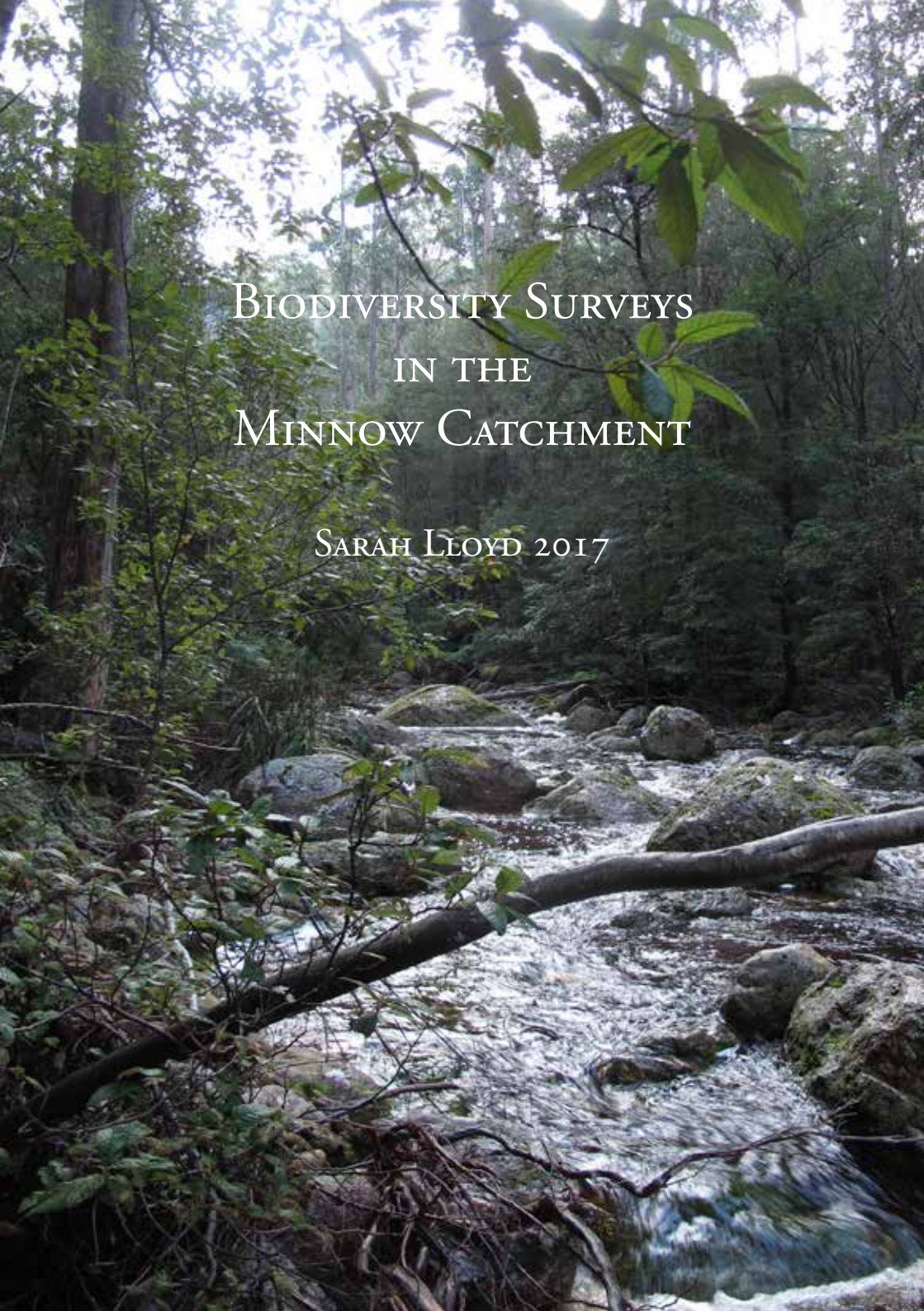


Biodiversity Surveys in the Minnow Catchment

Sarah Lloyd 2017

The source of the Minnow River is approximately 1080 meters above sea level on the summit of Mt Roland. Small tributaries merge into a number of waterfalls, the most prominent being the Minnow Falls that cascades down the rock scree on the southeast slope of the mountain. The river then flows through native forest, pine and eucalypt plantations and agricultural land eventually to join the Dasher River at 200 meters above sea level. Unlike the Minnow Falls which is one of the most prominent landmarks on the mountain, many of the named and unnamed creeks and streams and surrounding land that comprise the Minnow Catchment are hidden from view by Mount Roland, and the numerous hills—Gog Range, Kenzies Hill, Conglomerate Hill and Panorama Sugarloaf—from which these waterways flow.

Aboriginal History

Ta Neem Er Ra (or Tarerneemer) was the Aboriginal name for Mount Roland, Mount Claude and Mount Van Dyke as transcribed from the spoken word by George Augustus Robinson who was in the area with his Aboriginal 'companions' in 1834. The mountains were significant in several respects: the foothills and waterways were important for childbirth and women's ceremonies; the rocky outcrops were rich hunting sites; and prominent features were used as lookouts and for distant communication with neighbouring Aboriginal bands.

As an oral culture, there are no written accounts of Aboriginal life before the British arrived. However, there are descriptions of the area by Robinson who was travelling to the much-prized ochre mine 'Toolumbuner' on the Gog Range. Robinson noted that the forest was '*overgrown with underwood … All this country had been burnt and the fallen timber was very thick …The natives had been here recently and burnt the grass. Saw several bark huts. This is a favourite resort of the natives and is their road.*' He goes on to state that '*the celebrated mine of ochre … was held in … great esteem by the natives*'. They used fire to maintain a series of tracks that lead to Toolumbuner from several directions giving access to other groups with whom they traded this precious material.

Historical changes in the natural vegetation

Pollen samples extracted from a small lagoon at the top of the Gog Range give a fascinating insight into regional changes in vegetation from about 8000 years ago. These can be attributed to the changing climate, Aboriginal activity, and the impact of European settlement.

The lowest layer, calculated to be from 6000 to 8000 years old, indicate vegetation dominated by rainforest species including beech (*Nothofagus* spp.), celery-top pine (*Phyllocladus aspleniifolius*), treeferns (*Dicksonia antarctica*) with some eucalypts (*Eucalyptus* spp.) and dogwood (*Pomaderris apetala*). Pencil and King Billy pines (*Athrotaxis* spp.) and deciduous beech (*Nothofagus gunnii*)—that now only persist in the elevated areas on the central plateau and at Cradle Mountain—were also present as were wet sclerophyll plant communities of satinwood (*Phebalium*, now *Nematolepis*), cheesewood (*Pittosporum bicolor*) and mountain pepper (*Tasmannia lanceolata*), species that persist today in wet gullies, shaded hillsides and riparian areas. Buttongrass (*Gymnoschoenus sphaerocephalus*) surrounded the lagoon. The pollen samples contain very few burnt particles suggesting that fire was infrequent.

Between 4000 and 6000 years ago the wet sclerophyll forest and rainforest species, espe-

cially the fire-sensitive pines and deciduous beech, declined. There was an increase in the diversity of hard-leaved species and a dramatic increase in the number of burnt particles which indicate the drying climate and the effect of Aboriginal burning. The pollen samples also show a decline in buttongrass but an increase in scented paperbark (*Melaleuca squamea*), tea trees (*Leptospermum* spp.), members of the pea (Fabaceae) family; broom spurge (*Amperea xiphoclada*) and silver banksia (*Banksia marginata*).

The upper layer has signs of European settlement with pollen from radiata pine (*Pinus radiata*) and ribwort plantain (*Plantago lanceolata*). Eucalypts still dominated the upper canopy but the understorey of woody shrubs was replaced by heaths (Epacridaceae spp.), grasses (Poaceae) and daisies (Asteraceae). This indicates a gradual opening of the forest and the influence of European agricultural practices.

Recent European activity: settlements, mining and timber harvesting

Settlements started to appear at Beulah and surrounding areas around 1900 when there were no roads, few buildings and the terrain was thickly forested. Land and building materials were so cheap that before WWI a 65-acre (26 ha) bush block was purchased for six pounds an acre and a four-roomed dwelling cost just seven pounds. The settlers' immediate task was to fell the trees with cross-cut saws and axes before using bullocks and chains to clear the vegetation. Any timber that wasn't used for buildings or fences was burnt.

It was a frugal existence with very little cash to buy goods—and few goods available for purchase. Most families had at least one house cow, a vegetable garden, chooks and a pig for making bacon. Rabbits were in plague proportions and bartering was common with people exchanging blackberries or eggs for groceries or clothing. Natural resources were abundant - '*the rivers were full of fish … brown and rainbow trout and our native blackfish*' and '*there were plenty of fresh-water crayfish … any little creek had them*.'

At the peak of agricultural activities up to 60,000 bushels of oats left Beulah representing about two or three thousand bushels (75 metric tonnes) from each property. Potatoes, swedes and peas were also grown and exported from the area.

Early photographs reveal something of the early life near Beulah, which '*in [1900] was mostly bush*'. A photograph taken of celebrations near the school after WWI shows a landscape almost devoid of vegetation.

The several attempts at mining were of limited duration. The gold at the Star of The West Mine and the widespread alluvial gold were not in payable quantities despite all the trenches, tunnels and shafts dug in its pursuit. Barite (baryte) was also mined at Beulah from about 1918 to 1922 with limited impact on the land.

In 1933 the Advocate described the 1931 downturn of the timber industry in northwest Tasmania and its subsequent improvement. The swings and roundabouts depended not only on local demand but also on federal tariffs to ensure local timber-harvesting was competitive with imported products, especially oregon pine.

In the 1940s the local council recognised the potential of soft wood plantations. Between 1948 and 1954 one hundred and fifty acres of radiata pine were planted at Beulah. These were harvested in 1998 and replanted in 1999. More recently, native forest and cleared rural land have been replaced with plantations of radiata pine or shining gum (*Eucalyptus nitens*).

The Minnow Catchment in 2017 - what the field surveys reveal

The hills and valleys of the Minnow catchment are a patchwork of several different vegetation communities that change depending on aspect, drainage, soil type, fire history and other disturbances. For instance, some of the riparian areas (i.e. along the creeks and rivers) are relatively undisturbed and rainforest species including native laurel (*Anopteris glandulosus*) and myrtle-beech (*Nothofagus cunninghamii*) still survive. The sunny exposed slopes are covered in dry forests dominated by the endemic black peppermint (*Eucalyptus amygdalina*) with a rich understorey of flowering plants.

However, the catchment is much more than just the waterways. Most of the forest that once grew around Beulah is long gone and in other areas large swathes of the original native vegetation have been cleared and replaced with plantations of shining gum or pines. Many native plants and animals are unable to survive in areas where agriculture and plantation forestry are the predominant land use.

Minnow River Picnic Ground

Blackwood (*Acacia melanoxylon*), silver wattle (*A. dealbata*) and three species of eucalypt—giant ash (*E. regnans*), white gum (*E. viminalis*) and stringybark (*E. obliqua*)—form the forest canopy at the picnic ground. Small myrtle-beech grow close to the water on the north side of the creek and there's a small grove on the south side. The mid and understorey vegetation is rich and varied with prickly beauty (*Pultanaea juniperina*), goldey wood (*Monotoca glauca*), prickly geebung (*Persoonia juniperina*), dogwood, caterpillar wattle (*A. mucronata*), native currant (*Coprosma quadrifida*), cheesewood and stinkwood (*Zieria arborescens*). There are numerous species of fern including soft waterfern (*Blechnum nudum*), hard waterfern (*B. watsii*), soft treefern, ruddy groundfern (*Hypolepis rugusola*), bracken (*Pteridium esculentum*), mother shieldfern (*Polystichum proliferum*), silky fanfern (*Sticherus tener*) and common filmyfern (*Hymenophyllum cupressiforme*).

Mosses and leafy liverworts proliferate where it's damp and shaded. They, along with lichens, cover logs, branches and soil where they are often interspersed with a range of colourful fungi.

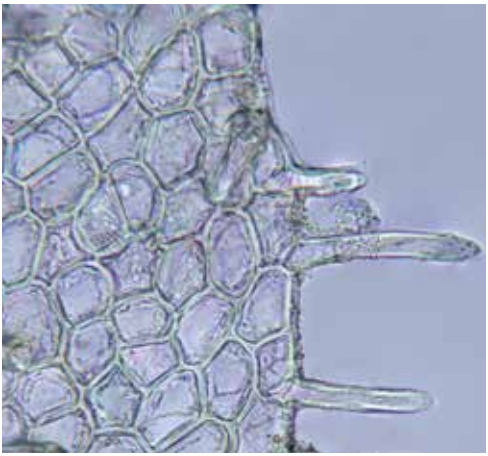
The noise of the fast flowing tannin-stained river masks the songs of most forest birds, but Silvereyes, Crescent Honeyeaters, Grey Shrike-thrush, Golden and Olive Whistlers, Green Rosellas, Tasmanian Scrubwrens and Forest Ravens can often be heard above the sound of rushing water.

Invertebrate exoskeleton found clinging to moss.

Minnow River (MR1)

The vegetation at the Minnow River upstream from the picnic ground includes wet forest species such as native laurel, mountain pepper and musk (*Olearia argophylla*). Common heath (*Epacris impressa*), native cherry (*Exocarpos cupressiformis*) and guitarplant (*Lomatia tinctoria*) occur on the sunnier slopes above the river.

Huge boulders of conglomerate rock form stepping stones across the river on the way to the Minnow Falls. The Roland Conglomerate has a pinkish hue and is mostly composed of white, pink and purple quartz with white and pink quartzite set in a fine-grained siliceous (containing silica) matrix, i.e. the fine-grained portion of a rock in which coarser crystals or rock fragments are embedded.



Detail of leafy liverwort *Metzgeria* sp. (400x).

Conglomerate rock.

Minnow River.

Minnow Creek and Kenzies hill

Minnow Creek.

Close to the Minnow Creek tall stringybark and giant ash and sub-canopy trees including musk, sassafras and cheesewood provide a shaded and humid environment suitable for the proliferation of numerous species of ferns, mosses and liverworts.

The floods of July 2016 scoured the ground near the waterway and in some places the course of the creek has changed.

Black Peppermint (*E. amygdalina*), white gum and stringybark are the dominant trees on the dry, north-facing slope of Kenzies Hill. There is a variety of understorey species typical of dry forests with Blanketleaf (*Bedfordia salicina*) and treeferns in the shaded areas.

The vegetation is gradually recovering from the fire that raged through the area in 2007.

Shiny filmyfern *Hymenophyllum flabellatum.*

Thallose liverwort *Hymenophyton flabellatum.*

Headwaters of the Minnow River: The Mount Roland Plateau

In early October the Mount Roland Rivercare Catchment group organised an outing to the Mount Roland plateau; keener participants reached the summit. The walking track, which begins at the car park at O'Neill's Road, winds through different vegetation communities that change with increasing elevation: dry forest with a heathy understorey gradually gives way to wet forest interspersed with ferny gullies; rainforest species grow in the shaded areas.

Dense sub-alpine scrub and heathland surround the headwaters of the Minnow River on the plateau. Buttongrass dominates the vegetation on the flat plains where the peaty soil is waterlogged for most of the year. Other moorland plants include the soft-fruited tea-tree (*Leptospermum glaucescens*), silver banksia and swamp paperbark (*Melaleuca squamea*). Smithton peppermint (*E. nitida*), Tasmanian snow gum (*E. coccifera*) and alpine yellow gum (*E. subcrenulata*) are the only eucalypts able to withstand the occasional snow falls, cool temperatures, strong winds and high rainfall experienced on the plateau. Other plants have adapted to the harsh conditions by developing small hard leaves.

We were too early to see the spectacular display of flowers characteristic of Tasmania's sub-alpine areas. When in full bloom in spring and summer the shrubs, and herbaceous and annual plants—many of which are endemic—attract an array of invertebrates, especially pollinating insects such as native bees and flies. The most conspicuous insects during the October outing were the jack-jumpers working away on their mounds of leaves, twigs, seeds and small pebbles.

Looking east from the Mount Roland plateau.

Mosses and liverworts

Mosses, liverworts and hornworts are collectively known as bryophytes. They are believed to have been the first plants to colonise the land. They lack true roots, but attach to logs, trees, rocks or soil by hair-like rhizoids through which they take in water and minerals.

Unlike flowering plants, most bryophytes don't have a transport system for conducting water, nor do they have a covering on their leaves that prevents water loss. Instead they have the remarkable ability to absorb water through their leaves and can quickly transform from a dry crisp if they experience prolonged dry periods, to a photosynthesizing green plant once water becomes available. This ability, along with the water they hold on their leaves by surface tension, makes them crucial in maintaining a stable humid atmosphere in forest and other ecosystems.

Ecological roles

Soil-colonising species bind the soil surface, and help to prevent erosion and reduce evaporation.

Mosses and liverworts that grow on the bare surfaces of logs, rocks and soil make ideal seed beds for the germination and establishment of flowering plants.

Bryophytes provide shelter, habitat and food for a range of invertebrates such as insects, mites, snails, worms, amphipods and spiders. Many birds use mosses in their nests.

Thallose liverwort *Marchantia berteroana*.

Palm moss *Hypnodendron vitiense*.

Ferns

Ferns range in size from tiny filmy ferns that are just one cell thick and superficially resemble mosses to tall treeferns that can attain great heights of up to 12 meters.

In the Carboniferous Period (340 million years ago) ancient ferns and giant clubmosses dominated the planet. In the Triassic and Jurassic Periods (245–210 mya) ferns along with cycads and conifers, were the main food of plant-eating reptiles. Their decline at the end of the Cretaceous (145 mya) coincided with the rise of the flowering plants.

Ferns are able to tolerate shaded areas not favoured by flowering plants so they dominate permanently humid places such as close to the Minnow River. Some, especially the familiar bracken fern, also occur in drier areas.

Ecological roles

Ferns provide shade, shelter and food for a range of vertebrate and invertebrate animals. At certain times of the year when other food items are scarce, the endemic Green Rosella feeds on the spores of soft treeferns. Some birds (e.g. the endemic Scrubtit) often nest among the fronds of treeferns and the Tasmanian Boobook has been observed sheltering under the fronds during the day. Pink Robins and pygmy possums use treefern hairs in their nests.

A recent study in Tasmania identified 108 beetle species associated with treeferns. They favour the region at the top of the trunk where leaves, twigs and other organic material accumulates and remains moist. This area is also known to be a hotspot for slime moulds.

Scrambling coral fern *Gleichenia microphylla*.

Common filmyfern *Hymenophyllum cupressiforme*.

Fungi

Numerous fungi in a multitude of colours start to appear after the first rain in autumn on the soil and organic material such as living plants, logs, stumps, branches, twigs and leaf litter. They come in a range of shapes and sizes: there are robust and delicate gilled fungi, and puff balls, corals, discs, brackets and jellies.

Fungi, unlike plants, are unable to photosynthesise so they must get all their nutrients by other means: Saprotrophic fungi get their nutrients from decaying organic matter; parasitic fungi get their from living plants or animals; and mycorrhizal fungi obtain nutrients through mutually beneficial associations with plants.

Ecological roles

The fungi we saw during the July 31st visit to the picnic ground were on rotting logs and stumps. They were all saprotrophic fungi, the group that obtains their nutrients from decaying vegetation. As they perform the important function of breaking down this material, they make nutrients available for other organisms.

Parasitic fungi were nowhere to be seen, possibly because of the time of year or the health of the area. Healthy areas with a diversity of plants and animals are able to withstand attack by parasitic fungi far better than impoverished areas with little plant diversity.

Approximately 95 % of all plant species on Earth have a symbiotic (i.e. mutually beneficial) relationship with mycorrhizal fungi. Nutrients are exchanged through invisible hair-like threads called hyphae that form something akin to a worldwide **underground** web! These threads are pathways for transporting nutrients such as carbon, nitrogen and water. Fungal hyphae effectively extend the plants' root zone ensuring the plants grow faster, are better able to withstand drought, and resist pathogens and weeds. It is believed that the crucial associations between plants and fungi assisted the flowering plants to colonise the land.

Heterotexrus miltinus

Crepidotus 'orange'

Clavulinopsis miniata

Chlorociboria aeruginascens

Bracket fungi

Flammulina velutipes

Hygrocybe graminicolor

Galerina hypnorum

Lichens

Lichens are a fixed partnership between at least two organisms: a fungus and a green alga, a blue-green alga—or both. The alga contain chlorophyll and provides the fungus with food in the form of sugars through photosynthesis. The fungus, which usually makes up the bulk of the lichen, provides the alga with some nutrients and protection from harsh conditions. Lichens with a blue-green algal component are able to fix atmospheric nitrogen. This mutually beneficial relationship allows lichens to inhabit some of the most hostile places on the planet including deserts, mountain tops and rocky seashores subject to salt spray.

Lichens obtain carbon dioxide, oxygen and inorganic nutrients from air and water. Because they are extremely efficient at absorbing water from mist, fog, dew and run-off they are very susceptible to atmospheric pollutants and can not survive in highly polluted areas.

In most areas the number of lichens far exceeds the number of flowering plants. For example, in rainforest there are usually four times more lichen species than flowering plants.

The identification of lichens is very difficult and often requires the use of highly toxic substances.

Ecological roles

Lichens quickly colonise bare soil which helps to retain moisture and prevent erosion. They physically and chemically break down rocks and contribute to soil formation.

Lichens contribute to nutrients in rainforests. Species are blown from the treetops, land on the ground and add nutrients to the soil. Some species fix atmospheric nitrogen; others trap nutrients from rain and mist.

Many birds use lichens in their nests. For instance, the Pink Robin decorates the outside of its nest with flakes of leafy lichens.

Menagazzia sp. on dogwood near the Minnow River.

Several species of crustose lichens on a rock at the Minnow picnic ground.

Slime moulds (Myxomycetes)

Slime moulds appear in similar habitats to fungi and, like fungi, they reproduce by spores. However, slime moulds are not fungi, and after a varied taxonomic history which has seen them placed in the plant, fungi and animal kingdoms, slime moulds are now classified as Amoebozoans.

Slime moulds have two completely different feeding stages. From their spores come single-celled amoebae that feed mainly on bacteria in the soil. Their second feeding stage—the plasmodial stage—feeds in the soil or on woody substrates on bacteria, algae, fungi, possibly lichens, and each other.

When conditions are favourable, the plasmodia start to transform to fruiting bodies. The average size is about 2 mm high, but they can be large amorphous blobs up to 10 cm across, or tiny stalked species little more than 0.1 mm high.

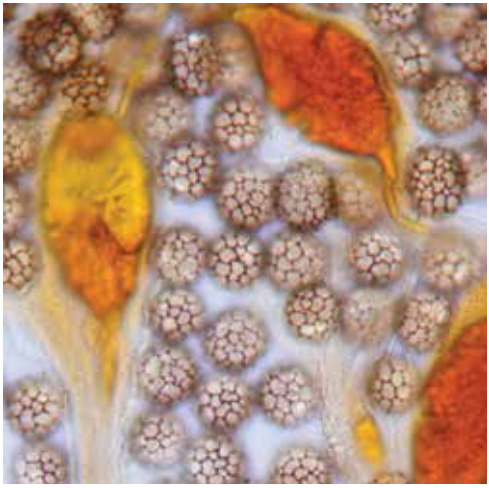
Slime moulds are ephemeral and apart from the larger species, most are difficult to find, let alone identify. Microscopic examination of their spores and other features is needed for positive identification.

Ecological roles

Slime moulds are thought to have little or no economic value so they are usually overlooked in biodiversity surveys. Furthermore, their small size and unpredictable appearance means their ecological roles are difficult to assess. However, as they feed on bacteria at both their amoeboid and plasmodial stages, they are likely to be important in controlling populations of bacteria. Some species can remove toxic metals such as zinc from old mining sites.

Slime moulds provide food for a range of invertebrates. Collembola (springtails) feed on plasmodia and developing fruiting bodies and a range of beetle species feed on their spores.

An extensive colony of *Trichia* sp. was collected from a fallen eucalypt at Minnow Creek.



Spores of *Elaeomyxa reticulospora,* a slime mould found at the Minnow picnic ground.

Flowering Plants

Flowering plants started to dominate the Earth at the end of the Cretaceous Period about 145 million years ago and are now the most species diverse plant group.

Ecological roles

Flowering plants—and all plants containing chlorophyll such as mosses, liverworts and algae—photosynthesise. Photosynthesis is a process by which carbon dioxide, water, and certain inorganic salts are converted into carbohydrates using chlorophyll and energy from the sun. A by-product of photosynthesis is oxygen which is important in making the planet habitable by other organisms.

Flowering plants are abundant in most terrestrial ecosystems. Different species have evolved to cope with different climatic conditions and soil types. For example, the range of species that thrive on the exposed sunny slopes at Kenzies Hill is very different from the species adapted to grow in shady riparian areas along the Minnow River.

Rapidly germinating species such as silver wattle and fireweed quickly colonise cleared areas. They shade the soil, help prevent erosion and protect the seedlings of plants that are slower to germinate.

Invertebrates—especially insects—live within the roots, branches and trunks of flowering plants where they feed on living or dead plant tissue. Some (e.g. bees) are specialised to feed on pollen, while others (e.g. weevils) feed almost exclusively on seeds. Spiders also live on plants where they hunt or ambush insects.

Marsupials such as pademelons and wallaby shelter during the day in the understorey; in the evenings they emerge to browse on grasses, sedges and shrubs.

Birds are dependent on flowering plants for shelter, nesting sites, and food in the form of nectar or seeds. Many Tasmanian bird species feed on insects, spiders and other invertebrates that themselves are dependent on plants for food and habitat.

Seed pods of Christmas mintbush *Prostanthera lasianthos*.

New growth on mountain clematis *Clematis aristata*.

Invertebrates

Invertebrates—snails, earthworms, spiders, millipedes, centipedes, springtails, crustaceans and insects—comprise over 90% of the world's fauna. They dominate the processes of aquatic and terrestrial ecosystems.

Cicadas are conspicuous insects because of their loud sounds. Their nymphs live in underground cells where they feed by sucking root sap. After 9 months to several years mature cicadas come to the soil surface and emerge from their nymphal skins.

Many plants have galls, structures that are formed by a plant in response to the presence of an invertebrate such as a mite, fly, beetle, moth or wasp. Some resemble flower buds.

Ecological roles

Soil-dwelling species such as worms and millipedes influence the structure of the soil. Bees and other insects regulate plant diversity by pollinating and dispersing seeds. Herbivorous species break down organic matter; predators and parasites control population of other animals and spiders control insect populations.

In turn, invertebrates are an important food source for birds, mammals and each other.

Cicada exoskeleton found on eucalypt bark.

Galls on dollybush (*Cassinia aculeata*)

Galls on a eucalypt leaf.

Birds

Birds are colourful, vocal and active so they are the most conspicuous component of the fauna. Many of the species observed in the Minnow catchment are endemic in Tasmania i.e. they are found nowhere else on Earth.

Ecological roles

Many of Tasmania's forest birds—including the robins, endemic honeyeaters, currawongs and whistlers—feed on invertebrates, especially insects and spiders. They are very important in keeping trees and other places free of species that may reach pest status if left unchecked.

Nectar-feeding birds help to pollinate plants, and fruit and seed-eating species perform a crucial ecological role of spreading seeds away from parent plants.

Raptors such as Wedge-tailed Eagles, hawks and falcons prey on living or dead animals. Introduced species including starlings, sparrrows, rabbits and mice form the main part of their diet where native animals have declined. Thus they are among the few species that control numbers of introduced species. Raptors keep prey populations healthy by taking weak, deformed and old individuals. Some clean up animal carcasses, especially road-kills.

Species lists

The following species lists were compiled during field trips to the Minnow Picnic Ground, Minnow River (MR1), Minnow Creek, Kenzies Hill and the headwaters of the Minnow River on the Mount Roland Plateau. Several hours were spent at some of the sites which resulted in reasonably comprehensive lists. Less time was spent at the Minnow River (MR1) so fewer species were recorded there.

More species than listed will be recorded in different seasons. For example, the surveys began at the end of the peak season for fungi, and ended before plants started to flower and invertebrates (particularly insects) were active.

Many species of moss, liverworts and lichens require specialists knowledge and texts to identify. Therefore, additional species in these groups are likely to be present at the survey sites. Common names of plants can be found online:
http://dpipwe.tas.gov.au/Documents/Common_names_booklet.pdf

All photographs in this booklet were taken either during the surveys or they were taken at home of samples collected during the field trips. For example the images of the leaf structure of the mosses and liverworts were taken with a camera mounted on a compound microscope, as was the image of slime mould spores on page 13. The photos of the seeds of the mintbush (p. 14) and the slime mould (p. 13) were taken with a camera on a stereo microscope using the photo stacking technique.

Abbreviations: (e) = endemic (found only in Tasmania); (m) = migratory; (i) = introduced; sp. = species singular; spp. = species plural; subsp. = subspecies.

N.B. populations of some species (e.g. Welcome Swallow) are partially migratory.

Minnow Picnic Ground 41°27′42.5″S 146°20′24.4″ E

Birds
Crescent Honeyeater
Silvereye
Tasmanian Scrubwren (e)
Forest Raven
Tasmanian Thornbill (e)
Grey Currawong
Green Rosella (e)
Pink Robin
Grey Fantail
Spotted Pardalote
Grey Shrike-thrush
Golden Whistler
Olive Whistler

Fungi
Amauroderma rude
Ascocoryne sarcoides
Bisporella citrina
Byssomerulium coreum
Calocera guepinioides
Chlorociboria aeruganescens
Chromocyphella muscicola
Clavaria amoena
Clavaria miniata
Deconica horizontalis
Discanella terrestris
Flamulina velutipes
Galerina hypnorum
Ganoderma australe
Heterotextus miltinus
Hygrocybe graminicolor
Laccaria sp.
Marasmiellus affixus
Marasmius 'angina'
Mycena interrupta
Pseudohydnum gelatinosum
Rhodocollybia butyracea
Scleroderma cepa
Singerocybe clitocyboides

Flowering Plants
Acacia dealbata
Acacia melanoxylon
Acacia mucronata
Acaena novae-zealandiae
Cassinia aculeata
Chiloglottis triceratops
Clematis aristata
Coprosma quadrifida
Dianella tasmanica
Eucalyptus obliqua
Eucalyptus regnans
Gahnia grandis
Gonocarpus teucrioides
Hydrocotyle hirta
Lomandra longifolia
Melaleuca ericifolia
Monotoca glauca
Notelea ligustrina
Nothofagus cunninghamii
Persoonia juniperina
Pimelea drupacea
Pittosporum bicolor
Pomaderris apetala
Prostanthera lasianthos
Pterostylis nutans
Pterostylis pedunculata
Pultanea juniperina
Viola hederaceae
Zieria arborescens

Slime moulds
Colloderma robustum
Elaeomyxa reticulospora

Invertebrates
Giant Freshwater lobster (e)

Ferns
Bechnum nudum
Blechnum watsii
Dicksonia antarctica
Gleichenia microphylla
Hymenophyllum cupressiformis
Polystichum proliferum
Pteridium esculentum
Rhumora adiantiformis
Sticheris tener

Moss
Achrophyllum dentatum
Atrichum androgynum
Hypnodendron vitiense
Macromitrium archeri
Orthotrichum tasmanicum
Ptychomnion aciculare
Rosulabryum billarderi

Liverworts
Frullania spp.
Metzgeria sp.

Lichens
Graphis librata
Cladia sp.
Cladonia sp.
Usnea sp.

Minnow River (MR1) 41°29′04.4″ S 146°19′18.7″ E

Flowering Plants
Acacia dealbata
Acacia mucronata
Anopteris glandulosus
Billardiera longiflora (e)
Coprosma quadrifida
Epacris impressa
Eucalyptus obliqua
Exocarpos cupressiformis
Lomatia tinctoria (e)
Monotoca glauca
Nothofagus cunninghamii
Olearia argophylla
Pomaderris apetala
Prostanthera lasianthos
Tasmannia lanceolata
Zieria arborescens

Fungi
Cantharellus concinnus
Galerina hypnorum
Hydnum repandum
Leotia lubrica
Mycena interrupta
Oudemansiella gigaspora
Podoserpula pusio
Stereum ostrea

Ferns
Bechnum nudum
Dicksonia antarctica
Histiopteris incisa
Hypolepis rugosula
Pteridium esculentum

Birds
Superb Fairy-wren

Moss
Campylopus bicolor

Kenzies Hill 41°28′11.2″ S 146°21′03.5″E

Birds
Grey Fantail
Striated Pardalote (m)
Spotted Pardalote
Golden Whistler
Black-headed Honeyeater
Brown Thornbill
Superb Fairy-wren
Olive Whistler
Superb Fairy-wren

Fungi
Calocera guepinioides
Collybia eucalyptorum
Marasmiellus affixus

Ferns
Bechnum nudum
Blechnum watsii
Dicksonia antarctica
Pteridium esculentum

Flowering Plants
Acacia dealbata
Acacia melanoxylon
Acacia verticillata
Bedfordia salicina (e)
Clematis aristata
Coprosma quadrifida
Dianella tasmanica
Dichondra repens
Drymophyla cyanocarpa
Epacris impressa
Eucalyptus amygdalina (e)
Eucalyptus obliqua
Eucalyptus viminalis
Exocarpos cupressiformis
Gahnia grandis
Galium australe
Geranium potentilloides
Gonocarpus teucrioides
Hydrocotyle hirta
Leptomeria drupacea
Lomandra longifolia
Lomatia tinctoria (e)
Olearia lirata
Pimelea drupacea
Pittosporum bicolor
Poranthera microphylla
Pultanea daphnoides var. *obcordata*
Pultanea juniperina
Senecio linearifolius
Viola hederaceae

Minnow Creek 41°28′25.5″S 146°19′03.5″ E

Birds
Golden Whistler
Green Rosella
Grey Fantail
Grey Shrike-thrush
Olive Whistler
Pink Robin
Silvereye
Superb Fairy-wren
Tasmanian Scrubwren (e)

Fungi
Amauroderma rude
Claussenomyces australia
Clavaria (single white club)
Galerina hypnorum
Ganoderma australe
Hymenoscyphus (white discs)
Laccaria sp.
Leotia lubrica
Multiclavula mucida

Slime moulds
Trichia spp.

Lichens
Coenogonium implexum
Cladia sp.
Baeomyces heteromorphus

Flowering Plants
Acacia dealbata
Atherosperma moschatum
Clematis aristata
Eucalyptus obliqua
Eucalyptus regnans
Hydrocotyle hirta
Muehlenbeckia gunnii
Olearia argophylla
Pittosporum bicolor
Pomaderris apetala
Zieria arborescens

Liverworts
Hymenophyton flabellatum
Frullania sp.

Invertebrate
Geoplanus sugdeni

Ferns
Bechnum nudum
Blechnum watsii
Dicksonia antarctica
Grammitis billardierei
Histiopteris incisa
Hymenophyllum flabellatum
Microsorum pustulatum
Polyphlebium venosum
Polystichum proliferum
Rhumora adiantiformis
Tmesipteris obliqua

Moss
Atrichum androgynum
Cyathophorum bulbosum
Hypnodendron vitiense
Lembophyllum divulsum
Lopidium concinnum
Ptychomnion aciculare
Rhizogonium novae-hollandiae
Weymouthia cochlearifolia

Atrichum androgynum capsule.

Atrichum androgynum leaf detail (400x).

Orthotrichum tasmanicum leaf detail (400x).

Minnow River - Mt Roland Plateau 41°27′58.7″S 146°16′08.1″E

Plants

Acacia dealbata
Acacia melanoxylon
Acacia mucronata
Allocasuarina monilifera
Amperea xiphoclada
Atherosperma moschatum
Banksia marginata
Bauera rubioides
Bedfordia salicina (e)
Cassinia aculeata
Cassytha sp.
Chiloglottis sp.
Clematis aristata
Coprosma quadrifida
Correa lawrenciana
Dianella tasmanica
Drymophylla cyanocarpa
Epacris impressa
Epacris lanuginosa
Epacris serpyllifolia (e)
Eucalyptus amygdalina (e)
Eucalyptus coccifera (e)
Eucalyptus obliqua
Eucalyptus pauciflora
Eucalyptus regnans
Eucalyptus viminalis
Gahnia grandis
Gonocarpus sp.
Gymnoschoenus sphaerocephalus
Hydrocotyle hirta
Leptecophylla juniperina
Leptospermum scoparium
Leucopogon collinus
Leucopogon oreophilus (e)
Melaleuca squamea
Melaleuca squarrosa
Monotoca glauca
Muehlenbeckia gunnii
Nothofagus cunninghamii

Necklace sheoak *Allocasuarina monilifera*

Rigid candleheath *Richea sprengelioides* (e)

Notolea ligustrina
Olearia argophylla
Olearia lirata
Oxylobium ellipticum
Pimelea drupacea
Pomaderris apetala
Prostanthera lasianthos
Richea sprengelioides (e)
Thelymitra sp.
Urtica incisa
Zieria arborescens

Fungi

Calocera guepinioides
Clavaria miniata
Discinella terrestris
Geoglossum sp.
Heterotextus peziformis
Hymenoscyphus (bruising orange)
Lactarius eucalypti
Lycoperdon pyriforme
Melanotus hepatochrous
Pluteus atromarginatus
Stereum sp.
Trametes sp.
Tremella fusiformis

Mosses and Liverworts

Cyathophorum bulbosum
Frullania sp.
Marchantia berteroana
Polytrichum juniperinum
Ptychomnion fasciculare
Rosulabryum billarderi
Sphagnum sp.

Slime Moulds

Trichia decipiens
Trichia sp.
Stemonitis sp.

Frog

Crinia tasmaniensis (e)

Swamp paperbark *Melaleuca squamea*

Silver banksia *Banksia marginata*

Minnow River - Mt Roland Plateau

Birds

Wedge-tailed Eagle (endemic subsp.)
Brush Bronzewing
Yellow-tailed Black-Cockatoo
Sulphur-crested Cockatoo
Green Rosella (e)
Pallid Cuckoo
Fan-tailed Cuckoo (m)
Horsfield's Bronze Cuckoo (m)
Shining Bronze-Cuckoo (m)
Laughing Kookaburra (i)
Superb Fairy-wren
Spotted Pardalote
Striated Pardalote (m)
Tasmanian Scrubwren (e)
Brown Thornbill
Tasmanian Thornbill (e)
Yellow-rumped Thornbill
Yellow Wattlebird (e)
Yellow-throated Honeyeater (e)
Strong-billed Honeyeater (e)
Black-headed Honeyeater (e)
Crescent Honeyeater
Eastern Spinebill
Scarlet Robin
Flame Robin
Pink Robin
Dusky Robin (e)
Olive Whistler
Golden Whistler
Grey Shrike-thrush
Grey Fantail (m)
Dusky Woodswallow (m)
Grey Butcherbird
Black Currawong (e)
Grey Currawong
Forest Raven
Beautiful Firetail
Greenfinch
Goldfinch (i)

Sphagnum moss *Sphagnum* sp.

Case moth

Welcome Swallow (m)
Silvereye (m)
Common Blackbird (i)

Ferns

Asplenium terrestre
Dicksonia antarctica
Gleichenia alpina
Grammitis billardierei
Grammitis magellanica
Histiopteris incisa
Hymenophyllum cupressiforme
Hymenophyllum flabellatum
Hypolepis rugosula
Peridium esculentum
Phymatosorus pustulatus
Polystichum proliferum
Rumohra adiantiformis
Tmesipteris obliqua

Lichens

Baeomyces heteromorphus
Cladia aggregata
Cladia retipora
Cladina confusa
Cladonia spp.
Menegazzia spp.
Metus conglomeratus
Peltigera dolichorhiza
Pseudocyphellaria billardierei
Pseudocyphellaria multifida
Usnea sp.

Invertebrates

Myrmecia sp. (jack jumpers)
Case moth
Geoplanus sugdeni (canary worm)

N.B. The Minnow River - Mount Roland plateau list includes species observed from the start of the walking track at O'Neill's Road.

Lichen *Pseudocyphellaria billardierei*

Wiry bauera *Bauera rubioides*

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