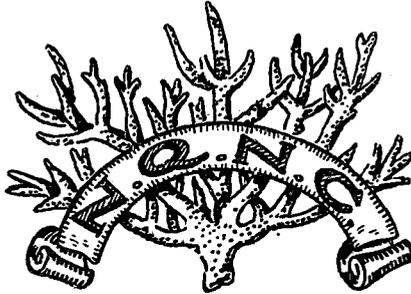


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# THE NORTH QUEENSLAND NATURALIST



CAIRNS

Journal of  
NORTH QUEENSLAND NATURALIST CLUB

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

# 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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**Club Officers — September 30, 1965 to September 30, 1966**

President : A. J. CASSELS, Esq.

Hon. Secretary : Mrs. M. L. CASSELS      Hon. Treasurer : Mrs. M. MEARS.

Editor : Miss J. MORRIS.

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**Subscriptions (Due September 30) :**

City and Suburban Members, £1/5/-.

Country Members, 15/-.

Junior Members, 5/-.



## CLUB HANDBOOKS

Check List of North Queensland Orchids, 1964 (In course of Revision).

Check List of North Queensland Ferns ..... 1/-

Edible Plants in North Queensland ..... 2/-

List of Birds Occuring in North Queensland ..... 2/-

Marketable Fish of the Cairns Area ..... 1/-

Check List of Australian Dryopidae ..... 6d.

(Plus Postage)

## RAINFORESTS

(Continued From Previous Issue.)

With this theory behind us, we can now understand the relationship between rainforest and its physical environment in much truer perspective. As a whole, rainforest is very susceptible to any stresses in its water supply, and will only be found where none of the factors I have just mentioned is limiting.

Take wind for example. The prevailing winds in the north-east Queensland, whether they are the S.E. trades or N.W. monsoon, are mostly moist. The rainforest here is distributed in higgledy piggledy fashion on all sides of the mountains and valleys, wherever rainfall precipitation is high enough.

In south-eastern Australia however, rainforest is only found on the eastern sheltered slopes of the mountain ranges. This is because the winter prevailing wind is a westerly wind which blows straight across the continent and comes out pretty dry by the time it gets to the Great Dividing Range. The rainforest simply cannot stand up to it.

Cold temperature does not limit the growth of rainforest providing it does not reach snow conditions and is fairly-uniform all year round. In western Tasmania, rainforest, though poorer in species, grows almost as luxuriantly as it does in many parts of highland New Guinea. But in places where variations in temperature are extreme, such as frost pockets on the tablelands of southern Australia, no rainforest will ever grow.

Rain itself plays an obvious part in the distribution of rainforest. As I have mentioned, patchy occurrence of rainforest on some hill slopes and its absence on others simply show the hills that pick up the rain and the hills that miss it.

I also mentioned earlier that rainforest did not grow in less than 50" of rain per annum. But there are many parts of Australia which receive more than 50" p.a. and which do not grow rainforest. Why is this? There are a number of reasons but the following three are the most important.

Firstly, there is the soil. Rainforest is generally found on deep loamy soils which, in Australia, are mostly formed from volcanic (basaltic) rocks and therefore rich in nutrients. In south-eastern Australia, though the rainfall goes as high as 150" in some years, rainforest will not grow because the soils are shallow, sandy, lateritic and formed from sedimentary rocks of low nutrient status. A case in point is the Barren lands Faunal Reserve in New South Wales which gets about 100" p.a. and is nearly always shrouded in mist. But because the soils are formed from sandstones, it can only support a swampy heath which is full of Bristle birds, Emu Wrens and Ground Parrots.

Secondly, there is the annual distribution of rainfall. Much of Northern Australia gets over 50" p.a. but nearly all of this falls in two or three months at the time of the monsoons. The rest of the year is dry and dusty and it would be obviously begging the question to expect rainforest to thrive under these conditions. The point I want to emphasise here is that it is a humid environment rather than rain itself that supports rainforest. Perhaps the most tangible proof of this you will have noticed yourself when walking about in the field. When you are in eucalypt savannah country you are always conscious of the sun, its strength, and general lack of cloud. But in rainforest country, at almost any time of the year, you will notice plenty of cloud about and that even on a fine day, the sun is continually going under and coming out of cloud.

The third reason is an historical one - why is there no rainforest in parts of south-west Australia which get over 50" p.a. and have a cool humid climate? This leads to a consideration of the origin and migration of rainforest on the Australian continent and of climatic influences in ages

## RAINFORESTS — (Continued)

long past. Now that I have summarised the present day environment features which control rainforest distribution in Australia, we can proceed to a discussion about where the Australian rainforest originally came from.

By way of background, I first want to briefly recapitulate on the evolution of plant life on earth. The first living organisms came into being between 500 and 2000 million years ago. They were small unicellular or colonial aquatic forms of Algae that we still see today in the creeks and sea. But after about 500 million years ago, they began to diversify and adapt to life on land. First came the mosses and liverworts; they gave rise to forms like *Psilotum* which some of you may know; these psilophytes then gave rise to the ferns and coniferous trees that we know today; in their turn the ferns gave rise to the cycads which still survive today in southern America, Australia, and southern Africa; and finally, about 150 million years ago, the cycads or cycad-like plants apparently gave rise to Angiosperms or flowering plants that completely dominate the vegetation on earth today.

The fossil record indicates that the flowering plants evolved and established themselves quite quickly. Fossil evidence shows that many plant genera we know today were living at least 100 million years ago.

Work on fossils has shown that soon after the rise of the flowering plants, about 100 million years ago, two main types of vegetation covered the Australian land mass. The first was a hard-leaved vegetation whose principle components were various species of Proteaceae such as *Banksia* and *Hakea*, the heaths (*Epacridaceae*) and small myrtaceous plants such as *Leptospermum*, and *Melaleuca*. *Eucalyptus* was also prominent. This flora has since come to be regarded as the typical Australian vegetation - and at that time occurred largely over the western half of the continent.

Over the whole eastern half of the continent was a different flora, dominated in particular by the Antarctic Beech (*Nothofagus*) and conifers of the *Podocarpus* type, and there now seems little doubt that it was temperate rainforest as we know it today. Hence it can be deduced that the climate over most of Australia at that time must have been cool and moist. There was little or no arid centre.

Since that time, the Australian climate appears to have become increasingly warmer and drier, with minor variations, up until present day conditions. With it, the temperate rainforest retreated east until it now hangs on in isolated pockets along the southern Great Dividing Range and Tasmania. The drier conditions and retreating rainforest brought the concomitant expansion of the eucalypt-Proteaceous flora that so dominates the Australian scene today. Now you can see why there is no rainforest in south-west Australia — it never got there in the first place.

There is one final point here. In these halcyon days of 150 million years ago, the southern hemisphere continental masses of Africa, South America, Australia, and Antarctica lay very close together and perhaps touched in places. At the same time they were separated from the northern hemisphere land masses by several seas circling the globe just above what is now the equator. As a result, they formed a plant geographic zone all of their own and their closeness allowed the vegetation to mix to and fro on them. You can imagine this position of the continents on the globe quite easily. Africa fitted close to the western part of Australia and South America fitted on to the eastern part. These continental masses soon after drifted gradually away from each other to their present day positions, but the floristic relationships still remain. Thus in South Africa you find proteaceous plants and everlasting similar to those that you find in Western Australia, while Antarctic Beech and *Podocarpus*-pine rainforests are found right from the high mountains of New Guinea down the eastern mountains of Australia, right through New Zealand to the southern Andes of South America.

## RAINFORESTS — (Continued)

So much for the origin of temperate rainforest in Australia. What about the tropical and sub-tropical types? By contrast, their occurrence in Australia seems much more recent and they have apparently come not from the south in the Antarctic area but from the north, from Malaysia.

The Malaysian area has for a long time been about the equator and had a torrid climate. Tropical rainforests have possibly been growing there for nearly 100 million years, at a time when Australia was still pretty cool and still associated with the other continents of Africa and America in southern waters. Since then Australia has drifted northwards towards the equator, and as I mentioned earlier, its climate has become both warmer and drier. From about ten million years ago, and particularly during the last Ice Ages, there have been considerable changes in sea level with falls of up to 2-300 feet in the shallow northern Australian waters and land connections have been exposed north to New Guinea and north-west to the Malaysian archipelago. This has apparently permitted the immigration and mixing of tropical type rainforests from these regions with those of Australia. Though Australia was warm enough, its aridness sifted out much of these forests. The north-east corner was however sufficiently humid, and it is from here that the Malaysian influence appears to have moved down the eastern seaboard to the south of Sydney.

In conclusion, I want to say a few words about the conservation of rainforest in Australia.

Compared with all other vegetation types in Australia, rainforest is both richest in species and most confined in distribution - two factors which alone should be sufficient argument for its preservation.

Rainforest usually grows on rich soil and contains valuable timber - which are two reasons why it is often extravagantly exploited.

And there are two more reasons why I, as a botanist, feel that it is tremendously important to preserve whatever stocks of rainforest that we can.

The first is that rainforest comprises such a vast complex of plant and animal forms that it has never been thoroughly investigated for future foods, drugs, and other products that will benefit mankind. I think it is a fair prediction that as man gets older and wiser and more dependant on an increasing variety of natural products for his living, rainforest, if judiciously conserved and utilised, will provide an increasingly large proportion of them.

The second reason is that Australian rainforest comprises an intriguing admixture of Antarctic and Malaysian vegetation types and a fantastic array of evolutionary curiosities and connecting links found nowhere else in the world.

For example, there is *Psilotum* which grows out of rocks or tree trunks and consists of hanging strap-like stems, and the leafy *Tmesipteris* which grows on the trunks of treeferns, which link the liver worts and mosses with true ferns. Then there is the peculiar small cycad, *Bowenia*, which is the only cycad in the world with compoundly pinnate leaves; there is also *Gnetum*, an inconspicuous tree or climber in the forest, which seems to be a dead end in the line of evolution of coniferous trees; and finally there is the shrubby white-flowered *Drimys*, the most primitive flowering plant in the world, whose ovaries show quite clearly how the ovary of all flowering plants evolved from a spore-bearing fern frond. And so I could go on naming a host of interesting plants for which the Australian rainforest serves as a refuge.

The moves and acts to preserve rainforests or any natural area for that matter, seems to fall into the hands of Natural History Societies and the realm of politics. In all this, I have but one warning. In my travels about Australia, I have noticed that field naturalists tend to become interested particularly in small groups of plants and animals, such as orchids and shells

## RAINFORESTS — (Continued)

at the expense of others - and their outlook on nature conservation becomes biased accordingly. Now this is wrong. In nature, every one organism is dependent on another for its existence and survival, so that when we talk about nature preservation we should consider first the whole biotic community rather than any part or parcel of it.

To sum up, when you are dealing with nature preservation, approach your problems from Nature's point of view.

Published from an informal address given by R. SCHODDE, Canberra to the North Queensland Naturalist' Club in August, 1963.

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## BOOK REVIEW

**AUSTRALIAN FINCHES**, by Klaus Immelmann,

Angus and Robertson, Sydney. Price 47/6d.

In 1959-60 Dr. Klaus Immelmann, a brilliant young German-born ornithologist, came to study Australian finches under a grant from the German Federal Research Organisation, and so impressed his colleagues in the field that he was invited to undertake the work of revising Neville Cayley's "Australian Finches" which has been out of print for many years. The same colour plates are used as in the original, but there are also many photographs and all the text has been completely rewritten. This very comprehensive study of finches will interest all bird lovers and ornithologists and by the very great wealth of information will teach them much of these interesting little birds of the bush and town.

—o-o—

## TOURISTS AND WILD LIFE AT GREEN ISLAND

Between October 4-9, 1965, I was staying on Green Island and was interested to see that the Torres Strait Pigeon — *Myristicivora spilorrhoea* — was in some strength on the island. I estimated the population to be between 500 and 1000 birds. S. R. White (North Queensland Birds, Emu, Vol. 46, pp. 81-122) describes how once the birds were in great numbers on the island but by 1902 shooters had reduced the numbers to only a few pairs (E. M. Cornwall, Emu, Vol. 2, p. 175). White found the bird re-established in 1944. He comments: 'It will be interesting to see whether they are able to re-establish themselves in the face of an increasing tourist traffic, although the island is now a sanctuary. There seems little doubt that the birds owe their survival in these parts to the action taken in declaring as sanctuaries their breeding haunts among the reef islands.'

It is pleasing to note that the increasing numbers of tourists have not stopped the birds from breeding on the island. Mr. N. Monkman informed me that they nest regularly though at the time of my visit, although courting was in full swing, I found no occupied nests. Some birds remained on the island all day and their deep cooing made a pleasing murmur in the forest. Most left an hour or so after sunrise and returned a few hours before sunset. Parties numbered from a few birds to about 30 and the flight was swift and straight. In the tree tops the birds were noisy and nervous. Some courting display was observed with a clicking noise being made, and a quick shivering of the folded wings.

The closeness of Green Island to the City of Cairns no doubt also led to the extermination of nesting Green Turtles. To re-establish these it would seem necessary to bring turtle eggs back to the island. The babies when hatching probably home to the island they see at birth.

The most important fact is that tourist exploitation even at the high

**TOURISTS AND WILD LIFE AT GREEN ISLAND — (Continued)**

density of Green Island need not affect the wild life. The reefs had a large amount of interesting life on them and the island itself seemed largely unspoiled. The very presence of tourists stops the kind of vandalism and illegal killing which still takes place in sanctuaries where there are no wardens.

Vincent Serventy.

**ROBBERY IN THE GULLY**

We are apt to give the actions of birds and animals a human interpretation; whether it is correct to do so in all cases is doubtful, but I do think that when they appear to us to play practical jokes or otherwise engage in mirthful antic, they are indulging in a very human way. Have you ever seen a child with an icecream, teasing another who has none? Well, that is what this tale is about, but with reptile and birds instead of children as the actors.

I was camped on the bank of a creek in Mossman a couple of years ago, and one morning I heard the plaintive croaking of a frog coming from the creek bed. I thought a snake was getting its breakfast, so I crept through the fringe of scrub on the creek bank to investigate.

The creek was but a trickle but there were a few fair sized holes along it. The one I appeared above was about twenty feet long by six feet wide and possibly 3 ft. deep. The bank dropped sheer from under my feet to the water. but on the far side a beach of water-worn stone and gravel ran back to the bank which sloped gently up to the canefields at the top.

Lying on the beach with its body half in the water was a 3 ft. long water dragon, and a few yards away a black butcher bird held a still croaking frog in its beak. As I watched, the lizard started to creep over the gravel to the butcher bird which remained apparently oblivious of the fact, for it continued to bash the frog on a stone.

Suddenly the lizard made a rush to seize the prize, but the butcher bird merely flitted over its head, and when the lizard turned around the butcher bird was already putting an end to the frog's last feeble cries of anguish with a few more hearty thumps on a handy stone.

Again the dragon crept up on the tempting meal, and again the bird with a hop and a flutter of wings was a few yards away. By now the frog had croaked its last and the powerful bill started to tear the prey apart.

The butcher bird pulled a piece of intestine out of the frog and made a great display with it. Eyes half shut and head thrown back, it played with the portion in its beak before finally swallowing it.

I could see the dragon getting set for another rush, but the butcher bird must have wanted to prolong the torture, for it started to clean its bill. The lizard was by now barely 5 ft. away, and the frog lying on the gravel a few inches from the feet of the bird that appeared engrossed in carefully wiping its bill — when disaster struck.

Without a sound a kookaburra glided down from a branch where it had been biding its time. It was only a couple of feet above the beach when it passed over the lizard, who nearly died of heart failure and dived into the creek; the butcher bird was almost knocked flat as the 'burra picked up the frog on the wing — its breast hitting the ground with a thump as it did so.

As the kookaburra disappeared down the creek, the dragon's head appeared out of the water looking around in all directions. The butcher bird was still sitting where he had jumped to when the feathered thunderbolt had flashed past, disbelief showing in every ruffled feather; whilst from down the creek came a derisive chuckling as the villian of the piece flew off to some secluded perch there to eat its ill-gotten gains in comfort.

Ben Constable.

## EDITORIAL

Since publication of our last Journal the Club's Annual Meeting has been held, most office bearers being re-elected with enthusiasm. In his address, the President spoke appreciatively of the support given him by all officers and members throughout the year. He also noted the gratifying increase in both town and country membership. Finances of the Club appear to maintain a modest average through all the fluctuations, being "up" as subscriptions come in (could your subscription still be due?) and "down" as the Journal goes out. Owing to an increase in printing costs, it has been decided that the Journal must be reduced from 12 to 8 pages overall. (However, please do send along your Natural History notes and articles to fill these pages, for the information and the enjoyment of us all.) The well-renowned Bunyip, our Club's entry in the Fun in the Sun procession, fully justified himself by catching the public eye, and was even filmed for a T.V. programme by Mr. Vincent Serventy, the eminent West Australian naturalist and photographer.

In recent months we have enjoyed visits from Mr. Serventy and Mr. Harold Pollock, both of whose outstanding nature films attracted many members of the public as well as Club members. Besides being such delightful entertainment, the films and lectures presented by these experienced field naturalists stressed again and again the urgency of the need for more and better conservation of our dwindling wild life and wild places; for basic planning in both urban and rural land use to permit native flora and fauna to live along with people, and for the education of people to realise that this is in fact desirable and possible.

Our Club is very conscious of these needs. Educating the youngsters is a long range scheme, but several members conducted groups of Cubs along the "nature trails" at Hesp Park on our Field Day there. Some members contributed a word or two to the recent anti-fire campaign in the "Cairns Post", and we shall do our best to support the Committee appointed at the resultant Public Meeting to prevent a recurrence of such widespread fires as have devastated the North this year. Our final Field Day for the year was a tree planting expedition with Mrs. Betty Davies on part of the fire-razed area at Edge Hill.

A perhaps noteworthy little sidelight on this fire was the number of local residents who afterwards took the opportunity of clear ground to climb the hill. Could it be that the mildly well-intentioned general public would welcome "nature trails" to points of interest in their own localities? Many school grounds adjoin an area of bush. What opportunities these might offer!

Have you a voice on any P. & C. Committee?

With this thought for the New Year, we extend to all best wishes for a joyful Christmas season.

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**Anecdote with a moral:** A few years ago the jam-making team at the Edge Hill school was given a quantity of Native Cherries (*Antidecmodallachyanum*) which make delicious jelly. The following year they asked for more, but none were available. Mentioning the cherries in casual conversation recently, Mr. S. E. Stephens remarked, "There used to be a good tree near the Edge Hill school, but I think they cut it out when they extended the playground".