
THE
NORTH QUEENSLAND
NATURALIST

CAIRNS

Journal of

NORTH QUEENSLAND NATURALISTS CLUB

Founder, Presd. The late Dr. HUGO FLECKER

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

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MEETINGS - Second Tuesday of each month at Oddfellows Hall, Lake St., 8p.m.

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

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**"Each Author is responsible for the opinions and facts expressed in his
or her article."**

Club Officers -- September 30, 1970 to September 30, 1971.

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The Editor urgently requires more material for the journal from Club Members or guest writers.

OBITUARY

The sudden passing of Stanley H. Boyd at Cooktown, early in December, saddened not only Club members, but naturalists throughout the North. Born in Cooktown on January 2nd 1888, Stan was a "natural naturalist". His keen powers of observations, coupled by a willingness to share his vast knowledge with all and sundry, made him a well-known personality, not only in North Queensland, but overseas as well.

He was the instigator of the original Cooktown Museum and for many years acted as its curator in an unpaid capacity, thereby nourishing an acorn which flourished into the oak that is now the James Cook Museum.

His crisp reminiscences on natural history appeared in many publications throughout the world, from the prestigious "Animals" of Gerald Durrell to the privately-printed "Folklore Magazine".

His last published par (on Flying Foxes) appeared in the November "Naturalist".

Cooktown - and indeed North Queensland - won't be quite the same without him J. O.

POT POURRI

STRANGE DIETS.

In our bird books we are usually told the food that various birds eat, but I have found over the years that most birds have a pretty varied diet. The Spangled Drongo is usually thought of as a meat eater, but I have seen him assiduously going over the Grevillea and Callistemon trees taking the nectar like any honey-eater or Lorikeet.

In our garden we have a bird bath which is very well used. There was some green algae in long strings growing in the water and one day I saw a female Magpie Lark pull out a long string and swallow it. She did this three times and later on my husband saw her do it again.

The Grevillea pteridifolia flowered very well this year and set a lot of seed. I noticed that the female fig bird was using some of the twigs for her nesting but then I also noticed that she was eating some of the seed straight from the tree. Lately a number of fig birds were milling around on the ground under a poinciana tree and I saw some of them with seeds in their beaks. I did not actually see them swallow the seeds.

FROM UNDER A PILE OF IRON

I always thought a frog was just a frog until recently when I found that there were many different kinds, shapes and sizes of order "Anura" - which means "double life" referring to the fact that frogs and toads live in water and on land. Nor did I realise how many different kinds of lizards and snakes there were (of the order Squamata) but when a member of the Club from New Guinea, Mr. Fred Parker, visited us in Cairns a few weeks ago we learnt a great deal about these two orders.

One of our trips was to a property at Holloways Beach near Cairns to see just what lived in that area. We went to a cleared piece of land adjoining eucalypt woodland where there were some piles of old iron. These are ideal for a lizard or snake hunt. Carefully moving the iron piece by piece we stood by ready to run or catch what ever came out. I will leave Fred Parker to describe the frogs of Cairns area in an article he has promised this journal but the following is a list of the lizards and snakes seen during a couple of hours searching.

- CARLIA BICARINATA - a small brown grass skink very common in grass.
 C. NOVAE GUINAE - only one of these very small secretive skinks was found.
 C. FUSCA. - this is a large Carlia nearly 6" in total length. It is grey with white lips and a red throat.
 CTENOTUS SPALDINGI - a swift moving ground skink, striped brown and black.
 C. VAERIOLATUS - is a smaller species differing in having striped flanks, not blotched as in spaldingi.
 DIPORIPHORA BILINEATA - this long name just means one of our familiar little Tommy Roundheads, a large headed dragon. This was a small grey fellow.
 GEHYRA AUSTRALIS - is a very common grey tree gecko.
 SPHENOMORPHUS PARDALIS - a brown smooth scaled burrowing skink which took some catching as it tried to burrow back into the soft ground.
 DEMANSIA PSAMMOPHIS - more commonly known at the Yellow faced whip snake. It was a pale green with rust red on the anterior body and a yellow ring round the eye. A fairly common snake around Cairns.
 MORELIA SPILOTES VARIEGATA - a carpet python. This fellow was really annoyed at being disturbed and as he was being held up for inspection turned and bit Fred's ankle, drawing blood. Not that that worried Fred who just shook him off and carried on with what he was doing.

I am sure that had we had more time at our disposal we would have found many more interesting creatures at Holloways Beach.

Marion Cassels,
 Cairns.

BIRD NOTES

Recently whilst watching birds on the foreshores my husband and I were surprised and pleased to see five cattle egrets in breeding plumage standing in their characteristic hunched up position in the mud. Cattle egrets in breeding plumage have also been reported up at Daintree this month (November).

RANGE EXTENSION OF THE LONG TAILED PIGMY POSSUM ON THE CAPE YORK PENINSULA, QUEENSLAND.

The interesting observations by N. C. Coleman on the long-tailed pigmy possum of north eastern Queensland in *The North Queensland Naturalist* (vol. 38, no. 153, November 1970) are admirable in their detail, and point up the fact that valuable information on our local mammals can be obtained by observant naturalists. Members of museum expeditions are always pressed for time, and rarely have the opportunity to make such detailed observations. However, mammalogists with study collections at hand are in a position to map out the geographical distribution of genera and species, and to evaluate the distinctness of populations.

In 1916 the Swedish naturalist, Mjoberg, based a new genus and species of pigmy possum, *Eudromicia macrura*, on a series of four specimens which he collected in 1913 at Cedar Creek. Wakefield (1963) in his review of the Australian and New Guinea pigmy possums classified all of these tiny possums (except *Acrobates*, *Burramys*, and *Distoechurus*) in the genus *Cercartetus*. He also concluded that *Eudromicia caudata* of New Guinea was conspecific with *Eudromicia macrura* of Cape York. Therefore, the possums discussed by Coleman now bear the name *Cercartetus caudatus macrurus*.

Tate (1952), leaning heavily upon the botanical knowledge of Dr. L. J. Brass, discussed the distribution of rain forest in Queensland. The Cooktown-Cairns-Townsville stretch of rain forest is the only area in which *Cercartetus c. macrurus* has been found. In fact, as Wakefield (1963) pointed out, there were only eight museum specimens of the long-tailed pigmy possum available for his study "all from within 50 miles of Cairns". One of these important specimens (AMNH 155090) was donated to Tate and Van Deusen, members of the 1948 Archbold Cape York Expedition, by the North Queensland Naturalists Club; this spirit specimen bore the number 404 and became number 11590 in the Archbold field catalogue. The exact provenance of this male and the date of collection were not known. However, it could have been collected on the Atherton Tableland, a favorite area for outings by the members of the Naturalists Club. Tate (1952) gave the following data for this individual, "west of Cairns (presented by Mr. George Brooks)"; in the field catalogue, however, this information applies to a small free-tailed bat (*Tadarida*) entered on the line above, under catalogue number 11589.

Jack Roberts of Shipton's Flat, our host at that locality, during the 1948 Expedition, has sent a second male specimen (AMNH 196633) to the Archbold Collection. This individual was caught by a cat and brought to the Roberts' house sometime during 1966 or 1967. This record extends the known range of *Cercartetus caudatus macrurus* northwards to about 30 miles south of Cooktown. This small arboreal marsupial was not obtained by Tate and Van Deusen in 1948 during their two weeks of collecting in the vicinity of Shipton's Flat. Brass (1953) gave an excellent description of this locality. Tate (1952) observed that "these tiny 'dormouse phalangers' may be fairly common in the rain scrubs (forests) of the Cairns region, and I suspect that they will eventually be demonstrated in the Iron Range and McIlwraith Range rain forests."

The domestic cat is a well-known collector of small mammals. In fact, the other long-tailed pigmy possum from Mt. Carbine (Queensland Museum, J. 7011) was also brought in by a cat. Some of our most interesting and important mammal records are obtained in this fashion. I urge all cat owners to examine small mammals so captured, and to preserve such specimens in alcohol together with a note on the date and locality. Dr. L. J. Brass is resident in Cairns, and will gladly make arrangements to forward such specimens to the Queensland Museum or to the Archbold Collection.

- Brass, L. J.
1953. Results of the Archbold Expeditions. No. 68. Summary of the 1948 Cape York (Australia) Expedition. Bull. Amer. Mus. Nat. Hist., vol. 102, pp. 135-206, fig. 1, pls. 41-47.
- Mjoberg, E.
1916. Handl. Kungl. Svenska Vetensk. Akad., vol. 52, no. 2, pp. 13-20.
- Tate, G. H. H.
1952. Results of the Archbold Expeditions. No. 66. Mammals of the Cape York Peninsula, with notes on the occurrence of rain forest in Queensland. Bull. Amer. Mus. Nat. Hist., vol. 98, pp. 563-616, figs. 2, tabs. 6.
- Wakefield, N. A.
1963. The Australian Pigmy-Possums. Victorian Naturalist, vol. 80 pp. 99-116, figs. 4, table. 2, maps 2.

Hobart M. Van Deusen
Archbold Collections
The American Museum of Natural History
New York City.

15 March 1971.

Note: Mr. Van Deusen advises that he will be glad to send to anyone interested a copy of his paper, American Museum "Novitates", on the hoary wattled bat of Queensland, which will be published in April or May, 1971. (See N. Q. Nat., vol 36, no. 148.) The distribution of Chalinolobus picatus and C. nigrogriseus is mapped. (Address as above)

Some members may be interested in the issue, on March 31, 1971, of five mammal stamps from the Territory of Papua and New Guinea. A brochure prepared by Mr. Van Deusen, describing these mammals, is to be distributed with the stamp issue. Available from:

Philatelic Bureau, G. P. O., Port Moresby, T. P. N. G.

WHALE GRASS (REEF SPAWN), A RED TIDE PHENOMENON IN LOCAL WATERS

North Queensland fishermen report, during the summer months and particularly after north-easterly winds, that large areas of the sea are covered with a red-brown slime. Aircraft have reported the same phenomenon as oil slicks off the coast, a conclusion drawn from its calming effect on the water's surface and its dark appearance from the air.

What is this phenomenon?

Biologists know it as a Red Tide. It is caused by a microscopic planktonic plant, multiplying rapidly and its cells aggregating together.

Is it a recent Phenomenon?

It is not the result of man's pollution of his waterways, for records of red tides can be traced way back in time. One of the earliest reports is found in the Bible (Exodus 7, 20-22), another in the Iliad, and our own local one in Captain Cook's Log. Records show it can occur in freshwater or seawater.

What causes a red tide to appear?

Red tides are only observed during some months of the year, locally from October to March, and it is thought that the amount and availability of nutrients in the sea is perhaps the greatest factor influencing the great

increase of this microscopic plant. Red tides appear particularly in oceanic areas where there is upwelling of waters. Large scale water movements and local disturbances in the chemical and physical conditions of the sea seem to have an effect.

What effect does a red tide have on other life?

The main effect is that the mass of plant material causes suffocation to animals coming into its vicinity. Many dead fish have been seen floating amongst the "weed" and it will also kill barnacles, oysters, shrimps, etc. The Japanese pearling industry has several times been almost wiped out by red tides.

A secondary effect is the obnoxious smell the material has as it dies, exposed in full sunlight on the surface of the sea. Tourists in Townsville flee when the red tide is washed ashore!

How often do local North Queensland outbreaks occur?

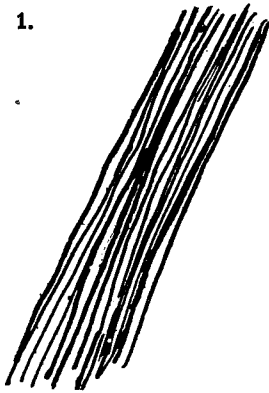
Data suggests it is an annual occurrence, but researchers have found that the microscopic plant is present in small numbers even when it is not apparent. It does not in fact totally disappear from local waters at all.

What is the specific plant causing the North Queensland red tide?

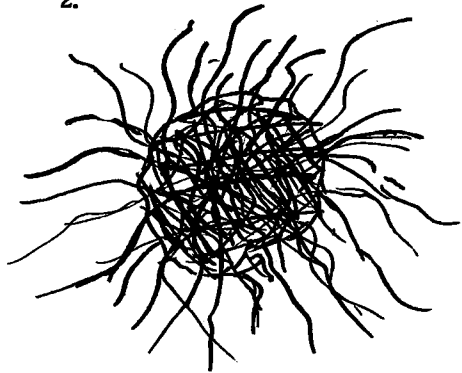
It is a blue-green alga called for many years Trichodesmium, but recently referred to as an Oscillatoria. It has box-like cells which stick together one on top of the other to form a filament. The filaments themselves then stick together side on and form a bundle or sheath, which is just visible to the naked eye.

There appear to be two types in local waters, one forming bundles of regularly stacked filaments and the other forming a ragged ball of filaments

1.



2.



Both are usually present but numbers of each fluctuate. Fishermen call it whale grass or reef spawn.

Does the North Queensland plant form red tides anywhere else?

Trichodesmium has been recorded in Gulf waters and an odd record from as far west as Perth is known. It is also in reef waters off India.

Are there other plants which form red tides?

Around the world there are different planktonic plants giving the same effect. Two of the best known are Gymnodinium and Gonyaulax, for these genera (unlike ours) accumulate toxin in their cells. If they or any animal which has been feeding on them is eaten, paralysis and death can occur. Florida records deaths from Gymnodinium and Britain puts out warnings every year about Mussel poisoning, the mussels having fed on the glut of Gonyaulax.

Why is it called a red tide?

Most of these "tide" - formers are green plants and the surface waters can be discoloured green, yellow, orange, brown, red and other shades by them. The local red water is due to a red pigment being released into the water as the filaments of Trichodesmium are dying. The filaments themselves go from a blue-green to a grey-green colour.

Can the red tide be controlled?

Authorities in America have built dams across major rivers in an effort to regulate the release of freshwater from the rains. They believe the rainy season adds a large amount of nutrients to the sea and stirs up the waters, providing optimum conditions for Gymnodinium to multiply. This of course is a tremendously costly project.

Other efforts at control involve the use of chemicals. However, a lasting chemical of selective toxicity has not yet been found, so chemical control is only possible on a small scale.

But the question one should really ask is, whether it is wise to control this natural phenomenon? Could not the balance of life in the sea be upset if there were no red tide?

There are certainly advantageous effects of a red tide, particularly our local one. Firstly, it is a food source for many filter-feeding animals. Secondly, on decay it will release a large quantity of valuable nutrients into the impoverished tropical waters. Thirdly, it is now known that Trichodesmium can fix atmospheric nitrogen (one of the few plants that can). This build up of nitrogen in the cells will be released on decay as usable valuable nitrate.

Until there is more scientific fact and research, the red-tide phenomenon should be left to reveal its true nature. There are many roads to follow. One that comes to mind is whether there might be a link between a red-tide organism or another planktonic plant and Ciguatera poisoning. This poisoning, which causes sickness and affects the nerves, occurs after eating certain large Barrier Reef fish.

Could it be that in North Queensland we have a phenomenon like the killer plant or the British poisoned mussel?

Margaret Flavell, M. Sc.

BOOK REVIEW

"KOOKABURRAS" by Veronica A. Parry. Published by Lansdowne Press, Pty. Ltd., price, \$4.25.

This book is the result of two and a half years study of the kookaburras in an area of the Dandenong Ranges. Some indication of the knowledge gained from the systematic observation of individual birds and family groups is given by such chapter titles as: The Kookaburra's Social System; The Size and Function of Territory; Vocal Behaviour - the Laugh Song, the Calls; etc. Most interesting is the discovery that sexually mature offspring of a mated pair will remain in the parents' territory for up to three years or more, sharing in territory defence and the care of succeeding young. Thus perhaps a third of adult birds in an area may be non-breeding - a form of population control? An enjoyable, informative book, enhanced by colour and black and white photographs.

K. J. M.

"NATIVE MAMMALS OF AUSTRALIA" by Dr. David Rider. Angus and Robertson, \$7.50. A splendid book by one of Australia's finest mammalogists.

Hobart M. Van Deusen.

JUVENILE MORTALITY IN DANAUS PLEXIPPUS

During investigations into the life-history of the "Wanderer" butterfly, (Danaus plexippus) it became apparent that there was, in the natural state, a 90% to 95% wastage between the egg and the adult. This figure was

arrived at by actual counts of eggs, and pupae harvested from Calotropis procera (the "Crown Plant"), one of the Asclepiadiaceae and the food-plant of this particular Danaid.

Various raising-techniques were tried under laboratory conditions, and finally a system was developed whereby a 50% to 75% success could be anticipated by humidity-control.

Close and continual observation of both "wild" and "laboratory" larvae showed that some early mortality was due to:-

i. Egg-cannibalism. On several occasions, when two eggs had been laid on one leaf, the first-hatched would seek out the other egg and eat its sibling.

ii. Direct cannibalism. This was never observed in the "wild" larvae, but crowding on breeding-trays proved, that, under certain conditions, the 1st and 2nd instar larvae would attack and eat each other.

iii. Drowning in latex. For the first six or seven days of its life the larva of D. plexippus adopts a singular dietary habit, eating a small circle, (about the size of a five-cent piece) out of the leaf, but seldom penetrating through the middle membrane. In young and tender leaves - particularly after rain - the milky latex of the host-plant filled these depressions, and the larvae 'bogged down'.

iv. Drowning by dew. Several larvae were found drowned after a heavy dew, their circular pits having filled with condensate during the night.

Analysis of the preliminary tabulations, (these observations were made over a period of three years, and are still being continued) showed that the forementioned causes accounted for approximately 50% of the known mortality.

Further observations showed that an egg-loss of 80% could occur between oviposition and hatching on the fourth or fifth day. To determine the cause, twenty-five eggs were placed on a hatching tray in a darkened shed. Light was provided by an amber darkroom lamp with a 10 watt bulb, placed at ten feet from the tray. A careful watch was kept from 7 p. m. onwards, after the experiment had been set up. At 8 p. m. a Huntsman spider (Isopoda sp.) investigated, but ignored the tray. At 9.30 p. m. a cockroach (believed to be, but not positively identified as, Escala circumducta) flew in, alighted on the tray, and proceeded to eat every egg. (These insects are common in most gardens, and up to this time I had always regarded them as a pest. It would appear that they can now be classed as 'useful' insects, but I have a private wish that they would develop a taste for the eggs of Catopsilia pyranthe crokeri, which regularly denudes poincianas and cassias in Cairns gardens)

Raising-technique, was modified to cope with this night-predator, but it was noted that an occasional egg still disappeared, even though the trays were covered with plate glass.

'Whilst making a routine 'outside count' on one occasion, a small ant was seen to attack an egg, seizing it in its jaws and attempting to remove it from the leaf. Egg and ant became a microscope slide, and the predator was later identified as Pheiodole megacaphala. Considering the size of this aggressor's head, the specific name is fully justified.

Further watch on the Calotropis has shown that when the female D. plexippus is not laying, only an occasional ant - apparently a 'scout' - can be seen on the shrubs. Immediately a female begins to lay, the ant population increases.

Should a 100% harvest be required, it is necessary to stand by the plants and collect the eggs as soon as they are laid. Many eggs - even if left for a short time - will show, under microscopic examination, the punctures of an ant's jaws.

When hatched, the caterpillars are pugnacious creatures, not hesitating to 'fight and bite' up to their third instar. After this stage, their bites are not usually fatal, but about 50% of cage-reared specimens reach pupation with definite scar-tissue on their bodies. This scar does not pass on to the pupa.

John Orrell.