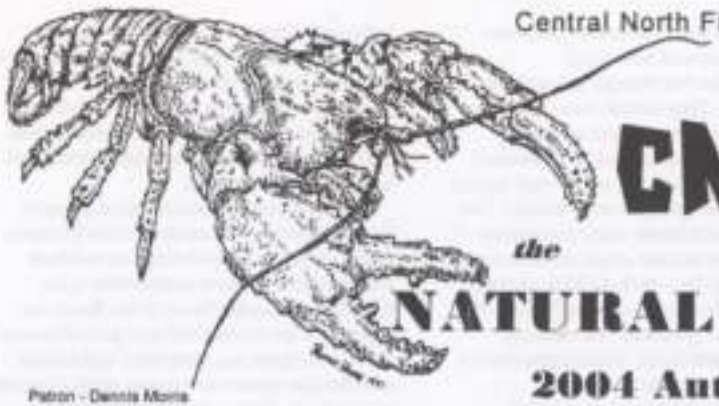
Central North Field Naturalists

CNFN

the

NATURAL NEWS

2004 Autumn



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Program and Events

Jan. 25 Combined Clubs Get Together at Skemps. Travel A3 past Targa, turn left at sign to Skemps Field Centre. Come for the day, bring your own food for the barbie, your choice of refreshments. If you wish to book overnight the day before or after at Skemps, then advise Al Pegler (peglerad@telstra.com)

FEB. 1, Mt. Barrow 9:30 am Travel the A3 out of Launceston to the Mt Barrow turnoff just before Targa. Meet at the turnoff.

March Subscriptions for 2004 Due! Subscriptions remain at $15 single, $20 Family

March 7, Dial Ranges 10 am. Meet at the Gunns Plains turnoff on the Bass Hwy near Ulverstone. We'll decide from there where to go.

April 4, Liffey 10 am Meet at the upper carpark. We will take the walking track up the river to the highway and do a car shuttle back. A beautiful walk through the forest, finishing with some sub-alpine vegetation.

May 1, Saturday!! Combined walk with North East Field Nats. A fungi browse on the Elephant Pass. Meet at the Pancake Barn on Elephant Pass near St Marys at 10am. I'm told the pancakes are very good, so maybe a treat after?

Subscriptions for 2004 due by MARCH 1st (please?)

Heathland plants – how do they survive?

By Sarah Lloyd

Heathlands are characterised by a low growing almost impenetrable tangle of shrubs, sedges, rushes and herbs. They are especially beautiful in early spring when many of the plants are in full bloom and attract numerous pollinating insects and a wide variety of birds. Australian heaths have an incredibly rich diversity of plant species that rivals the diversity of tropical rainforests. On the Kwongan sandplains of Western Australia, for example, grow 5710 native species of which nearly 80% are endemic to that state. I have always wondered how heath plants survive – let alone flourish - in soils that are so deficient in nutrients as to be "effectively lethal for domestic plants" (Kirkpatrick 1999). And it wasn't until I purchased the latest of Mary White's excellent books "Earth Alive: from microbes to a living planet" that I found an adequate explanation. This book outlines some of the strategies plants have evolved to extract the nutrients they need. A further, more detailed explanation was found in "Fungi of Australia", as in many cases, it's an intimate association with fungi that enables their survival.

It is believed by some that when plants first colonised the land they had two options. Either they could develop an extensive, fine root system of their own, or alternatively they could enter into a relationship with fungi and thereby increase their ability to obtain nutrients and water from soil via the

fungal hyphae – the microscopic threadlike structures that are the living component of most fungi.

Some plants adopted the first strategy and rarely form mycorrhizal associations. They include members of the saltbush family (Chenopodiaceae), cabbage family (Brassicaceae), sedges (Cyperaceae and Restionaceae) and rushes (Juncaceae). Interestingly, many weed species that invade disturbed areas belong to these families. This may be an adaptation to conditions where populations of mycorrhizal fungi are low because of soil disturbance.

However, the vast majority – perhaps 95% of plants, including ferns, mosses, lycopods and most families of vascular plants – opted for symbiotic (i.e. mutually beneficial) partnerships with fungi, relationships that are especially important in nutrient deficient soils.

There are several different types of mycorrhizal associations:

Ectomycorrhizae or (ectotrophic mycorrhiza) occur in about 3% of plants species and are common in conifers, eucalypts, and deciduous forest trees such as beech, oak and birch. In ectomycorrhizae the fungus does not penetrate the hosts' cells but forms both a filamentous sheath that envelopes the root and a net consisting of tightly packed hyphae between the outer 3—4 cell layers of the root (known as the hartig net). The fungi involved are usually basidiomycetes and often produce fruit bodies such as mushrooms, puffballs, coral fungi and truffles from genera such as Armillaria, Russula, Cortinarius and Boletus.

Endomycorrhizae (or endotrophic mycorrhiza) are the most common type and occur in 80-85% of plants. There is no external sheath and the fungal hyphae penetrate into the root cells. Unlike ectomycorrhizae, they generally do not produce large fruit bodies.

The Endomycorrhizae are divided into three types:

1, Arbuscular endomycorrhizae are the most common and widespread. They occur in natural environments such as tropical rainforests, alpine meadows and deserts and in agricultural systems including crops of cereals, grasses, legumes, citrus, coffee, cotton, oil palms, rubber, sunflower and tea. They are obligate parasites - i.e. they do not survive for long in the absence of their hosts especially in disturbed soils. Arbuscular mycorrhizas penetrate the cells in the outer layer (epidermis) and cortex of the root and produce highly branched structures called arbuscles (derived from the Latin word for "little bush"). There is an extensive interface between the arbuscles and the hosts' cell membranes, which enables water and other substances to be the transferred between plant and fungus.

2. Orchid endomycorrhizae are formed in all members of the orchid family and in their natural habitats orchids cannot grow without their fungal partners. The fungus forms coiled structures in the cells of the root cortex and transfers carbon and other nutrients to the orchid. It gets nutrients by either breaking down organic matter in the soil, or by become mycorrhizal on other plants. The underground orchid of Western Australia is linked via fungal hyphae to a Melaleuca sp.

3. Ericoid endomycorrhizae are a group of fungi associated with members of the Ericaceae family of the Northern Hemisphere and their closely related southern counterparts in the Epacridaceae family. Plants of this family are common in the nutrient deficient soils of coastal heaths and alpine bog ecosystems and include such familiar species as common heath, (Epacris) swamp heath (Sprengelia spp.), pink berry (Leptecophylla – formerly Cyathodes) and beard-heaths (Leucopogon spp). The fungus forms extensive snakelike hyphal coils within the epidermal cells of the hair roots resulting in most of the cell volume being occupied by the fungus.

It is through these various mechanisms that an exchange of nutrients takes place between the organisms. Fungi, which are unable to photosynthesize, gain carbon compounds, and probably also amino acids, vitamins and other nutrients from their host. The plant also provides the fungus with a habitat that is relatively free from other soil microorganisms.

The plant benefits in several ways. The fine microscopic fungal hyphae that grow out from the infected plant can penetrate extremely small spaces, effectively extending its root zone. Thus the fungus supplies the plant with water and soil nutrients, particularly phosphorus and nitrogen.

There are various other strategies that plants have evolved to ensure their survival in harsh conditions:

Members of the Proteaceae family including banksias and prickly geebung have proteoid roots that consist of hundreds of densely packed extremely hairy rootlets that grow off the main roots. They perform a similar function to the mycorrhizal fungi in extending the root zone and increasing nutrient and water uptake.

Leguminous plants including the pea family (Fabaceae) and wattles (Mimosaceae) are especially prevalent in heaths. As well as mycorrhizal associations, they have root nodules with special bacteria that are able to fix atmospheric nitrogen and make it available to the plant.

Insectivorous herbs such as sundews (Drosera

spp.) abound on nutrient poor soils. Their sticky tentacles attract, capture and absorb small insects using digestive enzymes secreted from the glands to dissolve and absorb nitrogenous compounds. Similarly, fairy's aprons or bladderworts (Utricularia spp.), small herbs of wet places, capture tiny insects in intricate traps or bladders that resemble minute bubbles on threadlike segments of their leaves that lie at or below the soil surface.

Heath plants also have some above-ground morphological characteristics that enable them to survive harsh conditions, namely sclerophyllous leaves – leaves that are small, hard, thick and leathery. However, their most important adaptations are hidden from view in that marvellous subterranean world that most of us never even think about.

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Musings Regarding Local Tree Decline

by Jim Nelson

I arrived in Tasmania 30 years ago, and therefore have experienced considerable changes to the environment here, especially in the areas of land clearing and land use. These changes have had consequences resulting in changes to local fauna on my property, most noticeably the bird fauna which now consists of birds of open woodlands rather than the variety of forest birds that used to frequent my garden.

The local surrounds have become vistas of plantations where once stood native forests. Additionally, much land has been cleared for agriculture and trendy rural lifestyle activities such as mowing large areas of grass. What are some of the consequences of such change?

Well, admittedly it is often difficult to make a specific account regarding cause and effect of change in the environment, given such variables as climate change, natural cycles, and the fact that change is the norm and always with us whether we like it or not. However, rather than using such variables as an excuse for just accepting any change that comes along, we should stay alert (and perhaps even alarmed) at changes we cause or contribute to which degrade the environment. Air pollution, water pollution, weed infestations and erosion are certainly examples where the finger can frequently be pointed at our carelessness, greed or stupidity.

One of the changes I have noticed in the last 5 years or so on my property and the immediate surrounding properties is tree decline. In particular, the local eucalypt, *Eucalyptus ovata*, has been showing a loss of crown foliage resulting in branches dying back on trees of varying ages. The timing of this is consistent with the arrival of the Noisy Miners, *Manorina melanocephala*, a native species of honeyeater that lives in colonies and is probably implicated in tree decline due to an aggressive defence of territory driving several species of insectivorous honeyeaters away.

Noisy Miners are now being labelled by some as a "native pest species". But like many pests, it is probably a result of our changing the landscape that has provided the niche they need for success. Perhaps we could be labelled a "Keystone Pest Species" when you contemplate all of the species that our (mis)management has provided opportunities for?

Another native species that has been particularly active the past few years to the point of becoming a significant pest to my trees is the fireblight beetle, *Pyrgoides orphana*. This insect is responsible for the defoliation of our silver and black wattles (*Acacia dealbata* and *A. mearnsii*). It is unclear to me whether this beetle is becoming more successful from changing land use, or loss of predators, or whether it is simply following age-old cycles we don't understand.

In my early years in Tasmania, serious wattle defoliation used to take place once every few years, but now it seems to have occurred for several years in a row, thus causing death or decline of many trees. I remember one year in the 70's when practically every silver wattle on my land was defoliated except for one paddock tree which was left alone. I collected seed from that tree and planted dozens of wattles around

my land. The next time the fire blight appeared, not only was the paddock tree defoliated, but all of its offspring as well. So much for my selective breeding program! All I accomplished was more breeding opportunities for the beetles.

Both the larvae and the adult beetle feed on the foliage, and the term "fireblight" adequately describes the look of the tree after serious loss of leaves and even the bark eaten off smaller branches so that the tree looks almost like it has been burnt. The outbreak begins in late winter and spring, and at that point it is mainly the larvae feeding. These are green with dark lateral stripes. The adult beetles are small (6mm), green and dome-shaped with cream and brown stripes along their wing covers.

The beetles lay their eggs in autumn and early winter and hatch in a little over a week, but the larvae develop slowly and are usually not noticed until spring. In spring, they develop rapidly, and after passing through several instars they drop to the ground and pupate in the soil. The resulting adults emerge in summer, but seek shelter until the cooler weather of autumn when they feed on the wattle leaves before laying eggs.

Its noticeable that local wattles which find their pioneer niche in the mixed bush areas are rarely defoliated, and that the *E. ovata* trees in the local bush are not showing the same degree of dieback of branches that are evident in the small stands with little understory and surrounded by grazing land. It should really be no surprise that diversity provides healthier outcomes. We constantly hear about the principle of diversity in investment portfolios to more safely spread the risks. Why is it so difficult to understand that diversity also works well in the environment ?

Speaking of leaf eating beetles, reports from fishermen at the Great Lake and Arthurs Lake are that beetles are falling into the lakes and being eaten by trout in huge numbers. This beetle could possibly be the one called the Great Lake Beetle (*Paropsis vulgaris*), which feeds on Eucalypts in both laval and adult stages.

But it is the introduced trees in my garden that suffer the most from a leaf eating pest. Appropriately, the pest is also introduced, and it is the pear and cherry slug, which is the larva of the saw-fly, *Caliroa limacina*. Saw flies are not flies at all, but are in the order Hymenoptera, and resemble a waistless wasp. They are equipped with a saw-like process at the ends of their bodies which they use when laying their eggs inside leaves.

Even pests are interesting, and cause reflection.

The Woodpecker Papers — talks with a Naturalist — Tales of Tasmania in the late 1800's

Reverend Henry Dresser Atkinson

Book Review: by Ron Nagorcka

The reasons non-indigenous Tasmanians ended up here in the 19th Century are many and varied: sentenced "for the term of their natural lives", displaced aristocracy establishing new estates, fortune-seekers working the goldfields, desperados working in the mines all come to mind. There are not many stories I know of people who visited, fell in love with the

place, and decided to stay. It wasn't a place with much of a reputation for the "finer things of life" - somewhere further from European civilisation was hard to imagine.

The Reverend Henry Dresser Atkinson (1841-1921) however, was one such person. On a trip around the world, he was so taken with Hobart and Mt Wellington, he simply got off the ship and stayed,

never to return to his native England.

This delightful book was prepared for publication by two of his grand-daughters, and consists of a collection of articles that were first published in the "Church Messenger" and the "Church News" before 1900 and in the "Tasmanian News" in the early 1900s.

The articles take the form of a dialogue between a young man "Tommy" - interested, but fairly uninformed - and a Naturalist who calls himself "Woodpecker". The choice of such an obviously non-Tasmanian bird to describe himself may reveal a man still steeped in the culture of the Northern Hemisphere, but "Woodpecker" certainly knows his stuff - he covers everything from Tasmanian geology, birds, plants, snakes, diverse human characters from the bush, to his conversations with his friend Truganini and quite a deal of homespun philosophy. He is appalled at the hunting of the Thylacine, the keeping of pets, the introduction of ivy and other european plants to the Cataract Gorge. In so many ways, he is way ahead of his time (except when it come to misogyny!)

Although a clergyman, Atkinson obviously has no problems accepting the theory of evolution, referring on occasion to the "immortal Darwin". But the tension between religion and science does not escape his attention. There is a fascinating exchange with Tommy in one article in which Tommy wonders if it is "altogether right" for the Bishop to have written an article on natural history. Woodpecker puts him right in no uncertain terms:

"When I was a youngster... I enjoyed the inestimable advantage of belonging to two field clubs; one was a geological club and the other a naturalist club. Believe me, I went out whenever I could possibly manage. All the other members were older and knew infinitely more than I did, but I assure you the pleasure of those field days...was such a memory, even now I love to dwell on. And what I specially wish to impress on you Tommy, is this, that at least one third of the men who comprised these clubs... were clergymen, graduates of universities and some of them noted specialists."

I have the strong feeling that "Woodpecker" would enjoy the outings of the CNFN. If there is a heaven I'm sure he is looking down on us with approval - in fact he may even envy us - unless all those other clergymen/naturalists are up there with him exploring heaven's natural wonders to the bemusement of St Peter - who may think there are better things to do.

"Equinoxious Gales" – their aftermath and the tidy-up mentality.

by Sarah Lloyd

When I first moved to the Deloraine area 30 years ago I lived for several years near an entertaining character named Jack. Jack had spent his life as a travelling salesman and had a wealth of anecdotes, sayings and mispronunciations. Of his incompetent colleagues he would say *"they couldn't sell a fur coat to a mangy cockatoo"* or that *"he was so hungry he would eat the dates off a calendar"*. To our amusement, he would also occasionally talk about non-ferocious metals and equinoxious gales!

What he meant, of course, was equinoctial gales, a name often given to those particularly strong winds that blow in September at the time of the spring equinox.

The equinox is the time when the sun crosses the equator and day and night are of equal length all over the world. Throughout the 18th and 19th centuries many people in Britain and the United States firmly believed that the hurricanes and storms experienced at this time were because of the equinox.

This idea probably originated among mariners who sailed the Caribbean at the time of the Northern Hemisphere autumnal equinox and experienced the West Indian hurricanes that prevail at this time. Thus, the association of the equinox with inclement weather became entrenched, and while the two often do coincide, one does not actually cause the other.

In southern Australia, spring is characterized by easterly moving cold fronts, which are accompanied by showers, strong winds and storms. This is because of the temperature difference between the southern ocean, that remains cold until the northern limit of the pack ice retreats in late October, and the continent that heats up as the sun moves south. This results in the weather most Tasmanians are all too familiar with, and this spring we seem to have fared particularly badly.

During late September and early October strong winds brought down numerous trees and limbs in both suburban and country areas and it was interesting to observe just where the most damage occurred. Very few trees blew down in heavily forested areas, but in nearby farmland many trees were uprooted. Isolated paddock trees were especially vulnerable, as were trees in "degraded" woodland areas that have little or no understorey as a result of heavy grazing. The above average rainfall that fell during winter made them

even more susceptible by softening the ground around their roots.

The tragedy is that many of these mature eucalypts are several hundred years old and are reaching the end of their lives. And they have far more than just an aesthetic value in the landscape. They provide shelter and shade for stock, they help to maintain the water table and reduce erosion and their fissures, cracks, crevices and hollows provide an amazing variety of hiding and nesting places for fauna. Eucalypts take at least 80 years to form suitable hollows for small animals such as Eastern Pygmy Possums, Little Pygmy Possums and bats, and several hundred years to form hollows for larger birds. Striated Pardalotes, for example, prefer hollows with an entrance size of 3-6cm that can take up to 100 years to form while larger birds including Sulphur-crested Cockatoos, Yellow-tailed Black-Cockatoos, Green Rosellas, Eastern Rosellas and Masked Owls require hollows with an entrance of 10-20 cm that can take up to 350 years to form.

Studies to assess the importance of isolated paddock trees have been conducted in the sheep and wheat belt of Western Australia and New South Wales. Because they grow in soil that have been enriched by artificial fertilisers and the excreta from domestic animals they have higher nutrient levels in their foliage compared to nearby trees in remnants. These nutritious leaves support high levels of invertebrates, which in turn attract many birds including ravens, parrots and large honeyeaters. While it is unlikely that small insectivorous birds such as thornbills and fairy-wrens venture into open paddocks for fear of predation, these trees do provide important stepping-stones in the landscape for migrating species such as Striated Pardalotes, Dusky Woodswallows and Black-faced Cuckoo-shrikes. They are valuable as resting and nesting places for hollow-dependent birds such as owls and parrots. Raptors such as Brown Falcons often use elevated positions from which to survey the landscape for potential prey and many birds prefer a high perch from which to sing to attract a mate.

In Victoria studies have demonstrated the importance of scattered paddock trees for bats. Unlike diurnal birds and arboreal mammals, where only a small proportion of the fauna use these trees, a high proportion of bat species use this resource for foraging and roosting. Trapping at one isolated tree in the Victorian Riverina resulted in the capture of 29 individuals of seven species in just one night! Bats are also extremely important to the survival of these trees as they consume large amounts of invertebrates.

A further tragedy occurs when the trees and limbs are quickly tidied up with little thought as to their possible ecological value. During the weeks that followed the worst of the storms many were cut into lengths ready for the fireplace, with the foliage and smaller limbs piled up ready for the spring burn.

It is now widely recognised that the loss of this large woody debris is a major factor contributing to the decline of biodiversity in Australian woodlands. Fallen trees and branches, bark and leaf litter that are so often regarded as simply waste or fuel are in fact vitally important to the structural complexity of ecosystems and the recycling of nutrients, particularly carbon and nitrogen. All the nutrients used by a plant during its life are slowly released back to the soil as it breaks down and the decay is accelerated by the actions of fungi, bacteria and invertebrates. Approximately 85% of dead organic matter is broken down by saprotrophic fungi while the remaining decomposition is caused by bacteria and invertebrates.

As well as adding nutrients to the soil as they break down, logs and other debris are vitally important for fauna. The moist environments under logs are ideal sheltering places for frogs and provide an important retreat during fires.

Exothermic animals such as skinks and snakes need warm areas on which to bask and cool areas where they can seek shade and shelter. Many mammals use logs as runways.

Logs are important for the establishment of lichens, mosses and filmy ferns. Mosses particularly have the ability to rapidly absorb water and retain it for long periods. This provides moist conditions for numerous invertebrates as well as providing shelter, camouflage, protection from temperature extremes and wind, a source of food and a place to deposit eggs. A significant number of invertebrates that are taken by birds from foliage, behind bark and from the air probably spent part of their lives hidden in woody debris on the ground.

Logs provide an elevated bed for the establishment of seedlings which are out of the reach of grazing herbivores.

In Victoria the removal of coarse woody debris has been strongly implicated in the decline of some woodland fauna such as Bush Stone-curlew, Painted Button-Quail, Hooded Robins, Spotted Quail-thrush, Spotted-tailed Quolls and Carpet Pythons. Some of these animals feed on invertebrates in the ground litter layer, others use this material for shelter and nesting while birds such as robins and cuckoos simply require a perch to survey the landscape for potential prey.

The "tidy up" mentality is one that seems as

culturally ingrained as it is ecologically disastrous. So much so that the Scientific Advisory Committees in Victoria, New South Wales and Queensland have recommended that the removal of coarse woody debris (CWD) from native forests and woodlands be listed as a potentially threatening process under each states' conservation legislation.

But in Tasmania, where introduced species such as hawthorn are heritage listed while centuries old paddock trees are removed to give way to pivot irrigators and the like, it will be many years before logs, fallen branches and other "rubbish" are seen as having any value in the landscape.

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Recent Great Excursions (missed by most of you)

by Jim Nelson

The December Excursion of the CNFN was a memorable one for the small group of five attending. We arrived at Phillip Milner's house at Lower Barrington, and started the day properly with a cuppa in Phillip's kitchen. Then we wandered across the paddock towards the bush, and upon entering it we began a long descent towards the Don River following steep gullies and small tributaries. There were some very stately *Eucalyptus regnans*, along with *E. viminalis* and a few *big E. obliqua* along the track that Phillip is establishing. He explained that he has covenanted the area, and his obvious care and concern for this beautiful environment is a fine tribute to his long devotion to native plants.

We saw what looked to be a robin's nest with a bird sitting with mainly its tail sticking out. We speculated it was a Pink Robin, given the location in the gully, but with Sarah away on a trip to the mainland, we were left wondering. Nevertheless, Deb kept a vigilant eye out the rest of the day in hope of viewing a Pink Robin with her new binoculars.

Deb must have strayed from looking for Robins, because she soon spotted a nice giant freshwater crayfish, better known as 'lobster' (*Astacopsis gouldi*) in the creek. Not to be outdone, Rod soon spotted a much bigger one. They were beautifully coloured specimens, with blues, reds and tinges of yellow standing out from a basically dark carapace. They were nicely covered with *Temnocephala sp.*, a commensal flatworm that keeps their carapace clean. Both crayfish were out in the open in pools, showing the value of such Class 4 streams.

Class 4 streams are the subject of controversy with regards to the threatened *A. gouldi*, as the Recovery Team debates whether these streams are important enough to have buffers left in place during forestry. Around the world it is being acknowledged how important it is to protect headwaters. Forestry interests claim protection must be based on science, but what they really mean is that they often use what they term "lack of science" to avoid protecting the environment.

Forestry Tasmania proclaims that its practices have never caused any species to go extinct. Given that the vast number of species that live in our forests are invertebrates, (many unnamed and unmonitored); then throw in FT's scorched earth clearfelling techniques, along with demonstrably inadequate stream

protection, monoculture replacement, chemical applications etc.,... well, in short, they use a so-called lack of knowledge to make claims for which there is virtually no chance of validity. Tragically, we simply don't even know what we are losing, or how much we are losing, but no one is holding protests to "Save our Invertebrates". If invertebrates are not important, then why do they make up more than 95% of life? Life as we know it would not be possible without them, so perhaps a little more attention is warranted.

Back to our walk, a little further along, we found some *Engaeus* burrows in a wet soak area. *Engaeus* are burrowing crayfish that tunnel down to the water table, and mostly live out their lives away from free water. If you are small, and live in an environment alongside *A. gouldi*, the largest crayfish in the world, then it is a useful strategy to create your own little micro-environment rather than chance your luck in the streams with large, cannibalistic neighbours. We managed to turn up a little burrower, and the species was diagnosed as *E. fossor*. This species is a very wide spread one, ranging from the West coast to the Mersey River. It has a nice little identification feature with a double row of tubercles along the top edge of the claw.

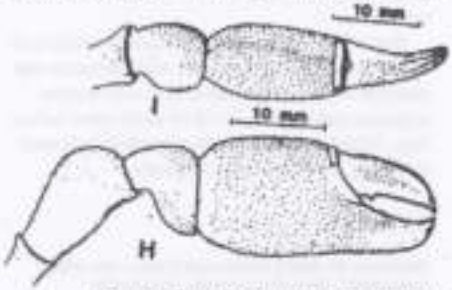
Finally, we reached the Don River where we had lunch. As we hopped the rocks in the river, we started seeing a number of lobsters, with as many as 4 in one pool. I had never seen so many out and about, and in full sunlight. I finally crept close enough to one to attempt to see exactly what it was doing. It was only a relatively small crayfish about 100 mm long, but it was sitting on top of an underwater boulder and I could see small clouds of silt wafting in the water near its mouth parts. It was eating the algae on the rock! Crayfish are largely detritus eaters, with decaying leaves, wood etc. comprising perhaps 90% of their diet. It is actually the accompanying fungi and bacteria breaking down this organic matter that provides their nutrition. They are usually ravenous for any protein that comes along, but perhaps they also enjoy some Spring greens in the form of algae?

The long walk back uphill was made easier by our excitement of having seen so many crayfish. Deb was still looking for that Pink Robin, but we were only rewarded with hearing one vocalise.

January Excursion Find

The walk at Eugenana Arboretum also was of interest regarding finding *Engaeus granulatus*. This is an interesting find, because this species of crayfish is currently undergoing a listing as Endangered.

I headed up to the fernery area not far behind the visitor's centre. There I found a few active burrows underneath the ferns, and without a great deal of trouble two crayfish were soon uncovered. My expectation was that these would be *Engaeus fossor*, which is the species I have previously found in the Don River catchment, but when I saw them I immediately realised they were another species, most likely *E. granulatus*. When I got back to the car and the microscope, I confirmed it was indeed that species,



Granulations on claws of *E. granulatus*

and while finding it in the Don River is not totally unexpected (I have suspected that it occurs in the Don Reserve), it does slightly extend its distribution, and indicates that the catchment should be further investigated. It is a nice result to find the species at the Arboretum, and perhaps it will lead to some interpretation information on Engaeus at the visitors centre.

The Arboretum itself provided quite a bit of interest, including a pretty good bird fauna. The Tamanian plant section proved to be quite interesting, with some rare species and some interesting cultivars. Phillip Milner's knowledge was very helpful.

FUNGI WORKSHOP COMING

Sarah is organising a weekend of fungi related activities at Skemps for next May.

Sapphire, David and Genevieve have agreed to guide us in various aspects of field ID, microscopy etc.

Skemps is an ideal venue for the weekend,with lots of great fungi habitats within easy walking distance. If you are interested in becoming a knowledgeable fungi person, this is your opportunity! Costs are currently being worked out. Contact Sarah with your expressions of interest, or any questions.