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LICHENS OF SOUTH WEST TASMANIA

PART III FORESTS

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THIS note is an extension of the preliminary lichen species listing given in Parts I and II and hence the same limitations, boundaries, definitions and abbreviations apply. The further limitations in this listing arise from the superabundance of lichens in the forested areas which makes it difficult to discern the smaller and less common species. Further material would be appreciated particularly from the forests surrounding mountain tarns, the interiors of the dense "horizontal" forests, and from the remaining "Huon Pine" stands.

The available records show considerable similarity in lichen flora for areas of similar forest type and hence considerable generalization has been made in the species listing of Table 1.

Six forest types and their associated lichen floras or communities are distinguished in Table 1. Types 1 and 2 (Mixed Nothofagus - Eucalyptus and dense Rain Forests) would account for the greatest proportion of the forests in the Southwest and also for the greatest biomass of lichens. The lichen floras of these two types of forest are basically identical although there is a greater variety and a much greater biomass in the dense rain forest. It appears that the lower illumination and perhaps a higher permanent humidity in the dense rain forest areas favours a prolific growth particularly of Pseudocyphellaria sp. and Sticta filix. Most of the species are common and weedy.

TABLE 1 - LICHENS OF THE FOREST OF S. W. TASMANIA

Type 1 Mixed Nothofagus - Eucalyptus Forest

e.g. Logging areas north of Mt. Wedge, West of Mt. Mueller, Arve Rd.

<i>Anzia angustata</i>	Fo, T, 3	<i>Pseudocyphellaria hirta</i>	Fo, T, 3
<i>Cladia aggregata</i>	Fr, T, 2	" <i>pseudosticta</i>	Fo, T, 1
" <i>schizopora</i>	Fr, T, 4	" <i>rubella</i>	Fo, T, 3
<i>Gymnoderma melacarpum</i>	SFr, T, 4	<i>Psoroma sphinctrinum</i>	SFo, T, 2
<i>Menegazzia weindorferi</i>	Fo, T, 2	<i>Sagenidium molle</i>	SFr, T, 4
<i>Nephroma australe</i>	Fo, T, 4	<i>Sphaerophorus melanocarpus</i>	Fr, T, 1
" <i>cellulosum</i>	Fo, T, 2	" <i>tener</i>	Fr, T, 1
<i>Pseudocyphellaria billardieri</i>	Fo, T, 1	<i>Sticta filix</i>	Fo, T, 1
" <i>flotowiana</i>	Fo, T, 1	<i>Usnea capillacea</i>	Fr, T, 3

Type 2 Dense Rain Forest - *Nothofagus*, *Anodopetalum*, etc.
e. g. South slopes Sentinel Range, Northern slopes Mt. Wedge,
Forest Walk Scott's Pk. Rd., Serpentine Dame Rd.

<i>Anzia angustata</i>	Fo, T, 3	<i>Pseudocypbellaria hirta</i>	Fo, T, 2
<i>Collema laeve</i>	Fo, T, 4	" <i>pseudosticta</i>	Fo, T, 1
" <i>leucocarpum</i>	(1) Fo, T, 2	" <i>punctillar</i>	Fo, T, 4
<i>Dendriscoaulon umhausensis</i>	Fr, T, 4	" <i>rigidula</i>	Fo, T, 4
<i>Hypogymnia lugubris</i>	Fo, T, 2	" <i>rubella</i>	Fo, T, 2
<i>Lecidea cinnabarina</i>	C, T, 3	" <i>scabrosa</i>	Fo, T, 4
<i>Menegazzia weindorferi</i>	Fo, T, 2	<i>Sagenidium molle</i>	SFr, T, 2
<i>Nephroma australe</i>	Fo, T, 4	<i>Siphula decumbens</i>	Fr, T, 2
<i>Pertusaria nothofagii</i>	C, T, 2	<i>Sphaerophorus melanocarpus</i>	Fr, T, 1
<i>Phaeographis dendritica</i>	C, T, 4	" <i>tener</i>	Fr, T, 1
<i>Pilophorus conglomeratum</i>	Fr, T, 4	<i>Sticta filix</i>	Fo, T, 1
<i>Pseudocypbellaria billardierii</i>	Fo, T, 1	<i>Usnea capillacea</i>	Fr, T, 1
" <i>cinnamomea</i>	Fo, S, 1	" <i>xanthopoga</i>	Fr, T, 1
" <i>flotowiana</i>	Fo, T, 1	"	

(1) Exact status presently under investigation. Also known as *Polychidium umhausensis*

Type 3 Old very mixed forest, *Nothofagus*, *Melaleuca*,
Dacridium and *Banksia*
e. g. Lake Judd and Islet Lake

<i>Cladia aggregata</i>	Fr, S, 2	<i>Pseudocypbellaria pseudosticta</i>	Fo, T, 3
<i>Cladina impexa</i>	Fr, S, 4	<i>Psoroma asperellum</i>	SFo, T, 3
<i>Cladoniopsis caespitosa</i>	Fr, R, 4	" sp. (3)	SFo, T, 3
<i>Ephebe fruticosa</i>	SFr, R, 4	" <i>sphinctrinum</i>	SFo, T, 3
<i>Hypogymnia lugubris</i>	Fo, T, 3	<i>Siphula decumbens</i>	Fr, T, 4
<i>Menegazzia bullata</i>	Fo, T, 3	<i>Sphaerophorus melanocarpus</i>	Fr, T, 3
" <i>weindorferi</i>	Fo, T, 3	" <i>tener</i>	Fr, T, 3
<i>Pertusaria</i> sp. (2)	C, S, T, 1	<i>Usnea oncodes</i>	Fr, T, 3
<i>Pseudocypbellaria billardierii</i>	F, T, 3		

(2) Undescribed Tasmanian endemic

(3) Known elsewhere from Tasmania but presently undetermined.

Type 4 Low *Melaleuca*-*Leptospermum* Groves
e. g. Banks of Huon beyond Blake's Opening

<i>Anzia angustata</i>	Fo, T, 4	<i>Pseudocypbellaria hirta</i>	Fo, T, 3
<i>Coccocarpia gayana</i>	Fo, T, 2	" <i>pseudosticta</i>	Fo, T, 3
<i>Collema leucocarpum</i>	Fo, T, 3	" <i>rigida</i>	Fo, T, 4
<i>Leptogium brebissonii</i>	Fo, T, 3	" <i>rubella</i>	Fo, T, 2
<i>Nephroma australe</i>	Fo, T, 2	<i>Psoroma contextum</i>	SFo, T, 2
" <i>cellulosum</i>	Fo, T, 1	" <i>durietzii</i>	SFo, T, 2
<i>Parmeliella pycnophora</i>	Fo, T, 1	" <i>leptolomum</i>	SFo, T, 2
<i>Peltigera polydactyla</i>	Fo, T, S, 3	<i>Sticta limbata</i>	Fo, T, 2
<i>Pseudocypbellaria faveolata</i>	Fo, T, 2		

Type 5 Isolated Islands of Eucalyptus, Melaleuca,
Pittosporum and Phyllocladus
in button Grass Plains, e. g. Upper Olga Valley

<i>Leptogium scotinum</i>	Fo, T, 4	<i>Psoroma reticulatum</i>	SFo, T, 4
<i>Pseudocyphellaria billardieri</i>	Fo, T, 3	" <i>soccatum</i>	SFo, T, 2
" <i>colensoi</i>	Fo, T, 4	" <i>sphinctrinum</i>	SFo, T, 2
" <i>flotowiana</i>	Fo, T, 2	<i>Psoromaria descendens</i>	SFo, T, 4
" <i>hirta</i>	Fo, T, 4	<i>Sphaerophorus melanocarpus</i>	Fr, T, 2
" <i>pseudosticta</i>	Fo, T, 2	" <i>tener</i>	Fr, T, 2
" <i>rubella</i>	Fo, T, 2	<i>Sticta filix</i>	Fo, T, 2
<i>Psoroma asperellum</i>	SFo, T, 2	<i>Usnea oncodes</i>	Fr, T, 2

Type 6 Sparse Eucalyptus Forest
e. g. Ragged Range Slopes

<i>Anzia angustata</i>	Fo, R, 4	<i>Pseudocyphellaria flotowiana</i>	Fo, T, 4
<i>Coccotrema curcubitula</i>	C, R, 3	" <i>hirta</i>	Fo, R, 4
<i>Hypogymnia lugubris</i>	Fo, R, 2	" <i>pseudosticta</i>	Fo, R, 1
<i>Menegazzia cf albida</i>	Fo, R, 2	" <i>rubella</i>	Fo, T, 4
<i>Peltigera dolichorrhiza</i>	Fo, S, 3	<i>Sphaerophorus tener</i>	Fr, R, 1
<i>Nephroma australe</i>	Fo, R, 4	<i>Sticta filix</i>	Fo, R, 2
<i>Parmelia signifera</i>	Fo, R, 1	<i>Thelidea corrugata</i>	Fo, S, 3
" <i>sinuosa</i>	Fo, R, 4	<i>Usnea sp.</i>	Fr, R, 2
		<i>Xanthoparmelia mougeotiana</i>	SFo, R, 1

Type 3 communities have only been identified at two localities, Lake Judd and Islet Lake, but is expected to occur in unburnt forests fringing the many mountain tarns in the southwest. It appears to be characterised by a small lichen population both in number and abundance of species. A curiosity is the recently discovered and as yet undescribed Tasmanian endemic *Pertusaria* species (known only from the two area mentioned above) in which the spores are sufficiently large to be seen with the unaided eye when they burst from the fruiting body in a jelly like mass.

Type 4 forests (mixed groves of *Leptospermum* and *Melaleuca*) are common around the rivers of the southwest, but the particular community of lichens and forest type has only been located once in the Huon Valley. All of the species listed for this community are known from other parts of the State, but in no other area so far examined has there been such a rich assemblage of normally rare species particularly *Coccocarpia gayana* and *Parmeliella pycnophora*.

The isolated islands of trees in button grass plains (Type 5) and the open *Eucalyptus* stands (Type 6) were expected to have floras similar to those button grass areas described in Part I of this series, but appear to have rather unusual lichen floras maybe as a result of the existence of two rather unusual substrates. In Type 5 forests *Psoromaria descendens* was found on *Melaleuca squamea* and this is the first record of this species for Tasmania and Australia. In Type 6 forests the occurrences of two *Xanthoparmelia* species, *X. mougeotiana* and *X. sinuosa* on Quartz conglomerate are considered unusual.

There are quite likely other communities which have not yet been described in any of the three parts of the present series and further work is obviously desirable at the earliest opportunity.

Three anthropological effects may alter the existing lichen flora - flooding, timber cutting and fires (controlled or wild). Flooding may destroy some of the dense rain forest areas in the river valleys but investigation to date shows that the loss would be of common (in other parts of the State) weedy species. Loss of "Huon Pine" Stands may be more serious as these have not yet been examined. Timber cutting in the area will increase illumination and hence temporarily destroy shaded habitats causing Type 2 communities to temporarily degenerate into Type 1 communities. Fires in such areas will have disastrous temporary effects. However, because of the high rainfall in the area regeneration after cutting and fires is expected to be rapid and the communities would be expected to be restored in a reasonable time provided unburnt pockets remain to supply lichen propagules. Fires from unextinguished camp fires near mountain tarns are likely to be particularly destructive of Type 3 communities which may require centuries to regenerate.

BIRDS OF THE GRANVILLE HARBOUR DISTRICT

Peter Fielding

CONTINUED - from August

- | | | |
|----------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SWAMP HARRIER | <u>Circus approximans</u> | Single birds seen at Granville Harbour and Zeehan. |
| BROWN FALCON | <u>Falco berigora</u> | Fairly common Granville Harbour. One at Zeehan. |
| BROWN QUAIL | <u>Synoicus ypsilophorus</u> | Fairly common at Granville Harbour and present at Trial Harbour and Zeehan. |
| TASMANIAN NATIVE HEN | <u>Tribonyx inortierii</u> | Has become established at Granville Harbour over the last five years spreading down the coast from the Pieman River mouth. Occasional at Fen Creek near the Little Henty River mouth. |
| PIED OYSTERCATCHER | <u>Haematopus ostralegus</u> | Small numbers at Granville Harbour, the mouth of the Little Henty River and George Town Packet Creek. |
| SPUR-WINGED PLOVER | <u>Vanellus miles</u> | Common Granville Harbour to Hoyle Creek. Also recorded at Zeehan. |
| BANDED PLOVER | <u>V. tricolor</u> | Present at Granville Harbour. |
| RED-CAPPED DOTTEREL | <u>Charadrius alexandrinus</u> | Two at the Little Henty River mouth in Mar. 1976. |
| JAPANESE SNIPE | <u>Gallinago hardwickii</u> | Occasional visitor to Granville Harbour and Zeehan. |

- PACIFIC GULL Larus pacificus Recorded at the Little Henty River mouth, Trial and Granville Harbours.
- SILVER GULL L. novaehollandiae Common along the coast.
- CRESTED TERN Sterna bergii Common Granville and Trial Harbours. Also recorded near the mouth of the Little Henty River.
- BRUSH BRONZEWING Phaps elegans Common in a variety of habitats including gorse, scrub, bracken and forest.
- YELLOW-TAILED BLACK COCKATOO Calyptorhynchus funereus Common Granville Harbour. Flock at the Little Henty River near Zeehan.
- GREEN ROSELLA Platycercus caledonicus Common and widespread in a variety of wooded habitats, occasionally in paddocks.
- GROUND PARROT Pezoporus wallicus One near Big Rocky Creek, 2 near Granite Creek and one at Zeehan Dam.
- FAN-TAILED CUCKOO Cacomantis pyrrhophanus Recorded at Zeehan
- BOOBOOK OWL Ninox novaeseelandiae Recorded at Granville Harbour and the Little Henty River 12 km south of Zeehan.
- SPINE-TAILED SWIFT Hirundapus caudacutus Common and widespread during March.
- WELCOME SWALLOW Hirundo neoxena Common and widespread in light vegetation, on beaches and along waterways.
- TREE-MARTIN Petrochelidon nigricans Less common than the previous species. Found in similar habitats and in lightly wooded areas.
- AUSTRALIAN PIPIT Anthus novaeseelandiae Common and widespread in button grass.
- BLACK-FACED CUCKOO-SHRIKE Coracina novaehollandiae Recorded at Granville Harbour and near Piney Creek.
- AUSTRALIAN GROUND-THRUSH Zoothera dauma Seen in rainforest east of Mt. Heemskirk.
- BLACKBIRD Turdus merula Common at Granville Harbour. Present at Zeehan and seen in mixed forest near Zeehan.
- SUPERB BLUE WREN Malurus cyaneus Common in a variety of habitats.
- SOUTHERN EMU-WREN Stipiturus malachurus Common in sedgeland and habitats with low shrubs.
- TASMANIAN THORNBILL Acanthiza ewingi Common in timbered areas from dense forest to scattered low trees and shrubs in sedgeland.

- BROWN SCRUB-WREN Sericornis humilis Common in dense low vegetation.
- FIELD-WREN Calamanthus fuliginosus Common in areas with low vegetation.
- WHITE-FRONTED CHAT Epthianura albifrons One male on a marshy headland near Granville Harbour.
- SCARLET ROBIN Petroica multicolor Recorded at Granville Harbour.
- FLAME ROBIN P. phoenicia Recorded at Zeehan, Granville Harbour and between the Heemskirk River and Stoney Creek.
- DUSKY ROBIN P. vittata Common in a variety of habitats ranging from forest to sedgeland.
- GREY FANTAIL Rhipidura fuliginosa Common in most habitats with trees.
- GOLDEN WHISTLER Pachycephala pectoralis Single birds at Granville Harbour and near Piney Creek.
- OLIVE WHISTLER P. olivacea Present at Granville Harbour. Single birds seen near Zeehan, near Piney Creek and in gorse near the Little Henty River.
- GREY SHRIKE-THRUSH Colluricincla harmonica Common in most forest and scrub habitats.
- GREY-BREASTED SILVEREYE Zosterops lateralis Recorded at Trial and Granville Harbours.
- YELLOW-THROATED HONEYEATER Meliphaga flavicollis Common in forest and scrub.
- STRONG-BILLED HONEYEATER Melithreptus validirostris Small flocks seen at Trial Harbour and along the Granville Harbour road.
- CRESCENT HONEYEATER Phylidonyris pyrrhoptera Common and widespread in a wide variety of habitats ranging from dense forest to patches of scrub in sedgeland.
- NEW HOLLAND HONEYEATER P. novaehollandiae Common in flowering Banksia scrub at Trial and Granville Harbour.
- TAWNY-CROWNED HONEYEATER Gliciphila melanops Fairly common in gardens and coastal scrub at Granville Harbour.
- EASTERN SPINEBILL Acanthorhynchus tenuirostris Common between Hoyle Creek and Zeehan in March. Also recorded at Trial Harbour.
- BEAUTIFUL FIRETAIL Emblema bella Common in a variety of habitats ranging from forest to sedgeland.
- HOUSE SPARROW Passer domesticus Common Granville Harbour and Zeehan.

- GOLFINCH Carduelis carduelis Fairly common in forest and scrub.
- GREENFINCH Chloris chloris Seen in coastal scrub near Granville Harbour.
- STARLING Sturnus vulgaris Common Granville Harbour, Trial Harbour and Zeehan. Also recorded along coast in uninhabited areas.
- BLACK CURRAWONG Strepera fuliginosa Common in a variety of habitats.
- FOREST RAVEN Corvus tasmanicus Common and widespread, ranging from dense forest to beaches. Most of the beach flocks in Mar. 1976 were of immature birds.

WHITEBAIT

P. Andrews

THE name "whitebait" is the term almost universally applied to the small slender transparent fishes which migrate seasonally in large shoals up rivers and estuaries where they are caught and used as food. In some instances whitebait consists of the juvenile stages of a number of fairly common marine species. European whitebait, for example, consists of a mixture of herrings, sprats, gobies etc., whereas the whitebait of Australia and New Zealand consists predominantly of a single species.

The large commercial whitebait fishery of New Zealand is based entirely on fishes of the family Galaxiidae, commonly known as jollytails or native trout, which is a group of small freshwater fishes found only in the southern hemisphere. The common jollytail Galaxias maculatus (Jenyns) forms the main bulk of the New Zealand whitebait catch although McDowall (1) has found that other galaxiid species are often present in considerable numbers.

The Tasmanian whitebait fishery, like that of New Zealand, is also based on a single species only in this case it is a small endemic species known as the Derwent Smelt or Whitebait, Lovettia sealii (Johnston). This small fish is a member of the family Aplochitonidae, which also includes the grayling, Prototroctes maraena Gunther, and is very closely related to both the Galaxiidae and the Retroponnidae (smelts). Fishes of the family Galaxiidae also occur widely in Tasmania but only rarely do they appear in whitebait catches.

The Tasmanian whitebait is a small species which grows to about 50 mm in length and is entirely restricted to the Tasmanian mainland. Although it has been recorded from the lower reaches of most Tasmanian rivers only in a few does it occur in commercial quantities. These are mainly the rivers of the north from Bridport west to Smithton and a few southern rivers principally the Huon, Esperance and Derwent.

The species has an unusual life cycle. The eggs are laid during the spring months on sticks, weed, rocks etc. in the spawning areas which are located in the upper reaches of the estuaries. Hatching takes place between 15 and 20 days later and the larvae are washed out to sea where they grow to maturity, returning the following spring to migrate back up the rivers. The fish are caught commercially during this period by placing suitable nets in the path of the long ribbon-like shoals as they move up towards the spawning areas. After spawning the life cycle has been completed and almost all the spent fish die.

Although it is classified as a freshwater species Lovettia sealii spends most of its growing life in the sea. This is a distinct advantage in a freshwater species as it enables the growing larvae to exploit the rich plankton fauna of the sea rather than having to depend on the less abundant and less reliable food reserves of freshwater areas.

The Tasmanian whitebait fishery dates from the early 1940's when a local firm began canning operations. From 1941 to 1950 the annual catch rose rapidly, reaching a peak during 1949/1950. Part of this rapid growth was undoubtedly due to the fact that the fishery provided valuable employment during the post war years for the fishing and canning industries, the more so in view of the fact that it was available when most other species were not. In addition the ready market and the relative ease of catching the fish without the need of specialised equipment probably attracted more people into the fishery. From the 1950's onwards, however, both the species and the fishery have shown a marked and steady decline until it has reached the point today where commercial operations have all but ceased and the fishery has been closed by law.

The reasons for this decline appear to be directly attributable to a combination of overfishing and the fact that the species is harvested during the most vulnerable and undesirable part of the life cycle from the viewpoint of reproduction. Whereas the New Zealand whitebait are harvested as juveniles migrating upstream to grow into adults, Lovettia sealii in Tasmania is harvested as mature adults before they can carry out their first and only spawning. Thus not only are the migrating fish taken but their reproductive potential, which provides the next generation, is destroyed. Survival of the species thus depends on those fish which can evade capture and spawn successfully.

Although the whitebait fishery has now been closed as a conservation measure it does not necessarily mean that Lovettia sealii itself is an endangered species. The biology has been thoroughly studied by Blackburn (2) who concluded that the fishery could recover if it was severely restricted for a time to allow the numbers to build up, followed by a management plan to prevent overfishing. Despite these recommendations, made over twenty years ago, it still seems that in many areas the fishery is being overexploited resulting in the closure over the last few years. It may be some years yet before Lovettia sealii finds its way back into the fish shops as a table delicacy.

- (1) McDOWALL, R.M. 1964 A consideration of the question "What are Whitebait?". Tuatara 12 (3) : 134 - 146.
- (2) BLACKBURN, M. 1950. The Tasmanian whitebait, Lovettia sealii (Johnston) and the whitebait fishery. Aust. Jour. Mar. Freshwat. Res. 1 (2) : 155-198