

The NORTH QUEENSLAND NATURALIST CAIRNS

Journal of

NORTH QUEENSLAND NATURALISTS CLUB
Box 991, P.O.CAIRNS, Q.4870. Australia.
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Founder President: The late Dr. HUGO FLECKER
International Library No: AT ISSN 0078 1630

OBJECTS: The furtherance of the study of the various branches of
Natural History and the preservation of our heritage of
indigenous fauna and flora.

MEETINGS: Second Tuesday of each month at Cairns Education Centre,
Cnr. Morehead and Lazarus Sts., Bungalow, 8.00 p.m.

FIELD DAYS: Sunday before meeting. Notice of place and time given
in "Cairns Post".

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THE NORTH QUEENSLAND NATURALIST

Vol. 45 No.174

April, 1979

Price: 50c.

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Each author is responsible for the opinions and facts expressed
in his or her article.

BURROWING SPIDER BEHAVIOUR IN WATERLOGGED SOIL

by CLYDE COLEMAN, Edmonton.

On December 17th, 1978, fourteen burrows of Lampropodus iredescens (shining footed spider) were marked with metal pegs at different heights on low and high banks of a creek flowing through my property at Edmonton. This was to help determine whether these spiders vacate their burrows when the ground is sodden, or whether they remain in the underground silk chambers which this species construct and which by test have proved to be watertight.

All spiders under observation proved to be females; the male is unknown.

These burrows and others in the area were under observation for seven months in 1978 (May-Dec.). Most were closed during the dry period from July to the light rains later in the year. In previous wet seasons many of these burrows had been partly or completely closed during and after periods of heavy rain, or prolonged medium rains.

On first warnings of the depression prior to cyclone Peter, all marked burrows were checked by torch-light in the early night hours. All were open and occupants noted at burrows.

Burrows were checked at midday, 1.1.79, after the first rains of the year. A few were partly closed with litter and soil, but whether by wind and rain or by the spider could not be determined. Debris was removed from the openings of two burrows and there was no sign of silk on the undersurface (which would have been a sign of spider activity), so at this stage closure of the burrows seems to have been due to wind and rain.

From this time onward through cyclone Peter and the following heavy rains, these burrows were checked (with few exceptions) three times a day: 7-8 a.m., midday and 5-6 p.m. Some remained closed for more than three weeks; others would be opened after a few days finer weather, only to be closed after the onset of further heavy rain. Some burrow entrances in open situations were completely smoothed over by wind and water and the tops silted level with the surrounding soil. When these exposed burrows were reopened, the first work had evidently been done from below as the first indication was a rupturing of the soil surface, which was pushed up to form a slight dome. Opening of a burrow was usually the work of two nights but on a few occasions, three. When completed, all were wide open and at a slight angle to the vertical (which is usual in this species). A few had been partly hooded by a dry leaf bound to the soil with fine silk.

This pattern continued all through the study period to early February. During this time only three of the burrows remained open although partly sheltered by an occasional fallen leaf. Checking at night revealed a hopeful, hungry spider at one or more of these three burrows. (The female does not leave the burrow entrance to hunt, but always has the rear legs anchored to the entrance and grabs prey that passes within reach.)

Some of these burrows were in situations that held surface water for varying periods after heavy local rains. Others on the lower creek banks were covered with water during flooding, at depths varying from about $\frac{1}{2}$ m. to over a metre. One of these was dug out after its third immersion and the chamber examined for damage from water. The spider was very active and very annoyed, and it took a strong pull with a sharp wire hook to pull the door open as she maintained a grip with fangs, palps and the hooks on the four front feet. The chamber was slightly frayed and soaked on the outside, but the inside was quite dry. It did not have the firm

texture of sacs dug out during the dry weather and I think its water repelling ability would be less when removed than when cemented to the firm soil of the chamber walls.

Some of the loose soil domes formed prior to the re-opening of the burrows were turned over with a sharp knife, and a few had a flimsy film of loose silk on the undersurface of the covering soil. The evidence gained from this study does not prove that the spiders close their burrows during periods of heavy rain, but the use of silk under the soil and debris covering the opening indicates that some of them take steps to prevent the filling of the lower part of their burrows with water borne debris.

One burrow in the drier part of the study area was opened in late January and the silk chamber lining removed with its occupant, in order to test the spider's strength in keeping its door shut. The rear end of this silk chamber was clamped to a vertical support. A sharp wire hook and cord were attached to a honey jar and the hook was inserted in the door close to the side opposite the hinge; then water was added to the jar until the spider relaxed and the door was pulled open. The weight of the hook, jar and water was 203 grams - the spider's weight less than 3 grams; thus the pull exerted by this spider in keeping its door shut was nearly 60 times its own weight. The tenacity or blind instinct of this spider in retaining its grip can be tested by anyone with patience and a steady hand.

Lampropodus iredescens burrows start at a slight angle to the vertical and then continue as a shaft to an average depth of about 40 cms. The resting chamber is excavated at right angles to the shaft, is oval in shape, about twice the length of the spider, and about five times the volume of its body. The bottom of the shaft below the chamber is used as a rubbish dump for the remains of her meals. The egg sac is made in the chamber and remains with the mother for some months before dispersing.

I have photographed the chamber in position at the side of the burrow and with a fine scalpel and fine curved scissors have cut a large square of the thin silk cover out of the sac adjacent to the door and its collar. Provided a bright light was not shone on her eyes during this operation she maintained a solid grip on the inside of the door. If the scissors or lancet touched one of her feet she would lift it and resume her grip when the instrument had done its work. In this way, on one occasion, more than half of the back of one specimen was exposed and then the door pulled slowly open. She endured several repeats of this action and then relaxed her grip and moved to the rear of the sac.

This species makes silken chambers early in life and the rule seems to be (personal observation) the older the spider the deeper the chamber below the ground (bandicoots dig up quite a few). Those who survive are somewhat like the wise virgins - take precautions and the Lord will reward you with a long life and a succession of husbands to love, cherish, and if you are quick enough, to eat!

The chamber of a mature female of this species has a volume about five times her own and the finished product is well worthy of some comment. Her tools are what nature provides; fangs, palps, and her legs, plus the flexible spinnerets. These latter she has no hope of seeing due to the position of her eyes and the stiffness of her body. Down in the darkness of her burrow, 9 inches (22 cm), she must rely on touch. Where possible the chamber is egg shaped with the exception of the door and its collar, and it is to these latter that she gives her greatest care.

The soft clinging silk of spider webs that are familiar to most people in country areas is far removed from that making up the outside

of the door and its recess or collar. The silk of these areas is tougher than the wing cases of a large beetle and requires a sharp lancet to cut it. Where the door fits into its collar we see work that would do credit to a skilled human tradesman. Here the hard silk has a firm glossy lining which makes possible a fit that can exclude water (as I have proved by immersing a sac and its occupant in a jar of water for several hours). She was none the worse and the sac was a little flaccid on its outer surface only.

It is a strange life - the life of a spider - so strange that some naturalist friends of mine have called them "aliens among us". In spite of a few black sheep, they are a very useful group of animals destroying countless millions of insects annually, while their life histories and courtship dances are some of the most interesting facets of natural history. The dependence on silk is no less important with the burrowers than with the orb weavers, and their skill in its use rivals that of their aerial sisters with their large orb webs.

Imagine if you can, the spider halfway down her burrow, first excavating and then smoothing the chamber walls prior to giving them their tightly woven silk lining with its liquid binder before she forms the all important door and its collar. On this she lavishes her greatest care. Here the flexibility of her spinnerets and the touch of her palps form the curve of the collar and its beautifully formed door; a culmination of an inherited consummate skill or blind instinct?

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A NATIVE PREDATOR OF THE CANE TOAD (BUFO MARINUS)

by R.W. HUTCHINGS

The cane toad is a serious threat to many animal species including our native fauna, both through its voracious appetite as it devours everything that moves and by the toxin it secretes. This problem is steadily increasing as the cane toad spreads throughout Australia. Its successful colonization is undoubtedly due to its high reproductive capacity combined with very few Australian predators. However, observations of mine have shown that we may already have the genetic potential to control this pest, and indeed, this scourge may already have been contained to some extent by an extremely common yet unclaimed predator.

While keeping an aquarium stocked with native aquatic fauna, I first became aware of the regularity with which several of my specimens of freshwater crayfish, belonging to the genus Cherax, devoured both live and dead cane toad tadpoles. Though these tadpoles were at various stages of development, they were torn apart by the crayfishes' mandibles and third maxillipeds, then devoured.

Because crayfish are aquatic and nocturnal they do not lend themselves to easy observation by the casual naturalist, and hence their feeding habits outside captivity are relatively unknown.

However, devastation of tadpole populations by these night-time marauders will never be total as cane toads breed in any water, such as roadside ditches, where crayfish are not found. Also Cherax crayfish seldom exceed 8 inches in overall length, and are thus only capable of destroying very small cane toads. Control of the adult toads is of far greater significance.

Recently, I had the good fortune to observe closely the feeding habits of Australian freshwater crayfish belonging to the genus Euastacus. Unlike Cherax, Euastacus reach weights of in excess of 2 kg, and have claw spans greater than 60 cm.

The first indications that these crayfish were potential cane toad

predators came when I was keeping specimens of Euastacus in an outside pond which was frequented by cane toads. At the time I endeavoured to keep cane toads out of the pond as I feared they would contaminate the water and kill my specimens. However, I did not check the water often enough, and to my surprise, after a time I began finding dead, partly consumed cane toads in the pond.

This prompted me to leave the cane toads in the pond, to see the result. To my surprise the cane toad bodies continued to accumulate though there were no fatalities to the crayfish. By this time there was no doubt in my mind that these crayfish were eating the cane toads and showing no obvious side effects. The evidence was strong, but I had not actually seen a crayfish eat a cane toad, so I sought to observe this event.

The test was simple. I merely presented a large live, adult toad to a crayfish in an aquarium, then patiently observed the result.

On contact with the toad, the crayfish lashed forward with his large chelipeds, and seized the toad. The crayfish tenaciously held the toad at the nearest point of contact, and manoeuvred it until it had a secure grip. This grip was maintained until the initial struggling subsided at which point a portion of the toad was manoeuvred and grasped by the third maxillipeds. It was then eaten while still alive. I have since confirmed this observation on several occasions.

The mandibles are used to grasp a piece of toad, often a limb, then the third maxillipeds and the large chelipeds simultaneously stretch the toad away from the crayfish, thus tearing a piece off. Tough though the toad may be, the crayfish has no difficulty in tearing entire limbs off, piece by piece. Often the abdomen of the toad is torn open and the internal organs exteriorised and devoured. Death to the toad appears to come from drowning or bleeding.

So far I have observed Euastacus hystricosus, Euastacus valentulus, and Euastacus suttoni indulge in toad eating. The limited distribution of Euastacus hystricosus and Euastacus suttoni prevents them from contributing any real control. However, the widely distributed Euastacus valentulus from northern New South Wales has the potential to contribute greatly to cane toad control, especially if its numbers are permitted to build up to former populations, which were depleted by overfishing. The major limitation of this control is, of course, that it relies on the toad returning to the water at some period of its life.

Clearly there is much work to be done to examine the potential control by many of the other species of Euastacus crayfish, particularly before we consider biological control by other exotic species.

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THE TRUSTING SUNBIRD

by T. FORD, Cairns.

1976: During the mid-nesting season for Olive-backed Sunbirds, I hung up a plastic cord two feet away from my front door. On the end of the cord was a tassel of grass roots and string. This offer was soon taken up by the local sunbirds always around the garden, who raised their family in the nest that they had built in the tassel.

1977: Very early in this season, sunbirds returned to the 1976 nest and did extensive renovations. Mother, being a little to energetic, kicked a hole in the side of the nest. This she kept filling and repairing with fluffy cane "tops". However these tops kept creeping out and forming a large ball on the outside of the nest. Mrs., I suppose, gave up in disgust at the repairs and went to build two half-hearted nests next door.

Meanwhile I extensively repaired the damaged nest by hand with grass, cobweb and nylon sewing thread, and relined it with cottonwool, feathers and old lining. I rehung the nest in a better sheltered and less windy position on the other side of the house. After about a month the sunbirds accepted my repairs and change of nest position, thereby giving a boost to my ego.

Mother Sunbird hatched two eggs in the aforementioned nest. As the youngsters grew there was, it appeared, a serious accommodation problem. Shortly before the final exodus, Mother at night was perched atop the babes at a sharp angle and must have found it difficult to stay in the nest.

I was away from home for six days, and on returning found that my kind neighbour had tended and sheltered the young birds at night and put them out during the day to be fed by the parents, who accepted this.

On my return one young lady was more or less airborne for short flights. Her sister, who I called Minim, was far behind in development; although feathered, she was quite bald and a mere $1\frac{1}{2}$ " long. My neighbour found her in the grass covered with ants. Put in a lined box, Minim seemed happy enough placed on my bird table with a sun and rain shelter. Mother continued to feed her regularly when I placed her outside early mornings, and took away the loose droppings from the box.

Deciding extra nourishment would help Minim along, I made up a diluted mixture of egg yolk, trace of honey and high protein powder. She was a little indifferent to this mixture at first, but with each subsequent feeding enjoyed it more.

Minim flitted a couple of feet at a time and gained strength rapidly. Her shelter was a large mulberry leaf tied in a small mango tree. This was also accepted by the parents, and Minim was joined by her sister, who huddled very close, supposedly offering warmth and encouragement.

A few days later Minim vanished without a trace, although her parents and sister remained in the garden. It seems she paid the ultimate price to some foe for not being amongst the fittest. Her slow physical gains indicated some possible small inborn defect. She was also failing to develop fast enough that notable characteristic of all small birds - extreme alertness. We can only hope that this latter defect was not aided by the human help, although this may be so.

The parents' trust remains as before. They raised their next family in the same nest.

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THE HERBERT RIVER RINGTAIL POSSUM PSEUDOCHEIRUS HERBERTENSIS
IN OPEN FOREST ON THE ATHERTON TABLELANDS

by RUPERT RUSSELL, P.O. Box 54, Herberton.

The Herbert River Ringtail Possum is generally considered to be a rainforest animal, which makes repeated sightings of two of these possums in open forest, 10 km south-west of Herberton, a matter of considerable interest.

The forest is dominated by tall Eucalyptus grandis, with numerous large E. resinifera and E. intermedia in the area, along with numerous Syncarpia gomulifera. Understorey is comprised almost entirely of a species of Casuarina, probably C. torulosa. The forest floor is covered in either soft grasses or low growing ferns.

Two Herbert River Ringtails were first sighted on 8-11-78. One was seen on 27-12-78 and the other on 8-1-79. Both were seen on 9-1-79, when one animal was observed feeding on the mature leaves of Eucalyptus intermedia, the Pink Bloodwood.

Both animals are of adult size and appear to be in excellent condition. That they are living in the forest described and not simply making forays into it can be established by the fact that the nearest rainforest, by crowflight, would be at least one kilometre away, and further, the animals have twice been seen just after dusk.

Reports of any open forest sightings of this species by any reader will be welcomed by the writer.

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SUCCESSFUL NATURE DISPLAY

by MARION CASSELS.

Following on the success and interest shown in our Natural History Display held in 1977 at the Raintrees Shopping Centre, it was decided to hold another display last year. As \$192 was made from sale of plants at the first display, it was agreed to once more pot plants for sale. We tried to propagate as many native plants as we could to encourage people to grow natives in their gardens.

Members with slides and films selected their best ones and these were shown with a taped commentary giving a wide coverage of local fauna and flora. On wire screens many lovely photographs and posters were displayed all trying to show people the wonders of the North. Another display was of bird feathers (collected from road casualties) with a short note at the top explaining a little about the make-up and use of feathers.

At the back of the stage a small rainforest was created with potted rainforest trees, epiphytic ferns hanging on screens and the floor covered in forest litter. At the front of the stage were cases containing moths, butterflies and several live snakes; also jars of different species of local mangroves. In another corner was a display of shells and crabs and at the back of the stage was a large box in which was the reflected image of the most dangerous animal in the world - man.

At the counter were T-shirts printed with our grass tree emblem, plus cards of feathers, wood roses, minerals and other odds and ends. A raffle was run with a polished timber planter stand as prize.

The members were well rewarded for their efforts. Apart from the fact that over \$1000 was raised (with about \$200 expenses), the management of the shopping complex was happy with it all and asked for another one for next year.

Thanks go to all the members who worked so hard to make this such a success and give us for the first time in many years, financial security for some time to come.

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NEWS ITEM: The marine parks section of the Queensland Fisheries Service has acquired the Green Is. residence and laboratory of the late Noel Monkman. Marine Park rangers will be on duty on a regular basis providing reef walks and slide shows in addition to their regular daytime activities.

THE ORIGIN OF GENERIC NAMES OF QUEENSLAND RAINFOREST TREES PART IX

by JAMES A. BAINES

Note: STCN = Standard Trade Common Name
PCN = Preferred Common Name

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Erratum: In Part VIII, Diospyros appeared as Diospryos.

Diploglottis. Gk diploos, double; glottis, the mouth of the windpipe; double-throated, the inner scale being divided into two. Q. has two species, known as Native Tamarind and Wild Tamarind. Fam. Sapindaceae.

Dissiliaria. Lat dissilio, fly apart, burst asunder (from salio, leap or jump); name given by Mueller because of the complete bursting of the capsule. D. baloghioides, STCN Redheart, is also known as Hauer, Black-heart and Lancewood. The specific epithet honours Dr. Joseph Balogh (see Baloghia). Euphorbiaceae.

Doryphora. Gk dory, a spear; phoros, bearing; alluding perhaps (says Francis) to the bristle-like points of the anthers - Bailey describes 'filaments ... with a winglike appendage on each side'. D. aromatica is Grey or STCN Northern Sassafras; D. sassafras, STCN Sassafras, Yellow or Canary Sassafras, is a N.S.W. species found in Q. only in far s.e. Sassafras comes from Lat saxifraga (saxum, stone; fraga, break) through Ital. sassifraga and Span. sasafra; a N. American tree whose present valid name is Sassafras albidum, White Sassafras, was so named because its bark produced a medicine similar in its effects to Saxifrage, i.e. used to 'break stones' in the bladder, cf. spleenwort. The Aust. trees were named thus because they had similar fragrance and properties to the American trees, which are in fam. Lauraceae. Oliver's Sassafras, Cinnamomum oliveri, STCN Camphorwood, is in Lauraceae, but both Doryphora and Atherosperma (Southern Sassafras) are in Monimiaceae. (The medicinal oil of sassafras is obtained only from the American trees.)

Dracaena. Gk drakaina (fem. of drakon), dragon; hence Lat draco and the English words dragon and draconian. The name was given because of the inspissated juice exuding from the trunk of some species, originally D. cinnabari of Socotra, but most famous the Dragon's-blood Tree or Dragon-tree of Teneriffe, D. draco. Q.'s sole species, D. angustifolia, is shared with the Indo-Malaysian region, but there are 150 species altogether in the world. Fam. Agavaceae.

Drimys. Gk drimys, pungent, piercing; alluding to the acidity of the plants. The genus was set up by J.R. & G. Forster in 1776. Very recently, R. Brown's Tasmania, established 1818, has been preferred by some botanists for Aust. species because of differences thought to be generic. Cause, Weatherhead & Kynaston, in 'The Nomenclature, Density and Lyctus-susceptibility of Q. Timbers' (Q. Dept. of Forestry Pamphlet No. 13), include Mountain Pepper as Drimys lanceolata, whereas Northern Pepper-tree is listed by Hyland and in 3rd. edition of Francis as Tasmania membranacea, which W. Vink in 1970 lumped with 30 previously recognized New Guinea Highlands species as a highly polymorphic and widely dispersed species, D. piperita (type species from Mt. Kinabalu in Sabah, Borneo) - this was cited by Willis in 'Handbook to Plants in Victoria', Vol II.

Dryadodaphne. Gk dryas (genitive dryados), wood nymph, dryad; genus Daphne; originally described in Lauraceae but transferred to Monimiaceae in 1923 by Spencer Moore, who doubtless coined the name because it seemed like a forest Daphne. (The mythical Daphne, pursued by amorous Apollo, prayed for aid and was changed into a laurel-tree, thenceforth called daphne in Greek.) D. trachyphloia is known as Ladei or PCN Grey Sassafras, a name it shares with Doryphora aromatica, q.v.