Central North Field Naturalists

CNFN

the

NATURAL NEWS

2004 Winter

Patron - Dennis Morris

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Program and Events

June 13, 10 am Meet at Meander at the Bridge, then travel to **Meander Forest** Picnic area for a look at the bryophytes and fungi.
July 4, 10 am Meet at Jim's studio in **Weegena**. A local walk if the weather permits, then hot soup in the studio and perhaps some keying out work. Slides, photos, books etc. to show are encouraged.
August 1, 10 am Meet at Don College's parking lot, Devonport for a walk along the Don River in the **Don Reserve**.
Sept 5, 10 am Hollybank Reserve Meet in the reserve carpark on the road to Lilydale

Extinction

by Sarah Lloyd

During the past few months Ron and I have made several visits to the Tarkine area of northwest Tasmania. Our tasks have included gathering sounds and documenting aspects of the natural history of the area for a soon to be released booklet and CD. One place we visited was Philosopher Falls, a spectacular waterfall just west of Waratah.

Misty drizzle fell softly as we began the walk along an old logging track. Several Olive Whistlers greeted us with an unusual call and early season fungi gave promise of what was to come. We walked through some of the most beautiful rainforest imaginable. Flecks of small myrtle leaves stippled the ground in a mosaic of autumn colours. Logs and trunks, softly covered in mosses, liverworts, lichens and filmy ferns evoked a magical place. It is probably safe to assume that the sights, sounds and smells we experienced were little changed from when James "Philosopher" Smith, famous for finding the "mountain of tin" at Mt Bischoff, the richest tin mine in the world at the time, "discovered" the falls about 150 years ago.

After the somewhat strenuous walk, we returned to our campsite on the nearby buttongrass plains. The following morning we just managed to pack up our camping gear before the next bout of wet weather blasted in from the west.

We detoured to Guildford on our way home. Small flocks of Swift Parrots, about 60 in all, flew from treetop to treetop and large flocks of White-throated Needletail wheeled and circled in the clear autumn sky above. All seemed well in this idyllic island state.

But we were quickly jolted back to reality. The monoculture plantations of hectare upon hectare of shining gum, *Eucalyptus nitens*, between Guildford and Burnie was a stark reminder of the world of industrialised forestry. And, as if that wasn't enough, a report on The World Today (ABC Radio National 9/3/04) about the state of the world's birds declared that at least one in eight bird species are heading rapidly

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towards extinction.

The interviewee asserted that it's not only birds that are declining. As "indicator" species, the decline in birds mirrors the decline in the species on which they depend. Also, on vegetation for nest sites, shelter and nesting material, on other animals, including mammals, reptiles, frogs, insects and other invertebrates for their food.

The report identified three main threats to bird species worldwide including clearing of forests for agriculture, unsustainable forestry practices and birds on islands received a special mention because their many endemic species are particularly vulnerable to predation from newly arrived predators such as cats, rats and people.

All three of the threats identified in the report apply to Tasmania. Clearing for agriculture undoubtedly eliminated many species, especially invertebrates, before they were scientifically described and named. And while there is endless discussion about whether current forestry practices are sustainable, nobody can deny that many of our species are endemic.

Islands are biologically fascinating because of their endemic species. In Tasmania there are far fewer bird species than equivalent areas on the mainland, but there are an exceptionally high number of endemic species. 12 land birds are endemic and two, the orange-bellied parrot and the swift parrot are breeding endemics. That is, they breed only in Tasmania, but spend winter on the mainland. A further 27 bird species in Tasmania are endemic sub-species, including the Wedge-tailed Eagle, Masked Owl, and Owlet Nightjar. This high level of endemism, characteristic of island populations, is also found in other animal groups in Tasmania. At least 1/3 of invertebrates are endemic and of the vertebrate fauna, 7 of the 18 reptiles and three of the eleven species of frogs found in Tasmania are found nowhere else in the world.

Tasmania, like so many islands, especially those in the south Pacific region, has already fared badly as far as bird extinctions are concerned. On Macquarie Island, two species, the Macquarie Island Parakeet and the Macquarie Island Rail are extinct as a result of introduced predators including feral cats and an aggressive New Zealand hen, the weka. On King Island and in Tasmania, two endemic subspecies of the Emu, smaller birds than their mainland cousin, were regarded as good food for early settlers, and by about 1805 and 1865 respectively had been hunted to extinction. King Island, which is like a microcosm of Tasmania, has many bird species that are now severely threatened or extinct.

As well as feral predators, the greatest loss to biodiversity is the loss and fragmentation of habitat through land clearing.

Before European settlement Tasmania was well covered in a mosaic of vegetation types including ancient Gondwanan rainforests, eucalypt forests, grassy woodlands, buttongrass moorlands and sedgelands, alpine and coastal heaths. Each of these different vegetation types had its own community of animals.

With the influx of the first Europeans came the clearing of the most biologically diverse areas of the state. Settlements were established around the rich environments of rivers and estuaries. Farmers chose the areas with the richest soils on which to begin their agricultural pursuits. On these rich soils grew the largest trees supporting the highest populations of insects, other invertebrates, bird and mammals. To add insult to injury, Europeans brought with them domesticated plants and animals which became the basis of agricultural industries, but which disrupted endemic ecological processes that had continued for thousands of years.

The clearing of large areas of native vegetation for agriculture and housing development has continued largely unchecked since first settlement. More recently vast tracts of forests have been cleared and converted to plantations and even the damming of rivers has inundated a staggering 91,600 hectares of vegetation.

Thus the Tasmanian landscape has changed dramatically in the past 200 years. Much of the native vegetation has been lost forever or it has been fragmented into ever smaller islands of habitat in a sea of agricultural or suburban land. These "islands" range in size from thousands of hectares of forest in the headwaters of the Duck River, smaller patches of bush in the intensely cropped land of the central north, to strips of vegetation along fencelines or roadsides. Even isolated paddock trees are like islands of biodiversity and have some ecological value in the landscape.

As part of various research projects, I surveyed bird population in these islands of remnant vegetation in central north and northwest Tasmania. The question I am invariably asked by just about every landowner after a survey is "did you see anything rare?" I seldom did of course, which is why species are classified as rare. And while seeing a rare species is always a thrill, I get just as much pleasure in seeing those species that should be there - because increasingly, they are not.

For instance, for several years I monitored the birds in a small island of remnant bush near Carrick in central north Tasmania. The bush is

reasonably healthy, there are many different species of understorey plants, and logs and branches litter the ground. Although it has all the necessary elements to sustain healthy bird populations I seldom recorded honeyeaters there.

Ten species of honeyeaters inhabit Tasmania. Some favour the rich nectar source provided by plants such as banksias and epacrids and they play an important role in the pollination of many of our native plants. However, a number of these honeyeaters seldom eat nectar, but instead consume large numbers of invertebrates that they find on the leaves and under the bark of the eucalypts. They are therefore extremely important to the health of remnant bush because they control insect populations.

I suspect that the honeyeaters are unable to live on these islands of habitat because they are too small to sustain viable populations and they are too isolated. Birds that may repopulate are vulnerable to predation as they attempt to cross cleared land, and the isolated paddock trees, that could provide stepping stones in the landscape, are no longer there. Unfortunately, many of these beautiful old trees that are so much a part of our Australian landscape and heritage are being cut down to make way for pivot irrigators and the like.

Birds are relatively easy to monitor because most are active and vocal during the day and numerous field guides, CDs and tapes assist in their identification. Invertebrates are a different story. While most people can tell a butterfly from a wasp, differentiating a stag beetle from a dung beetle takes a little more expertise. Sadly, it is likely that half of Tasmania's invertebrate fauna, which conservatively totals 35,000 species, is yet to be fully described and named. It is safe to assume that if bird species are declining there is a corresponding decline in invertebrate species. In fact, the story may be far worse for invertebrates. Many have very restricted distributions and the non-mobile species are unable to escape the clearfelling and hot burn regimes adopted by Forestry Tasmania as sustainable forestry practices. Just documenting invertebrate species in a habitat may be a life's work; finding out about their ecological function could take several lifetimes.

How do we assess the impact of extinctions and does it really matter if one or two species become extinct?

Our most notable extinction was the Thylacine. This large carnivorous predator hunted pademelon, Bennetts wallaby and other small animals, pursuing them until exhaustion rendered them easy prey. However, it is very unlikely that the current high numbers of pademelons and wallabies could be attributed to the demise of the Thylacine. Rather, land clearing and fragmentation has provided these animals with patches of native vegetation - in which they shelter during the day - adjacent to pastures which provide a ready food source.

Many of the other species now considered either rare or endangered are also at the top of the food chain. They include the Wedge-tailed Eagle, Grey (White) Goshawk, Masked Owl, and Spotted Tail Quoll. For some of these species, such as the Wedge-tailed Eagle and Masked Owl, the major component of their diet has undoubtedly changed to include mostly introduced animals such as rabbits, rats and mice. The fact that the environment has been altered significantly since the arrival of the first Europeans makes it extremely difficult to assess the likely impact of the decline or loss of these predatory carnivores from the ecosystem.

In North American carnivorous predators high in the food chain such as wolves and coyotes have disappeared from some areas. This has happened either inadvertently or through active management that allows deer to thrive and thus providing a source of game for recreational hunters. This has been considered as having very little impact on the rest of the ecosystem in which these species lived.

However, long term monitoring has revealed a different story. Who would have thought that the loss of the top predators such as wolves, coyotes or grizzly bears in a habitat could have an impact on the understorey plants, migratory birds, litter production in forests and soil nutrient dynamics? Consider this: Removing top predators causes an increase in prey species, like moose, elk or deer. Because these species are herbivorous, an increase in their numbers affects the woody plants in the forests where they live because grazing has an impact on the establishment and growth rate of seedlings. The plant community influences distribution, abundance and competitive interaction within groups of birds, mammals and insects. This in turn affects litter production and soil nutrient dynamics. Thriving seedlings and understorey plants provide habitat and shelter for small bird species. (Miller et al 2001)

This long term monitoring can demonstrate the impact of the loss of large predatory carnivores from ecosystems and steps can be taken to rectify the situation. But how can the impact of the loss of two small predatory beetles be assessed?

There are at least two species of beetles that haven't been recorded in Tasmania since 1915. Both are predators of small animals that live in forest leaf litter and mosses. Leaf litter and other organic matter are vital components of a healthy ecosystem. At a very basic level, the decomposition of leaf litter by fungi, bacteria and numerous small invertebrates regulates the nutrient flow in forests and mosses play an important role in maintaining the moisture levels.

Two forest beetles may be of no consequence to those who advocate the destruction of our forests. It could take at least another 50 years or more before we fully realise the implication of the loss of these and the many other species that are inevitably heading for extinction as a result of current land management practices.

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Magnificent Obsession

by Lisa Clarkson

As a fairly new member of the CNFN, I have become very enthused by the range of knowledge of some of our members and the diversity of interests that the group holds. As a result of this exposure I have once again become obsessed with identifying everything. Now some of you may find taxonomy a bore, but all my life I have been obsessed with being able to correctly identify and classify things (some who know me find this a bit peculiar and annoying- I remember a primary school teacher being perturbed by the fact that I had made a list of all the different types of snow). In fact, I love taxonomic keys and rarely go anywhere without one. However, it isn't always possible to identify everything from a key.

One of my past obsessions has been orchids, but the field keys don't always work (*Caladenia* come to mind). Similarly, some of the *Poa* species (grasses) are close to impossible to key out and require theoretical and practical knowledge honed from years of experience (something I don't have). And finally but not least, fungi are driving me insane because I don't have a decent field key and have to resort to pictures in books!

However, my latest taxonomic obsession has become freshwater macroinvertebrates. In this case, my intentions are honourable - as a member of a landcare group overseeing the rehabilitation of a wetland I want to know what "creatures" are inhabiting the lake/wetland. Many freshwater macroinvertebrates are indicator species for the health of aquatic ecosystems. Furthermore, as the wetland is associated with a school it would probably be useful to have this knowledge so it can be passed on to the students studying the environment.

Although I have some experience with freshwater macroinvertebrates as a result of flyfishing (yes, I think I know a few caddis flies and those mayfly "thingies"– red/black spinners as the Macquarie River fisher folk call them), I really don't know the larval forms. And so a field trip with the CNFN to Liffey River in April was an excellent opportunity to turn over some riverbed rocks and attempt to KEY out some macroinvertebrates with the help of my newly purchased "The Waterbug book" by John Gooderham and Edward Tsyrlin.

Yes, we found stonefly larvae, but which ones I have no idea because we didn't collect any (well, Wade knew they were stonefly so we didn't take any home for a closer inspection under the dissecting microscope). Fools, so much for a systematic scientific approach! According to Gooderham and Tsyrlin (2002), there are 200 species of stonefly belonging to 4 families and 26 genera (25 genera are endemic to Australia)! Stonefly and their larvae are very sensitive and are usually only found in high quality streams. Unfortunately, we wouldn't have been able to key them out any further than to the family level (with the

book) which for someone like me, a 'taxonomophile', would be distressing and unsatisfying. However, further overturning of rocks revealed what appeared to be a mayfly larva and I decided to attempt a classification. I thought I had "hit the jackpot" when the KEY proved that I had collected a member of the mayfly family, Siphlonuridae, represented by only "A SINGLE SPECIES IN AUSTRALIA" (see, even rank amateurs can have some luck). The siphlonurid nymphs are robust (15 mm in length) which makes them significantly bigger than the closely related baetids (usually <10mm). They also possess reinforcing struts on their gill plates (structures found on the abdomen). *Ameletoides lacunalbinae* is only found in alpine streams or lakes of high water quality where trout and large galaxiids are absent. This is because they have a habit of grazing algae off the tops of rocks in broad daylight – behaviour that is conducive to predation in any trout infested stream. If there are any freshwater macroinvertebrate experts reading this who are certain I've got it wrong – please let me know. Amateurs need all the help they can get and I always defer to experience.

However, after my initial, all-too-easy taxonomic success at identifying a freshwater macroinvertebrate, I'm left with an uneasy feeling. Why is there only one species of this mayfly in Australia? Is this truly a reflection of its status or is it just that not enough field work has been conducted into these "insignificant" members of ecosystems. Is it possible that other family members existed but have been extinguished by feral species such as trout, or have they just not been described yet (as with so many other invertebrates)? I now feel justified in my taxonomic obsession – to be able to systematically identify something to the species level is very important if we are to have any chance of preventing its extinction! Afterall, how can you protect something if you don't know it exists? But then it could be argued that not all species are essential to ecosystem functioning…but that's another debate.

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RATS!

by Ron Nagorcka

Rodents are an amazingly successful placental mammal fauna. They include rats, mice, squirrels, beavers and guinea-pigs. What they have in common is their large gnawing teeth (incisors) - deeply sunk in the bones of the jaw and which continue to grow throughout their lives. Many people do not realise that Australia has a rich and diverse native rodent fauna, which seems to have arrived on the continent from southeast Asia some 15-20 million years ago. (The earliest fossils date to about 5 million years, so there is some dispute about the actual date of their arrival.) Watts & Jaslin (1981) list 55 native species in 17 genera occurring in Australia. The list includes hopping mice, rabbit-rats, stick-nest rats, jerboas and many other fascinating creatures. There are also 6 introduced species - black rat, brown rat, house mouse, pacific rat, eastern grey squirrel, and five-striped palm squirrel.

Tasmania has 5 species of native rodent:

Broad-toothed Rat *Mastacomys fuscus*
New Holland Mouse *Pseudomys novaehollandiae*
Long-tailed Mouse *Pseudomys higginsi* (endemic)
Water Rat *Hydromys chrysogaster*
Swamp Rat *Rattus lutreolis*

The Broad-toothed Rat prefers high rainfall areas of wet scrub and sedgeland in Western Tasmania as well as alpine areas on the mainland.

The New Holland Mouse was considered extinct for many years until its rediscovery in NSW in the 1960s. It was first recorded in Tasmania in 1976, and has been recorded only from the Northeast and Flinders Island.

The Long-tailed Mouse builds nests in decaying logs and stumps. There are fossils in Victoria and NSW showing that it once occurred there, but these days it is confined to Tasmania - probably because of the increasing aridity of the climate on the Australian mainland. It's recorded habitat is always very wet forest - usually myrtle beech *Nothofagus cunninghamii* rainforest.

The Water Rat is very common around the state in rivers, lakes, farm dams, and sheltered marine waters.

The native rodent with which Sarah and I have

gained some familiarity is the Swamp Rat (sometimes called the Bush Rat). When we first moved to Black Sugarloaf we were aware that there was a species of native Rat. You will note however that the Swamp Rat *Rattus lutreolus* is in the same genus as the introduced Black Rat *Rattus rattus* and Brown Rat *Rattus norvegicus* - i.e. even native rats are rats and look like rats. All three of these rats are about the same size - (*R. lutreolus* is the smallest and *R. norvegicus* the largest), and "cuteness" is definitely not an identification factor. *Rattus rattus* for instance can apparently make an excellent - and intelligent pet! (*R. norvegicus*, however is known for its aggressive nature and will attack if cornered.)

So when a cute rodent first appeared we naively assumed that it was more likely to be the native variety, and christened it "Stealth". This was a serious mistake - as "Stealth" proved to be *Rattus rattus*, and before we knew it, he/she and many others of his/her kind had established themselves around us - including a nest in the heating system of our first faithful Subaru - which never was quite the same again! (Introduced rats are truly amazing animals - and I imagine that just about everybody who has lived in the bush has stories to tell of their persistence and boldness, infestations around buildings, ceilings, sheds, population explosions etc. As successful stowaways on ships, European rats and mice have established themselves just about everywhere, and have been responsible for the extinction of many species - especially on small islands. I have the feeling they will still be around long after *Homo sapiens* has gone the way of the Thylacine.)

If only we had known at the time, the native Swamp Rat can in fact be distinguished quite easily from the dreaded scratching, beam chewing, plague carrier that rips bits of your favourite chair to add it to the socks it has already stolen to construct its nest. For a start, these are activities of which it would never be guilty. But the easiest way to make a quick identification is by the length of its tail, which is considerably shorter than its head and body. (The tail of *Rattus norvegicus* is almost the same length as its head and body and that of *Rattus rattus* is longer still.)

But even more revealing may be the runways through dense vegetation it constructs by neatly biting off (and eating) sedges and grass stems near the base. Swamp Rats even form tunnels under snow in the highlands. They also dig quite extensive burrows - often with conspicuous soil heaps outside. While you may not see them all that often, they are considered to be probably Tasmania's most abundant and widespread native mammal. One interesting fact is that Mainland females have 5 pairs of teats while Tasmanian females have only 4.

While introduced rats may be a house pest, it is in the vegetable garden that the Swamp Rat can cause it's own problems - with the occasional half-joking conjecture from Sarah about the possible culinary qualities of Swamp Rat stew. Just recently, we went to the garden to pick some parsley, only to notice a couple of the plants had a suspiciously "droopy" appearance - in fact they were no longer in the ground at all, but just sitting there with the roots entirely gone, eaten by swamp rats. They also seem particularly fond of carrots and potatoes amongst other things depending on the season. The rock walls in our garden provide them with the perfect breeding habitat - they dig quite large burrows and can breed profusely. You seldom see them however, as they exceedingly shy and very fast at disappearing. At times we are able to watch them from the kitchen window. Even then they are extremely wary, but we can report sighting one in summer climbing right up into the birdbath for a drink, and a particularly bold individual actually started to sneak in the back door of the house to steal bits of dogfood. As you can gather from this report, they are not entirely nocturnal.

I have heard of gardeners in western Victoria giving up in despair because of Swamp Rats, but in fact they are easy enough to control simply by destroying their burrows. This causes them to move elsewhere - at least temporarily - and gives the garden some respite. (If you have Swamp Rats there is undoubtedly some native vegetation nearby where they can re-establish.) On the positive side, they are very fond of the compost heap, where their constant diggings make any regular turning of the compost quite unnecessary. So there is less talk these days of rat stew - and a continuing appreciation of these unique and very attractive members of our native fauna.

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Coral Reefs

by Jim Nelson

Which weak bodied creatures have arguably most altered the face of the planet? You might guess the

winner to be good old *Homo sapiens "destructor"*, the large brained, selfish destroyer of natural systems and unsurpassed engineer of ugly edifices. However, a recent trip snorkeling in Samoa, along with a day with a local geologist opened my eyes to the change that the small, simple creatures called corals have accomplished. Millions of acres of land, largely in the Pacific and Indian Oceans, as well as the Atlantic, exist because of corals. So, just what are these unpretentious creatures who dare rival our claim of planetary impact all about?

All corals belong to the same phylum (Cnidaria) as jellyfish, hydras and many other soft-bodied animals. But not all corals build coral reefs. The soft corals do not, and can live at great depths in cold seawater. The stony corals build reefs as calcium carbonate exoskeletons, with each generation building on top of the exoskeletons of previous generations. They live in a mutualistic relationship with a group of protists called zooxanthellae whose photosynthetic activities provide carbohydrates and remove CO_2. The single coral animal (called a polyp) gets protein from predation of plankton and other tiny animals by using its stinging tentacles to capture and push prey into its central cavity gullet.

When the zooxanthellae remove the CO_2 from the environment of the polyp, associated pH changes cause the deposit of calcium as coral limestone. Light penetration to support their photosynthesis is thought to limit reef building to about 90 m in depth. Changing ocean depths can result in reefs extending hundreds of meters below the surface, but only the upper layer includes live coral animals and algae. Certain algae called coralline algae live outside the coral organisms and create their own calcium carbonate masses, which cement together larger coral formations.

The coral polyp continues to grow as long as it is alive, and thus the skeleton gets larger each year. The polyp itself forms buds, or it divides in two, thus increasing the size of the colony. Polyps also develop from sperm and eggs cells which float in the water. A fertilized egg must settle on a hard place to anchor and grow. By budding and dividing, it may become a new colony, and in this way a new reef is started or an old one spreads.

Coral reefs are dependent on the temperature of the water, the amount of salt in it, the amount of light that reaches the coral animals, and the supply of food. The need for warm water puts most of the reef corals in a belt about 30 degrees wide on either side of the equator.

There are 3 types of coral reefs. Fringing reefs build up around a shoreline creating a shallow lagoon between the reef and the shore. Barrier reefs are separated from shore by wide, deep channels. Atolls are circular reefs that enclose a lagoon in the open ocean.

The general view is that parts of coral are broken off and the sea grinds them into the sand that forms the beaches. Anyone snorkeling in coral areas will notice that the reef fish are constantly biting off bits of coral, eating the polyps and presumably passing as waste the exoskeleton bits. Warren Jopling, an Australian geologist living in Samoa supplied the theory that coral sand beaches are largely formed by fish crap. Takes away some of the tropical romance, doesn't it?

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Nocturnal

In the day
The world is grey
And fuzzy, full of haze
A time to sleep
Buried deep
Within a hollowed tree
But at night
Without light
The world does come alive
It's time to eat
It's time to meet
With other furry friends
Under the stars
Munching upon insect bars
And other yummy treats
With young on back
We make the long trek
To possum midnight bait
We dance away
Till break of day
Then slowly crawl back home
Our poor heads ache
Throughout day break
From too much possum wine
For this is why
Possums do lie
Around the entire day
For a hangover is a dreadful w
to start the day!

by Sarah Clarkson

New Zealand Kauri and Ferns

by Jim Nelson

A recent stopover for 3 days on the North Island of New Zealand resulted in hiring a car to drive North from Auckland up the West coast to see the Kauri Pines, *Agathis australis*. The Agathis genus occurs with 3 species in Queensland, where *A. robusta* is known as the Queensland Kauri. The genus is in the family Araucariaceae, and is therefore part of the Gondwanan connection.

Agathis robusta

The first stop was at the Kauri Museum at Matakone. The logging of the Kauri was a significant industry in New Zealand, and the museum is very extensive and well done. The story of man's ingenious conquering of the natural wonders of the giant Kauri trees reads much the same as the destruction of the giant redwoods in California. The courage needed to cut down two thousand year old gigantic trees could only be matched by an equal amount of audacity to carry out such a violation of beauty. Or, is that just the way I read things from the comfort and aesthetics of our times?.... Come to think of it, the aesthetics of our times still seems to largely embrace quick money above all else, as is abundantly clear in Tasmania's forestry issues.

Continuing to head North, we started to see some patches of native vegetation at last. One of the first things of note were the ferns, particularly all of the tree ferns. One species in particular was reaching close to 20 m tall, and was a dominant feature in the forest. Its frond stalks were a beautiful black colour, and the taller trunks had oval scars where the fronds had dropped off. Looking at the ferns in the understory, we recognised a few in common with Tassie, but also some intriguing unknowns. Thus, we made a stop and acquired a small fern guide.

The tall tree fern was identified as *Cyathea medullaris*, or the Black Tree Fern. It is known as Mamaku by the Maori, and the pith was a source of food. Two other species of *Cyathea* were identified along with a couple of species of *Dicksonia*. The tree ferns along with the ground ferns and the epiphytes were a lovely component of the forest, and we decided to confine ourselves to learning something about them for this short trip, rather than also trying to tackle all of the strange trees and shrubs. One shrub stood out as a familiar face, although an unwelcome one in Tassie. This was the *Coprosma repens*, or mirror bush which has become a garden escape into our bush and is considered an environmental weed here.

Finally we reached the Waipoua Kauri Forest where some of the last big Kauri trees are reserved, including the largest remaining specimen. On the track into see the big tree, we could hardly move without finding a new fern. Ferns grew in great profusion as did a variety of bryophytes (mosses, liverworts and hornworts - a book review next issue). I'll mention a few ferns of particular interest, such as *Asplenium flaccidum*, the hanging spleenwort. This was a fern I recognized as one that I have always kept my eye out for in Tasmanian, but had yet to see. It is apparently quite common in NZ, and its strikingly distinctive, pale, spindly and drooping fronds could be seen perched in many of the trees. On examining the first one, I spotted a creeping kidney shaped leaf climbing the same tree. This turned out to be *Trichomanes reniforme*, or the Kidney Fern. One of the ground ferns had fronds close to 3 m in length, and this turned out to be one of the *Blechnum* species which I never positively identified to species level. There were a number of Blechnum species we share with NZ, but also several different ones. The tufted *Blechnum discolour* was an impressive species with its different shades of green.

The bracken, the batwing and the coral fern all were familiar as the same species we know in Tassie, but one fern, *Phymatosorus pustulatus*, was quite different, and almost unrecognizable as our Kangaroo Fern. They call it the Hound's Tongue Fern, and given that this species has gone through a few name changes in recent years, I wonder if it is yet properly sorted out?

The Climbing Shield Fern, *Rumohra adiantiformis*, was a familiar sight, and this Gwondawnan fern can also be found in South America. It is sold in the U.S. where it is popular for hanging baskets.

On our return trip to Auckland, we intentionally called into the city of Whangarei, which has many parks and gardens, one of which includes a very extensive fernery. Here we hoped to put names to some mystery ferns, but alas they were very poorly labeled which was a pity for such a good display otherwise. I did manage to sort out *Pallaea rotundifolia*, the Button Fern, which had taken my eye, and also the common maidenhair which was *Adiantum cunninghamii*. There was even a filmy fern house, but alas this even exceeded the other growing areas in lack of labels, which was a great pity because NZ has almost 30 native filmy ferns.

This was my first trip in NZ, and I was impressed enough to want to return for a longer stay.