

Lichens and Bryophytes of the Tasmanian World Heritage Area. II. Three Forest Sites at Pelion Plains

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Abstract

The lichen and bryophyte floras from two communities in eucalypt forest and one in rainforest are examined. Each community has a distinct and rich flora, with that of the rainforest community being the most diverse. Floristic differences between the communities are interpreted as a response to the presence of differing ecological niches rather than to problems of dispersal. The results show that the richness of the non-vascular flora is not necessarily correlated with the richness of the vascular flora, nor can it be assessed reliably by superficial impressions of lushness.

Introduction

Lichens, mosses and liverworts (non-vascular plants) are major contributors to plant biodiversity in Tasmania's vegetation. For example, in rainforest it is normal to find 100–200 species in an area as small as 400 m² (Jarman *et al.* 1991; Jarman and Kantvilas, in press; unpublished data). Flowering plants, conifers and ferns (vascular plants) in an equivalent area may number less than 10 species, and rarely exceed 35, even in the richest rainforest community (Jarman *et al.* 1984, in press).

Comparative data for Tasmanian eucalypt forests are not available. The non-vascular flora in these forests has never been surveyed and its size, composition and contribution to the biodiversity of any particular community are unknown.

In the present study, the bryophytes (mosses and liverworts) and lichens from two sites in eucalypt forest and one in rainforest are compared. The work was carried out near Pelion Plains in central Tasmania and is part of an ongoing survey of the non-vascular flora of the World Heritage Area (for example, see Kantvilas and Jarman 1991).

Methods

Study area

The study sites are located within one kilometre of each other on the southern side of Pelion Plains in the Cradle Mountain–Lake St Clair National Park (Table 1). Slopes surrounding the plains are covered by callidendrous and thamnian rainforest (nomenclature after Jarman *et al.* 1984), or eucalypt forest dominated by *Eucalyptus delegatensis* or *E. gunnii*. The plains themselves comprise a mosaic of buttongrass moorland, sedgeland and grassland, interspersed with scattered individuals or clumps of *E. gunnii* or *Athrotaxis cupressoides*.

Site characters are given in Table 1 and selected rainfall and temperature data for the nearest weather stations, Lake St Clair (about 35 km to the SSE) and Rosebery (about 40 km to the west) are given in Table 2.

Sampling

Field work was undertaken in March 1992. Vascular species (flowering plants, conifers,

Table 1. Summary of the vegetation and site details for the three communities.

	Site 1	Site 2	Site 3
Vegetation type	Eucalypt forest	Eucalypt forest	Rainforest
Dominant tree	<i>Eucalyptus delegatensis</i>	<i>Eucalyptus gumii</i>	<i>Nothofagus cunninghamii</i> , <i>Athrotaxis selaginoides</i>
Largest tree diameter	c. 100 cm	c. 100 cm	c. 100 cm
Main understorey layer			
Height (m)	1-1.5	0.2-0.3	0.2-0.3
Dominant species	<i>Cyathodes parvifolia</i>	<i>Monotoca linifolia</i> , <i>Diplarrena latifolia</i> (with <i>Olearia pinifolia</i> to about 3 m)	<i>Trochocarpa cunninghamii</i>
Character	very dense, with a ± continuous layer	very dense, with a ± continuous layer	sparse, with small, discontinuous patches
Site characters			
Grid reference*	41983684	42013682	42083683
Altitude (m)	890	860	900
Slope (°)	16	3	8
Aspect (°)	320	320	340
Geology†	Permian sediments	Permian sediments	Permian sediments

* Lands Department (1970)

† Department of Mines (1961)

ferns) and non-vascular species (lichens, mosses, liverworts) were included in the study. The former were identified in the field whereas the latter were collected for confirmation of their identity in the laboratory.

Sampling was based on a 20 m x 20 m quadrat at each site. Terrestrial habitats (soil, rocks, logs) and epiphytic habitats to a height of approximately 2 m above ground level were searched carefully for all species. Fallen branches and twigs were examined to provide an indication of the canopy flora.

Nomenclature

Lichen nomenclature follows Kantvilas (1994), with the numbering used for most undetermined lichen taxa following Kantvilas (1985). Bryophyte nomenclature mostly follows Ratkowsky (1987) for liverworts and Dalton *et al.* (1991) for mosses, with changes where names have been up-dated. Names used for *Chiloscyphus* have been derived from comparisons with material determined by Dr J. Engel (USA) who is currently revising the group. Nomenclature for the moss genera *Ulota* and *Sematophyllum* is taken from Malta (1933) and Scott and Stone (1976) respectively. Nomenclature of the vascular species mainly follows Buchanan *et al.* (1989).

Results

The eucalypt communities comprise open forest dominated by *Eucalyptus delegatensis* (site 1) and *E. gunnii* (site 2), with 'short prickly' understoreys (see Forestry Commission 1985). Neither community appears to conform to any published in the most recent classification of wet forest (Kirkpatrick *et al.* 1988). Site 3 comprises thamnic rainforest dominated by *Athrotaxis selaginoides* and *Nothofagus cunninghamii*, over a low shrub layer of *Trochocarpa cunninghamii* (community T6, Jarman *et al.* 1984, in press). Detailed descriptions of the vegetation at the three sites are given in Appendix 1 and major characteristics are summarised in Table 1.

Table 2. Rainfall and temperature data from the two weather stations nearest to the study area (Bureau of Meteorology, unpublished data).

	Weather station	
	Lake St Clair	Rosebery
Rainfall (av. mm/yr)	1522	1927
Temperature (av. max., °C)		
Warmest month (Feb.)	18.9	22.1
Coldest month (July)	6.6	10.8
Temperature (av. min., °C)		
Warmest month (Feb.)	7.6	9.2
Coldest month (July)	0.3	2.9
Altitude (m a.s.l.)	740	200

Total flora

The total flora recorded from the three forest communities comprises 318 species. Vascular plants (62 species) are outnumbered by the non-vascular plants (256) by just over 4:1. The rank order of the plant groups according to species richness is lichens (156 species), bryophytes (100), flowering plants (52), ferns and fern allies (8) and conifers (2) (Table 3).

Lichen flora

The lichen flora is listed in Appendix 2 and selected species are shown in Photos 1–4. The best represented macrolichen genera are *Cladonia* (15 species), *Hypogymnia* (5), *Menegazzia* (5), *Psoroma* (8), *Pseudocyphellaria* (8) and *Bunodophoran* (5)*. The largest crustose genus recorded in the study is *Thelotrema* (5 species); the genus *Lecidea* (6) is heterogeneous and the species recorded will ultimately be ascribed to at least three genera. Five lichen species are endemic to Tasmania: *Arthonia tasmanica*, *Hypogymnia tasmanica*, *Menegazzia myriotrema*, *Porina hyperleptalea* and *Siphulastrum granulatum*. However, several of the undetermined species,

* The genus *Bunodophoran* (Wedin 1993) currently includes most of the species previously placed in *Sphaerophorus*.

especially those in the genera *Arthothelium*, *Coccotrema*, *Micarea* and *Ramalodium*, are likely to be endemic also, bringing the total level of endemism in the lichens to about five per cent.

All lichen species have been found previously in Tasmania except one undetermined species of *Arthothelium*, *Dactylospora* cf. *polyspora* and *Phlyctis* cf. *megalospora* (possibly new records for Tasmania). Two species which are generally considered rare in Tasmania, *Chaenothecopsis sagenidii* and *Cladonia kuringaiensis*, were also recorded.

Bryophyte flora

The bryophyte flora comprises 64 liverworts and 36 mosses. These are listed in Appendix 3 and selected species are illustrated in Photos 5–8. Liverwort families with the highest number of species are the Lepidoziaceae (12 species) and Geocalycaceae (12) and moss families with the highest numbers are the Dicranaceae (6) and Orthotrichaceae (7). The largest genera are *Chiloscyphus* (10 species) and *Frullania*, *Lepidozia*, *Metzgeria*, *Plagiochila*, *Dicranoloma* and *Ulota* (all with four species).

One species, *Ulota laticiliata*, is documented as rare in Tasmania (Dalton *et al.* 1991). However, for the most part, too few data are available on bryophyte distributions to assess accurately the rarity of much of the flora. Three species (3%) are endemic to Tasmania.

The vascular flora

The vascular flora includes 52 flowering plants, two conifers and eight ferns or fern allies (Appendix 4). The level of endemism is much higher than in the non-vascular flora, with about 19% (12 species) being confined to Tasmania. None of the species is considered rare.

Comparison of species richness

Species richness in the different plant groups at the three sites is compared in Table 3, and

Table 4 shows the extent to which the species are shared between the sites. Lichens and mosses show a similar trend in species richness, the numbers increasing from the *Eucalyptus delegatensis* forest, to the *E. gunnii* forest, to rainforest. With the liverworts, the highest number of species is also found in rainforest but the trend is reversed in the two eucalypt forests, with more species in the *E. delegatensis* forest than in the *E. gunnii* forest. The flowering plants differ from all the other plant groups in having higher numbers in the eucalypt communities than in rainforest.

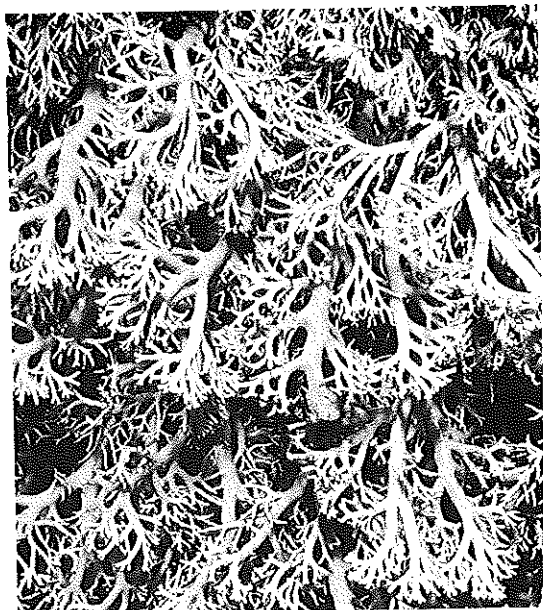
Non-vascular species easily outnumber vascular species, with ratios of about 3.5:1 in the eucalypt forests and about 6:1 in rainforest. The predominance of non-vascular species is consistent with results from our previous studies in Tasmanian forests (for example, Jarman *et al.* 1991; Kantvilas and Jarman 1993; Jarman and Kantvilas, in press). Among the non-vascular species, lichens are richer than bryophytes: markedly so in the eucalypt forests but less so in rainforest.

Discussion

Floristic differences between the communities

The distinctive character of each forest community, apparent in its appearance and vascular species composition, is clearly reflected in the non-vascular flora. More than half of the bryophytes and almost two-thirds of the lichens are found in one community only and less than one-fifth of the non-vascular species are shared by all three communities. The shared species include many that are ecologically tolerant and widespread, especially in the high rainfall regions of central and western Tasmania.

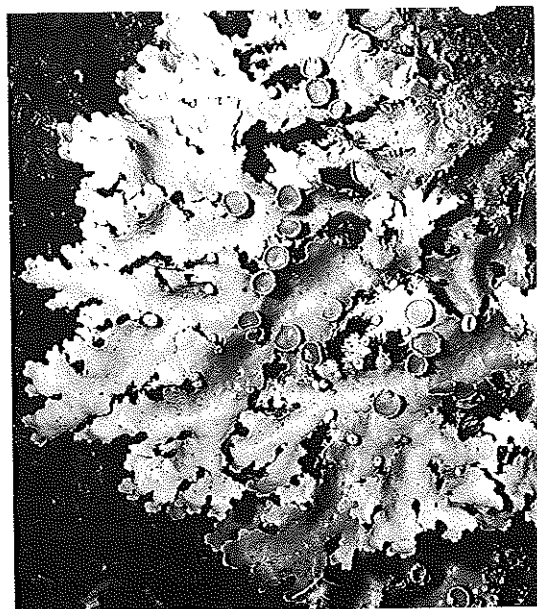
The low level of floristic similarity between the three sites is unlikely to be due to problems of dispersal because the sites are no more than one kilometre from each other.



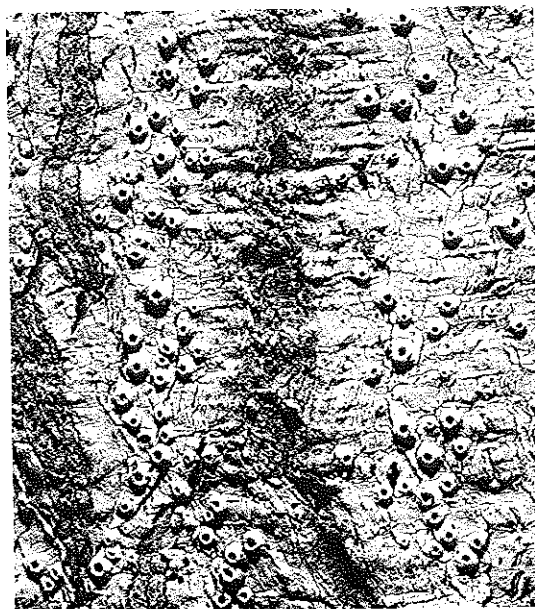
*Photo 1. Bunodophoron australe (x1.5),
a common lichen of mossy trunks in rainforest.*



*Photo 2. Hypogymnia tasmanica (x1.5),
a Tasmanian endemic found on canopy twigs.*



*Photo 3. Pseudocyphellaria glabra (x1),
a widespread species in moist habitats.*



*Photo 4. Thelotrema lepadinum (x4),
a common trunk species in wet forests.*

Table 3. Comparison of species numbers from different plant groups in the three forest communities.

Community	Lichens	Bryophytes			Ferns	Conifers	Flowering plants	Total
		Mosses	Liverworts	Total				
<i>E. delegatensis</i> forest	72	16	30	46	4	1	28	151
<i>E. gunnii</i> forest	78	20	24	44	1	1	33	157
Rainforest	83	22	52	74	8	2	16	183
Total across three sites	156	36	64	100	8	2	52	318

Table 4. The extent to which species from each plant group are shared among the three communities. (Percentages are calculated using the species totals for each plant group.)

	Lichens (n = 156)	Mosses (n = 36)	Liverworts (n = 64)	Flowering plants (n = 52)
Per cent of the total flora restricted to:				
<i>E. delegatensis</i> forest	15	14	6	21
<i>E. gunnii</i> forest	20	22	2	35
rainforest	30	22	42	10
Percentage restricted to a single community	65	58	50	66
Per cent of the total flora shared by:				
rainforest – <i>E. delegatensis</i> – <i>E. gunnii</i>	14	20	16	13
rainforest – <i>E. delegatensis</i>	5	8	14	8
rainforest – <i>E. gunnii</i>	5	11	9	0
<i>E. delegatensis</i> – <i>E. gunnii</i>	12	3	11	13

In general, such distances would not be expected to represent significant dispersal barriers, especially for lichens, since many species are known to be capable of dispersal across thousands of kilometres (for example, see Jørgensen 1983; Bailey 1976). However, non-vascular plants tend to be very finely tuned to narrow ecological niches, and the key determining factor in their distribution is the availability of appropriate microhabitats.

The three communities are characterised by very different environments. These are governed mainly by the general structure of the forests and the presence of particular trees and shrubs that can provide special microhabitats. Moist, permanently shaded understoreys characterise the rainforest community whilst exposed, well-lit

understoreys characterise the open eucalypt forests. In rainforest, almost all available microhabitats are utilised by lichens and bryophytes, from the ground surface to the canopy. *Nothofagus cunninghamii* is an excellent substrate and is colonised in its entirety, from the butt to the twigs (see Kantvilas 1990). In the eucalypt communities, the dense layer of litter or low shrubbery results in a poor cover of lichens and bryophytes on the forest floor, and the major concentrations of species are on the shrubs or logs. The dominant trees (the eucalypts) are generally poor hosts and most of their non-vascular epiphytes are restricted to the buttress and lower trunk. Even so, many of the lichen species that do occur on the eucalypts, especially those on decorticated wood, for example *Calicium glaucellum*,

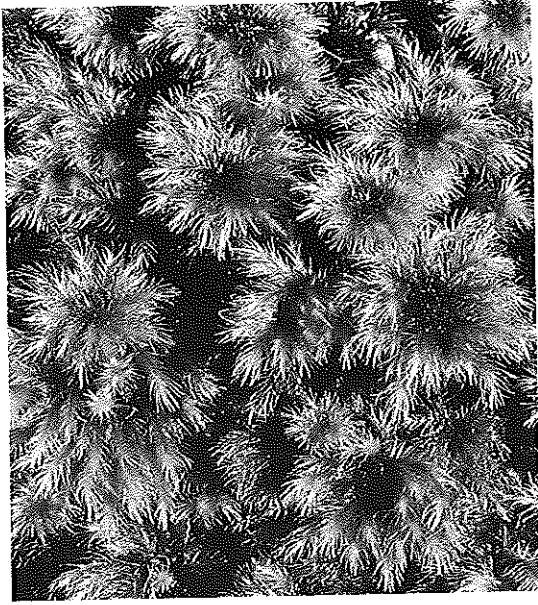


Photo 5. Hypnodendron comosum (x1), a terrestrial moss with shoots resembling a miniature palm tree.

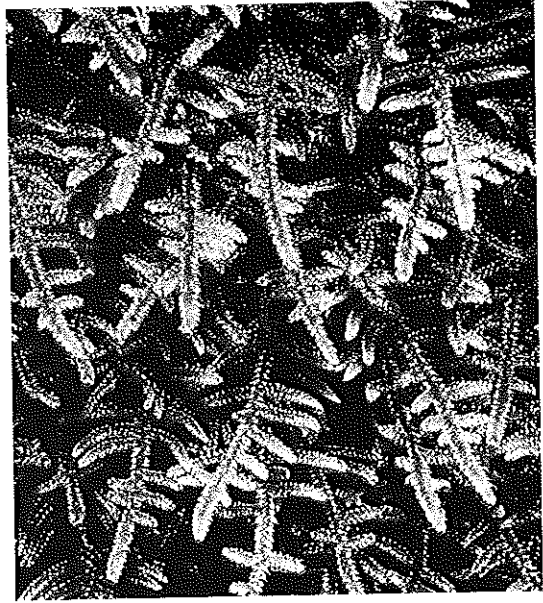


Photo 6. Hypnum chrysogaster (x2), a terrestrial or epiphytic moss occurring widely in western Tasmania.

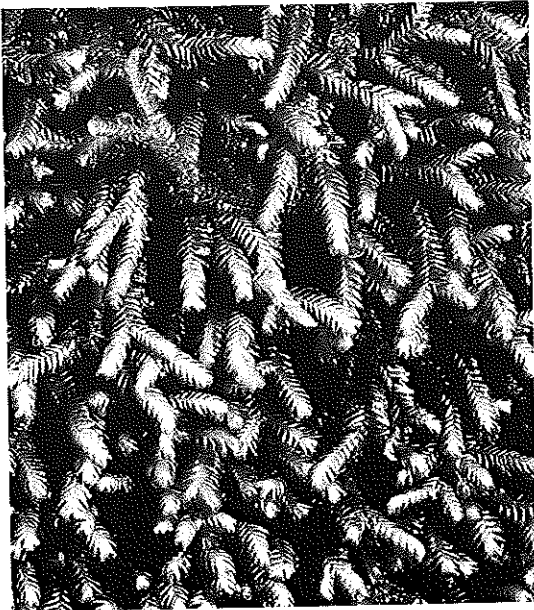


Photo 7. Bazzania involuta (x2), a common liverwort on the buttresses of eucalypts and myrtles.



Photo 8. Treubia tasmanica (x2), an uncommon thallose liverwort found in wet forests.

species of *Hypocenomyce* and *Lecidea stuartii*, show a high level of host specificity.

Differences between the two eucalypt communities can be attributed, in part, to a different complement of vascular species which provide a different range of substrate types for the lichens and bryophytes. For example, the thick, papery bark of *Olearia pinifolia* in the *E. gunnii* forest is an exceptional substrate for some epiphytes such as species of *Collema*, *Pannaria*, *Parmeliella* and *Pseudocyphellaria*, and has no substitute in the *E. delegatensis* forest.

The results highlight the importance of shrubs, logs and stumps as a habitat for non-vascular plants in eucalypt forests. At the sites examined, these habitats support the bulk of the flora and a very high proportion of the surface area ostensibly available for colonisation, for example the eucalypt trunks and ground surface, is not utilised by lichens and bryophytes, or only poorly so. Loss of, or major disturbance to this component of the forest has the potential to significantly affect the composition of the non-vascular flora.

Representative nature of the flora

The non-vascular flora at the rainforest site is generally consistent with that found during previous studies in similar communities, and most species recorded from the Pelion Plains sites have been found elsewhere. With respect to the two eucalypt sites, the present study represents the first of its kind in these communities, or indeed in any eucalypt forests in Tasmania, and we are unable to assess whether the non-vascular flora is typical. At best, the sites are likely to be representative of only a very small proportion of eucalypt forests, given the broad ecological range of this vegetation type and the considerable variation in its vascular flora and community structure (see Duncan and Brown 1985; Kirkpatrick *et al.* 1988). However, the results demonstrate that the non-vascular flora of eucalypt forests can be very rich, even where there is little indication of this from the general appearance of the community.

Assessment of biodiversity

It is apparent from the study that first impressions of abundance can be very misleading in terms of assessing species diversity (richness). For example, in the *E. gunnii* forest, the main understorey shrub, *Olearia pinifolia*, is covered in a very lush, conspicuous non-vascular flora which imparts an impression of species richness to the community. In contrast, the non-vascular flora of the *E. delegatensis* forest is cryptic and the immediate impression is that of an impoverished flora. Epiphytes on the main shrub, *Cyathodes parvifolia*, are mostly small to minute species, and the ground surface is poorly colonised. In spite of these differences in prominence, species richness is very similar in the two communities. It is also worth noting that many of the lush species in the *E. gunnii* forest are widely distributed, geographically and ecologically, whereas the more interesting species, with respect to rarity, are mostly small and inconspicuous.

The results suggest that flowering plants are unreliable indicators of total species richness. For example, the number of flowering species is lowest in rainforest and highest in the *E. gunnii* forest but this trend is reversed when the non-vascular flora is included. Furthermore, with the inclusion of non-vascular plants, the total number of plant species recorded is more than quadrupled. Vascular plants, because of their large size, will always provide the most convenient tool for vegetation classification and general description, but do not necessarily provide a reliable surrogate for other plant groups in identifying trends in biodiversity.

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Site 1—*Eucalyptus delegatensis* open forest over *Cyathodes parvifolia*

The forest is dominated by tall, straight trees of *Eucalyptus delegatensis*, which form an open canopy over an understorey which is brightly lit above a well-developed, dense shrub layer, dominated by the fine-leaved, prickly shrub *Cyathodes parvifolia*. This layer is 1–1.5 m tall and includes occasional plants of other shrubs such as *Monotoca linifolia* var. *algida*, *Trochocarpa cunninghamii*, *Pultenaea juniperina* and *Coprosma nitida*. The large sedge *Gahnia grandis* is also present, and a few young plants of tree species such as *Leptospermum lanigerum*, *Nothofagus cunninghamii*, *Phyllocladus aspleniifolius* and *Pittosporum bicolor* project one or two metres above the shrub layer. Small gaps are colonised by patches of *Dianella tasmanica* and/or *Diplarrena latifolia*. Partly rotted eucalypt logs and large rotting stumps are scattered through the forest and a layer of litter covers the ground surface.

Lichens and bryophytes are inconspicuous although well-represented in terms of species richness. The main lichens on the forest floor are *Cladia aggregata* and *Cladonia scabriuscula*, with *Stereocaulon ramulosum* and a species of *Placopsis* occurring on occasional exposed stones. Lichens become more abundant and diverse on rotting logs and stumps where *Siphula decumbens* and several species of *Cladonia*, for example *C. capitellata*, *C. ramulosa*, *C. rigida*, *C. subsubulata* and *C. weymouthii*, are abundant. Bryophytes such as *Ptychomnion aciculare* and *Chiloscyphus cuspidatus* occur in small patches amongst the litter but most species are concentrated around the base of shrubs, forming a small collar which extends up the stems for 10–20 cm. The main bryophytes on stumps and fallen logs are *Dicranoloma robustum* var. *setosum*, *D. billardierei*, *Lepidozia ulothrix*, *Gackstroemia weindorferi* and *Leptotheca gaudichaudii*.

The cryptogamic flora of epiphytic habitats is more diverse than that of the forest floor. However, the dominant eucalypt, *Eucalyptus delegatensis*, is generally a poor substrate, with most epiphytic species occurring low on the buttresses. This tree supports a very characteristic suite of lichens including *Cladia schizopora*, *Hypocomyce australis*, *H. foveata*, *Hypogymnia pulverata*, *Lecidea stuartii* and *Neophyllis melacarpa*. The main bryophytes present are *Rhizogonium novae-hollandiae* and an unidentified species of *Kurzia*.

Most lichen and bryophyte species at the site are found on the shrubs, mainly on the twigs and branches of *Cyathodes parvifolia*. Dominant lichens include the grey foliose species, *Hypogymnia mundata*, *H. lugubris*, *H. tasmanica* and *Menegazzia weindorferi*. There is also a great diversity of inconspicuous crustose species, for example species of *Catillaria*, *Ochrolechia* and *Pertusaria*, as well as an incipient wet forest lichen flora of cyanophilic lichens, notably *Psoromidium versicolor*, *Parmeliella nigrocincta* and *Leioderma pycnophorum*, on the base of some of the larger shrubs. The most common epiphytic bryophytes are small, inconspicuous species such as *Austrolejeunea olgae*, *Diplasiolejeunea plicatiloba*, *Frullania rostrata* and *F. aterrima*.

Site 2—*Eucalyptus gunnii* open forest over *Monotoca linifolia* var. *algida* – *Diplarrena latifolia*

The dominant species, *Eucalyptus gunnii*, is present as poorly formed trees with crooked, leaning stems. A few smaller individuals of *E. coccifera* also occur at the site. The understorey is open and brightly lit, with the densest layer occurring very low in the forest as a mixed shrub–iris layer about 20 to 30 cm high. It is dominated by *Monotoca linifolia* var. *algida* and *Diplarrena latifolia* but contains many other species, including shrubs, forbs and monocotyledons. They occur mostly as scattered individuals and include species such as *Cyathodes parvifolia*, *Almaleea subumbellata*, *Epacris gunnii*, *Celmisia asteliifolia*, *Stylidium graminifolium*, *Oxalis magellanica*, *Restio australis*, *Lepidosperma filiforme*, *Drymophila cyanocarpa* and *Poa* species. Taller, heathy patches of *Oxylobium ellipticum*, *Baeckea gunniana* and *Orites revoluta*, up to 1 m high, are also present, with scattered, bushy plants of *Olearia pinifolia* (up to 3 m tall) projecting above.

The cryptogamic flora of the site is well developed in epiphytic habitats but poorly developed on the forest floor. *Olearia pinifolia* is a favoured host and its epiphytic flora is particularly lush and conspicuous. Common bryophytes include the cushion-forming mosses *Leptostomum inclinans*, *Calyptopogon mnioides* and species of *Ulota*, and the liverworts *Frullania falciloba*, *F. probosciphora* and *Metzgeria atrichoneura*. Dominant lichens are large foliose species such as *Sticta sublimbata*, species of *Pseudocyphellaria* and members of the

Pannariaceae, notably *Parmeliella nigrocincta* and species of *Psoroma*. Many smaller lichen species are also present, overgrowing the clumps of bryophytes or colonising patches of bare bark.

Bryophytes and lichens are common on the buttresses and lower trunks of *Eucalyptus gunnii*, although their cover is not high. The main species are the liverworts *Austrolejeunea olgae* and species of *Frullania*, and the lichens *Collema laeve*, *C. subconveniense*, *Cladonia rigida*, *Megalaria grossa* and a species of *Ramalodium*. Decorticated fallen eucalypt limbs are rich in a very specialised lichen flora consisting of *Calicium glaucellum*, *Cladia schizopora*, *Lecidea stuartii* and *Neophyllis melacarpa*. However, a single large dead eucalypt trunk in the site supported few cryptogams, possibly because it had fallen too recently to be colonised. Other host species at the site, especially *Coprosma nitida* and *Orites revoluta*, support abundant lichens, for example *Hypogymnia tasmanica*, *Menegazzia weindorferi* and small crustose species, but are colonised poorly by bryophytes.

The main cryptogams on the forest floor are *Hypnum chrysogaster*, *Chiloscyphus cuspidatus*, *Cladonia capitellata*, *Cladia retipora* and *Cladina confusa*. Rotting logs are colonised by additional species of *Cladonia*, for example *C. subsubulata* and *C. gracilis* ssp. *tenerrima*, and by *Siphula decumbens* and *Cladia aggregata*. Terrestrial bryophytes are mostly concentrated around the bases of shrubs or occur on slightly raised sites, probably where old branches or stumps have decayed.

Site 3—*Nothofagus cunninghamii* – *Athrotaxis selaginoides* closed forest over *Trochocarpa cunninghamii*

The dominant species, *Nothofagus cunninghamii* and *Athrotaxis selaginoides*, form a closed canopy over an open but shady understorey dominated by low patches, 20–30 cm tall, of *Trochocarpa cunninghamii* in a thick carpet of mosses and liverworts. Several small herb species are common among the mosses including *Libertia pulchella*, *Oxalis magellanica*, *Lagenifera stipitata* and *Lycopodium fastigiatum*. Scattered, small diameter *Phyllocladus aspleniifolius* reach into the subcanopy and, at the edge of the site, a poorly drained area supports a few small-diameter, multi-stemmed individuals of *Atherosperma moschatum*.

Cryptogams are abundant and conspicuous from the forest floor to the canopy. Bryophytes are common in both terrestrial and epiphytic habitats, whereas lichens are concentrated in the latter. The two plant groups are particularly common on the trunks of *Nothofagus cunninghamii*, producing the grey/green, speckled appearance typical of trees in high altitude rainforest. The main bryophytes on *Nothofagus* are *Lepidozia ulothrix*, *Gackstroemia weindorferi* and *Leptotheca gaudichaudii* on the buttresses, with *Dicranoloma robustum* var. *setosum* being common higher up the trunks. *Plagiochila circinalis*, *Frullania rostrata* and species of *Radula* are common on young *Nothofagus* and are probably common high in the canopy of the old trees. The dominant lichens on mature *Nothofagus* trunks are species of *Bunodophoron*, particularly *B. insigne*, *B. australe*, *B. ramuliferum* and *B. macrocarpum*, and the ubiquitous wet forest lichens, *Pseudocyphellaria glabra* and *Leifidium tenerum*. Dry, underhanging portions of the trunks are dominated by the large byssoid species, *Sagenidium molle*, and by several inconspicuous crustose lichens including *Lecanactis abietina*. Young stems of *Nothofagus* are colonised predominantly by crustose species such as *Thelotrema lepadinum* and *Opegrapha stellata*. With increasing height up the trunks, lichens containing cyanobacteria become abundant, for example *Nephroma australe*, *Psoromidium versicolor* and species of *Pseudocyphellaria* and *Psoroma*. In contrast, the canopy contains species with a green photobiont only, including pale grey species of *Menegazzia* and *Parmelia*, and the yellow species *Pannoparmelia angustata*, *Usnea articulata* and *U. xanthopoga*.

In contrast to *Nothofagus*, *Athrotaxis selaginoides* is a poor substrate and epiphytes are mostly restricted to its base. The dominant bryophyte in this habitat is the liverwort *Lepidozia ulothrix* which forms a collar around the base of the trunk. The moss *Rhizogonium novae-hollandiae* occurs in depressions formed in the thick fibrous bark whilst the lichen *Cladonia rigida* colonises the ridges, and the two together form a short vertically striped pattern above the basal collar of *Lepidozia*.

The dominant bryophyte on the ground is *Ptychomnion aciculare* but *Lepidozia ulothrix* is abundant on logs and raised sites. The flora changes in a poorly drained area nearby where *Polytrichum formosum* and *Schistochila lehmanniana* are the most prominent ground species and thallose liverworts such as species of *Riccardia* are common. Ground-dwelling lichens are uncommon although *Cladonia scabriuscula* and *Cladina confusa* are sporadic beneath canopy gaps, and *Stereocaulon ramulosum* grows on scattered, exposed stones.

Appendix 2. Lichens recorded from three forest sites at Pelion Plains. (1 = *Eucalyptus delegatensis* forest, 2 = *E. gunnii* forest, 3 = *Athrotaxis selaginoides* – *Nothofagus cunninghamii* forest; r = rare, o = occasional, c = common; * = endemic to Tasmania)

Species	Site		
	1	2	3
<i>Arthonia apteropteridis</i> Kantvilas & Vězda			o
<i>Arthonia ilicina</i> Taylor			o
* <i>Arthonia tasmanica</i> Kantvilas & Vězda			o
<i>Arthopyrenia</i> cf. <i>limitans</i> Müll. Arg.	r		
<i>Arthothelium</i> sp. A			r
<i>Arthothelium</i> sp. B			r
<i>Arthothelium</i> sp. C	o		
<i>Austroblastenia pupa</i> Sipman	o		
<i>Bacidia</i> sp.		o	
<i>Buellia disciformis</i> (Fr.) Mudd aggr.	o		o
<i>Bunodophoron australe</i> (Laurer) Massal. ¹			c
<i>Bunodophoron insigne</i> (Laurer) Wedin ¹			c
<i>Bunodophoron macrocarpum</i> (Ohlsson in D. Galloway) Wedin ¹			c
<i>Bunodophoron patagonicum</i> (Dodge) Wedin ¹			o
<i>Bunodophoron ramuliferum</i> (Lamb) Wedin ¹			c
<i>Calicium glaucellum</i> Ach.		o	
<i>Caloplaca</i> sp.	o		
<i>Catillaria kelica</i> Stirton	r		
<i>Catillaria pulverea</i> (Borrer) Lettau	o	r	
<i>Catillaria</i> sp. 1	c	o	r
<i>Catillaria</i> sp. 3			o
<i>Chaenotheca brachypoda</i> (Ach.) Tibell			o
<i>Chaenotheca brunneola</i> (Ach.) Müll. Arg.			o
<i>Chaenothecopsis sagenidii</i> Tibell			o
<i>Chaenothecopsis tasmanica</i> Tibell			o
<i>Chroodiscus megalophthalmus</i> (Müll. Arg.) Vězda & Kantvilas			o
<i>Cladia aggregata</i> (Sw.) Nyl.	c	c	c
<i>Cladia retipora</i> (Labill.) Nyl.		o	r
<i>Cladia schizopora</i> (Nyl.) Nyl.	o	o	
<i>Cladina confusa</i> (R. Sant.) Follm. & Ahti		o	o
<i>Cladonia capitellata</i> (J.D. Hook. & Taylor) Church. Bab.	o	o	
<i>Cladonia chlorophaea</i> (Flörke) Sprengel	o		
<i>Cladonia corniculata</i> Ahti & Kashiwadani		o	
<i>Cladonia furcata</i> (Huds.) Schrader	o		
<i>Cladonia gracilis</i> ssp. <i>tenerrima</i> Ahti	o	o	
<i>Cladonia kuringaiensis</i> Archer	r		
<i>Cladonia murrayi</i> W. Martin		r	
<i>Cladonia pleurota</i> (Flörke) Schaerer	r	o	
<i>Cladonia pyxidata</i> (L.) Hoffm.	o		
<i>Cladonia ramulosa</i> (With.) Laundon	c		o
<i>Cladonia rigida</i> (J.D. Hook. & Taylor) Hampe	c	c	c
<i>Cladonia scabriuscula</i> (Delise) Leighton	c		o
<i>Cladonia subsubulata</i> Nyl.	o	o	
<i>Cladonia ustulata</i> (J.D. Hook. & Taylor) Leighton	o	o	o
<i>Cladonia weymouthii</i> F. Wilson ex Archer	o	o	
<i>Coccotrema cucurbitula</i> (Mont.) Müll. Arg.	r	c	c
<i>Coccotrema</i> sp.		r	
<i>Collema laeve</i> var. <i>senecionis</i> (F. Wilson) Degelius	r	c	
<i>Collema leucocarpum</i> J.D. Hook. & Taylor		o	
<i>Collema subconveniens</i> Nyl.		o	
<i>Collema subflaccidum</i> Degelius		r	
<i>Conotremopsis weberiana</i> Vězda			o
<i>Dactylospora</i> cf. <i>polyspora</i> Triebel		r	

Species	Site		
	1	2	3
? <i>Dactylospora</i> sp.	o		
<i>Dimerella lutea</i> (Dickson) Trevis.			o
<i>Fuscidea</i> sp.	o	c	o
<i>Fuscoderma amphibolum</i> (Knight) P.M. Jørg. & D. Galloway			r
<i>Haematomma infuscum</i> (Stirton) R.W. Rogers	o	o	o
<i>Hypocenomyce australis</i> Timdal	c		
<i>Hypocenomyce foveata</i> Timdal	c		
<i>Hypocenomyce</i> sp.	r		
<i>Hypogymnia enteromorphoides</i> Elix	o	r	
<i>Hypogymnia lugubris</i> (Pers.) Krog	c	c	o
<i>Hypogymnia mundata</i> (Nyl.) Rassad.	c	o	
<i>Hypogymnia pulverata</i> (Nyl.) Elix	o		
* <i>Hypogymnia tasmanica</i> Elix	c	c	c
<i>Hypotrachyna sinuosa</i> (Sm.) Hale		o	
<i>Lecanactis abietina</i> (Ach.) Körber			c
<i>Lecidea immarginata</i> R. Br. ex Crombie	r		
<i>Lecidea stuartii</i> Hampe	c	c	
<i>Lecidea</i> sp. 1	r		
<i>Lecidea</i> sp. 4			c
<i>Lecidea</i> sp. 5	o	o	r
<i>Lecidea</i> sp. 6		r	
<i>Leifidium tenerum</i> (Laurer) Wedin ¹	o	r	c
<i>Leioderma pycnophorum</i> Nyl.	o		
<i>Lepraria</i> sp.	o		o
<i>Leptotrema</i> sp.		c	
<i>Megalaria grossa</i> (Pers. ex Nyl.) Hafellner		c	
<i>Megalaria</i> sp.	o		
<i>Melanelia subglabra</i> (Räsänen) Esslinger			r
<i>Menegazzia globulifera</i> R. Sant.	r	o	r
* <i>Menegazzia myriotrema</i> (Müll. Arg.) P. James			o
<i>Menegazzia subpertusa</i> P. James & D. Galloway	r	r	
<i>Menegazzia testacea</i> P. James & D. Galloway		r	
<i>Menegazzia weindorferi</i> (Zahlbr.) R. Sant.	c	o	c
<i>Micarea mutabilis</i> Coppins & Kantvilas			r
<i>Micarea prasina</i> Fr.			o
<i>Micarea</i> sp. 1	o		
<i>Micarea</i> sp. 2		o	
<i>Miltidea ceroplasta</i> (Church. Bab.) D. Galloway & Hafellner			o
<i>Mycoblastus</i> sp. 1	c	o	
<i>Neophyllis melacarpa</i> (F. Wilson) F. Wilson	c	o	
<i>Nephroma australe</i> Richard			c
<i>N. cellulosum</i> (Ach.) Ach.		r	
? <i>Nephroma</i> sp.	r		
<i>Ochrolechia</i> sp.	c	c	o
<i>Opegrapha stellata</i> Knight			c
<i>Opegrapha</i> sp.		o	
<i>Pannaria decipiens</i> P.M. Jørg. & D. Galloway		o	
<i>Pannoparmelia angustata</i> (Pers. in Gaud.) Zahlbr.		o	c
<i>Parmelia cunninghamii</i> Crombie			r
<i>Parmelia protosulcata</i> Hale			o
<i>Parmelia salcrambidiocarpa</i> Hale	r		o
<i>Parmelia tenuirima</i> J.D. Hook. & Taylor			o
<i>Parmeliella nigrocincta</i> (Mont.) Müll. Arg.	o	c	
<i>Parmeliella thysanota</i> (Stirton) Zahlbr.		o	
<i>Pertusaria gibberosa</i> Müll. Arg.	o		

Species	Site		
	1	2	3
<i>Pertusaria novaezelandiae</i> Szatala	o		o
<i>Pertusaria truncata</i> Krempelh.	o	o	c
<i>Phlyctis</i> cf. <i>megalospora</i> P. James		o	
<i>Placopsis</i> sp.	o	o	
<i>Porina decrescens</i> McCarthy & Kantvilas			o
* <i>Porina hyperleptalea</i> McCarthy & Kantvilas			c
<i>Pseudocyphellaria ardesiaca</i> D. Galloway		r	
<i>Pseudocyphellaria billardierei</i> (Delise) Räsänen		o	o
<i>Pseudocyphellaria colensoi</i> (Church. Bab.) Vainio			o
<i>Pseudocyphellaria coronata</i> (Müll. Arg.) Malme			r
<i>Pseudocyphellaria faveolata</i> (Delise) Malme		o	r
<i>Pseudocyphellaria glabra</i> (J.D. Hook. & Taylor) Dodge	r	c	c
<i>Pseudocyphellaria multifida</i> (Nyl.) D. Galloway & P. James			o
<i>Pseudocyphellaria rubella</i> (J.D. Hook. & Taylor) D. Galloway & P. James		r	
<i>Psoroma asperellum</i> Nyl.	r		
<i>Psoroma durietzii</i> P. James & Henssen		r	r
<i>Psoroma leprolomum</i> (Nyl.) Räsänen		o	
<i>Psoroma microphyllizans</i> (Nyl.) D. Galloway	r	o	o
<i>Psoroma paleaceum</i> (Fr.) Nyl.			o
<i>Psoroma pholidotoides</i> (Nyl.) Trevis.		o	o
<i>Psoroma soccatum</i> R. Br.		o	
<i>Psoroma</i> sp. 6		c	
<i>Psoromidium versicolor</i> (J.D. Hook. & Taylor) D. Galloway	o		c
<i>Pyrrhospora laeta</i> (Stirton) Hafellner	o	o	o
<i>Ramalodium</i> sp.		o	
<i>Rhizocarpon</i> sp.	o		
<i>Sagenidium molle</i> Stirton			c
<i>Sarrameana tasmanica</i> Vězda & Kantvilas	o		
<i>Siphula decumbens</i> Nyl.	o	o	
* <i>Siphulastrum granulatum</i> P.M. Jørg. & D. Galloway	r	r	
<i>Stereocaulon corticatum</i> Nyl.		o	
<i>Stereocaulon ramulosum</i> (Sw.) Räsichel	o		c
<i>Sticta stipitata</i> Knight			o
<i>Sticta sublimbata</i> (Steiner) Swinsc. & Krog		c	
<i>Thelotrema decorticans</i> Müll. Arg.			o
<i>Thelotrema lepadinum</i> (Ach.) Ach.			c
<i>Thelotrema subdenticulatum</i> (Zahlbr.) G. Salisb.			o
<i>Thelotrema suecicum</i> (H. Magn.) P. James			o
<i>Thelotrema</i> sp.		o	
<i>Trapeliopsis congregans</i> (Zahlbr.) Brako			c
<i>Usnea articulata</i> (L.) Hoffm.	o	o	c
<i>Usnea oncodes</i> Stirton	c	c	r
<i>Usnea xanthopoga</i> Nyl.	c	o	c
<i>Wawea fruticulosa</i> Henssen & Kantvilas		o	
Species W		o	
Species X (Lecanoraceae)	c	o	o
Species Y (?Gyalectaceae)			r
Species Z (?Thelotremataceae)			o
	72	78	83

¹ These widespread and ecologically important species were previously included in the genus *Sphaerophorus* which now has no representatives in Tasmania.

Appendix 3. Bryophytes recorded from three forest sites at Pelion Plains. (1 = *Eucalyptus delegatensis* forest, 2 = *E. gunnii* forest, 3 = *Athrotaxis selaginoides* – *Nothofagus cunninghamii* forest; * = endemic to Tasmania)

Species	Sites		
	1	2	3
Liverworts			
<i>Acrobolbus concinnus</i> (Mitt.) Grolle			+
<i>Acrochila biserialis</i> (Lehm. & Lindenb.) Grolle			+
<i>Adelanthus falcatus</i> (Hook.) Mitt.	+		+
<i>Austrolejeunea olgae</i> (Schust.) Schust.	+	+	
* <i>Austrolejeunea jarmaniana</i> Grolle	+	+	
<i>Balantiopsis diplophylla</i> (J.D. Hook. & Taylor) Mitt.			+
<i>Balantiopsis tumida</i> Berggr.			+
<i>Bazzania involuta</i> (Mont.) Trevis.			+
<i>Chandonanthus squarrosus</i> (Hook.) Mitt.		+	+
<i>Chiloscyphus cuspidatus</i> (Nees) Limpr.	+	+	+
<i>Chiloscyphus echinellus</i> (Lindenb. & Gott.) Mitt.	+		+
<i>Chiloscyphus gippslandicus</i> Engel & Schust.	+		
<i>Chiloscyphus leucophyllus</i> (J.D. Hook. & Taylor) Gott. <i>et al.</i>			+
<i>Chiloscyphus muricatus</i> (Lehm.) Engel & Schust.	+		+
<i>Chiloscyphus semiteres</i> (Lehm.) Lehm. & Lindenb.	+	+	
<i>Chiloscyphus cf. rupicolus</i> (Steph.) Engel & Schust.	+	+	+
<i>Chiloscyphus cf. perpusillus</i> (J.D. Hook. & Taylor) Engel		+	+
<i>Chiloscyphus cf. subporosus</i> (Mitt.) Engel & Schust.		+	+
<i>Chiloscyphus</i> sp.		+	
<i>Cuspidatula monodon</i> (Taylor) Steph.			+
<i>Diplasiolejeunea plicatiloba</i> (J.D. Hook. & Taylor) Grolle	+	+	+
<i>Diplophyllum obtusifolium</i> (Hook.) Dum.			+
<i>Drepanolejeunea aucklandica</i> Steph.			+
<i>Frullania aterrima</i> (J.D. Hook. & Taylor) J.D. Hook. & Taylor	+		+
<i>Frullania falciloba</i> Taylor ex Lehm.	+	+	
<i>Frullania probosciphora</i> Taylor	+	+	
<i>Frullania rostrata</i> (J.D. Hook. & Taylor) J.D. Hook. & Taylor	+	+	+
<i>Gackstroemia weindorferi</i> (Herz.) Grolle	+	+	+
<i>Heteroscyphus coalitus</i> (Hook.) Schiffn.			+
<i>Jamesoniella colorata</i> (Lehm.) Spruce ex Schiffn.	+	+	
<i>Kurzia</i> sp. 1	+		
<i>Kurzia</i> sp. 2			+
<i>Kurzia</i> sp. 3	+		
<i>Lepicolea scolopendra</i> (Hook.) Dum. ex Trevis.			+
<i>Lepidozia laevifolia</i> (J.D. Hook. & Taylor) Taylor ex Gott. <i>et al.</i>	+		+
<i>Lepidozia procera</i> Mitt.	+		+
<i>Lepidozia ulothrix</i> (Schwaegr.) Lindenb.	+	+	+
* <i>Lepidozia weymouthiana</i> Steph.	+	+	+
<i>Leptoscyphus</i> sp.			+
<i>Marsupidium surculosum</i> (Nees) Schiffn.			+
<i>Megaceros</i> sp.			+
<i>Metzgeria atrichoneura</i> Spruce	+	+	
<i>Metzgeria saccata</i> Mitt.	+	+	+
<i>Metzgeria</i> sp. 1	+	+	+
<i>Metzgeria</i> sp. 2	+		+
<i>Pallavicinia xiphoides</i> (J.D. Hook. & Taylor) Steph.			+
<i>Paraschistochila pinnatifolia</i> (Hook.) Schust.			+
<i>Plagiochila circinalis</i> (Lehm.) Lehm. & Lindenb.		+	+
<i>Plagiochila radiculosa</i> Mitt.			+
<i>Plagiochila retrospectans</i> Nees		+	+
<i>Plagiochila</i> sp.			+
<i>Radula compacta</i> Castle	+	+	+
<i>Radula tasmanica</i> Steph.		+	+

Species	Site		
	1	2	3
<i>Riccardia crassa</i> (Schwaegr.) Carringt. & Pears.	+		+
<i>Riccardia</i> sp. 1			+
<i>Riccardia</i> sp. 2			+
<i>Schistochila lehmanniana</i> (Lindenb.) Carringt. & Pears.			+
<i>Telaranea mooreana</i> (Steph.) Schust.			+
<i>Telaranea tetradactyla</i> (J.D. Hook. & Taylor) Hodgs.			+
<i>Telaranea</i> sp.	+		+
<i>Treubia tasmanica</i> Schust. & Scott			+
<i>Tylimanthus diversifolius</i> A. Hodgson			+
<i>Tylimanthus pseudosaccatus</i> Grolle			+
<i>Zoopsis argentea</i> (J.D. Hook. & Taylor) J.D. Hook.			+
Mosses			
<i>Achrophyllum dentatum</i> (J.D. Hook. & Wils.) Vitt & Crosby		+	+
<i>Acrocladium chlamytophyllum</i> (J.D. Hook. & Wils.) C. Muell. & Broth.		+	
<i>Bartramia halleriana</i> Hedw.			+
<i>Brachythecium paradoxum</i> (J.D. Hook. & Wils.) Jaeg.		+	
<i>Breutelia pendula</i> (Sm.) Mitt.			+
<i>Bryum billardierei</i> Schwaegr.		+	
<i>Calyptopogon mnioides</i> (Schwaegr.) Broth.		+	
<i>Campylopus clavatus</i> (R. Br.) Wils.	+		
<i>Dicranoloma billardierei</i> (Brid.) Par.		+	
<i>Dicranoloma dicarpum</i> (Nees.) Par.		+	+
<i>Dicranoloma menziesii</i> (Taylor) Par.			+
<i>Dicranoloma robustum</i> (J.D. Hook. & Wils.) Par. var. <i>setosum</i> (J.D. Hook. & Wils.) Sainsb.	+	+	+
<i>Dicranum trichopodium</i> Mitt.			+
<i>Distichophyllum pulchellum</i> (Hampe) Mitt.	+		
<i>Hypnodendron comosum</i> (Labill.) Mitt.			+
<i>Hypnum chrysogaster</i> C. Muell.	+	+	+
<i>Hypnum cupressiforme</i> Hedw.	+	+	+
<i>Hypopterygium rotulatum</i> (Hedw.) Brid.		+	
<i>Leptostomum inclinans</i> R. Br.	+	+	+
<i>Leptotheca gaudichaudii</i> Schwaegr.	+	+	+
<i>Orthodontium lineare</i> Schwaegr.	+		
<i>Polytrichum formosum</i> Hedw.			+
<i>Ptychomnion aciculare</i> (Brid.) Mitt.	+	+	+
<i>Rhizogonium novae-hollandiae</i> (Brid.) Brid.	+		+
<i>Sematophyllum amoenum</i> (Hedw.) Mitt.	+	+	
<i>Sematophyllum leucocytus</i> (C. Muell.) Sainsb.		+	+
<i>Sphagnum australe</i> Mitt.			+
* <i>Tayloria gunnii</i> (Wils.) Willis			+
<i>Tayloria octoblepharum</i> (Hook.) Mitt.	+		
<i>Ulota cochleata</i> Vent.		+	
<i>Ulota laticiliata</i> Malta	+		
<i>Ulota lutea</i> (J.D. Hook. & Wils.) Mitt.	+	+	+
<i>Ulota viridis</i> Vent.	+		+
<i>Wijkia extenuata</i> (Brid.) Crum	+		+
<i>Zygodon hookeri</i> Hampe		+	+
<i>Zygodon menziesii</i> (Schwaegr.)		+	
	46	44	74

Appendix 4. Vascular species recorded from three forest sites at Pelion Plains. (1 = *Eucalyptus delegatensis* forest, 2 = *E. gunnii* forest, 3 = *Athrotaxis selaginoides* – *Nothofagus cunninghamii* forest; * = endemic to Tasmania)

Species	Site		
	1	2	3
<i>Acianthus viridis</i> J.D. Hook.			+
<i>Almaleea subumbellata</i> (Hook.) Crisp & P. Westin		+	
<i>Atherosperma moschatum</i> Labill.			+
* <i>Athrotaxis selaginoides</i> D. Don			+
<i>Baeckea gunniana</i> Schauer		+	
<i>Blechnum penna-marina</i> (Poir.) Kuhn	+		+
<i>Blechnum wattsii</i> Tindale	+		+
<i>Bossiaea cordigera</i> Benth. ex J.D. Hook.		+	
<i>Celmisia asteliifolia</i> J.D. Hook.		+	
<i>Coprosma nitida</i> J.D. Hook.	+	+	
<i>Corybas</i> sp.			+
* <i>Cyathodes parvifolia</i> R. Br.	+	+	+
<i>Dianella tasmanica</i> J.D. Hook.	+		
* <i>Diplarrena latifolia</i> Benth.	+	+	
<i>Drymophila cyanocarpa</i> R. Br.	+	+	+
<i>Ehrharta</i> sp.	+	+	+
<i>Empodisma minus</i> (J.D. Hook.) L. Johnson & Cutler		+	
<i>Epacris gunnii</i> J.D. Hook.		+	
* <i>Eucalyptus coccifera</i> J.D. Hook.		+	
<i>Eucalyptus delegatensis</i> R. Baker	+		
* <i>Eucalyptus gunnii</i> J.D. Hook.	+	+	
<i>Gahnia grandis</i> (Labill.) S.T. Blake	+	+	
* <i>Gaultheria hispida</i> R. Br.		+	
<i>Gonocarpus</i> sp.	+	+	
<i>Grammitis billardierei</i> Willd.			+
<i>Helichrysum scorpioides</i> Labill.	+		
<i>Hibbertia procumbens</i> (Labill.) DC.		+	
<i>Histiopteris incisa</i> (Thunb.) J. Sm.			+
<i>Hydrocotyle hirta</i> R. Br. ex A. Rich.	+		+
<i>Hymenophyllum peltatum</i> (Poir.) Desv.			+
<i>Hypolepis rugosula</i> (Labill.) J. Sm.			+
<i>Juncus</i> sp.			+
<i>Lagenifera stipitata</i> (Labill.) Druce	+	+	+
<i>Lepidosperma filiforme</i> Labill.		+	
<i>Leptospermum lanigerum</i> (Ait.) Sm.	+		
<i>Libertia pulchella</i> Spreng.	+		+
<i>Lissanthe montana</i> R. Br.		+	
<i>Lycopodium fastigiatum</i> R. Br.	+	+	+
* <i>Monotoca linifolia</i> (Rodw.) Curtis var. <i>algida</i> Jarman	+	+	
<i>Nothofagus cunninghamii</i> (Hook.) Oerst.	+	+	+
<i>Olearia erubescens</i> (DC.) Dippel	+	+	
* <i>Olearia pinifolia</i> (J.D. Hook.) Benth.		+	
* <i>Orites revoluta</i> R. Br.		+	
<i>Oxalis magellanica</i> Forst.f.	+	+	+
<i>Oxylobium ellipticum</i> (Labill.) R. Br.		+	
<i>Pentachondra pumila</i> (Forst. & Forst.f.) R. Br.		+	
* <i>Phyllocladus aspleniifolius</i> (Labill.) J.D. Hook.	+	+	+
<i>Pimelea drupacea</i> Labill.	+		
<i>Pittosporum bicolor</i> Hook.	+		+
<i>Poa</i> sp.	+		
<i>Polystichum proliferum</i> (R. Br.) Presl	+		+
<i>Pterostylis</i> sp.	+		

Appendix 4. Continued.

Species	Site		
	1	2	3
<i>Pultenaea juniperina</i> Labill.	+		
<i>Restio australis</i> R. Br.		+	
* <i>Rubus gunnianus</i> Hook.		+	
<i>Stylidium graminifolium</i> Swartz		+	
<i>Tasmannia lanceolata</i> (Poir.) A.C. Sm.	+		
* <i>Trochocarpa cunninghamii</i> (DC.) W.M. Curtis	+	+	+
<i>Uncinia tenella</i> R. Br.			+
<i>Uncinia</i> sp.	+		+
<i>Veronica</i> sp.		+	
<i>Viola hederacea</i> Labill.	+		
	33	35	26

