecture
'Mr Darwin's Little Gumbug: Systematics, host associations, and biogeography of the mirid genus *Setocoris*'
Prof. Gerry Cassis (UNSW)

Lecture followed by BBQ
RSVP by 7th August to
matthew.purcell@csiro.au or 07 32142847

VISITORS WELCOME
(please sign in at reception before meeting)

Next News Bulletin

Volume 37, Issue 5, August 2009
due early September

CONTRIBUTIONS WELCOME

Send your news/stories/notices to the editor
(justin.bartlett@deedi.qld.gov.au)
by Thursday 20th August