https://doi.org/10.26749/rstpp.110.63

Papers and Proceedings of the Royal Society of Tasmania, Vol. 110, 1976

(ms. received 30.7.1975)

CHANGES IN THE ABUNDANCE OF THE VASCULAR PLANTS OF THE MOUNT WELLINGTON RANGE, TASMANIA, FOLLOWING A SEVERE FIRE

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(with two tables and one text figure)

ABSTRACT

A census of the vascular plants of the Mt. Wellington Range, Tasmania, is reported, the survey having been carried out in the two-year period between February 1973 and March 1975, i.e. six to eight years after the devasting bushfire of 7th February 1967. An earlier survey of Mt. Wellington by Martin published in 1940 provided the opportunity to examine whether the bushfire caused any extinction of plant species, or whether there were any important changes in relative species abundance.

A total of 487 native vascular species were found in the survey zone, including 450 angiosperms, representing more than one-third of the known species of native flowering plants in Tasmania. Although certain plants, e.g. some species of *Richea* and some ferns, are making a slow recovery from the effects of the fire, no important changes in the flora have been observed in comparing the present survey with the earlier one. All species observed in the survey are presented in a detailed appendix, where the abundance of each species in each of eight vegetation zones is recorded. Current practice in the botanical naming of species is observed throughout.

INTRODUCTION

The only previous published survey of the vascular plants of Mt. Wellington, Tasmania, was carried out by Martin (1940), who found a total of approximately 370 species in his survey zone, which was bordered (approximately) on the west by Thark Ridge, on the south by the North West Bay River, on the north by the New Town Rivulet, and on the east by the Derwent River (using only the area above the 800 ft. contour on the topographical map). On 7th February 1967 a disastrous fire occurred which burned and killed virtually all the vegetation of Mt. Wellington, as well as causing directly the deaths of 53 people and destroying a large number of houses and considerable property in the Hobart metropolitan area. Several years after the fire, regrowth of most species was already apparent, and the present survey is an attempt to re-examine the vascular plants of the Mt. Wellington Range, to determine which species are currently present, and to note whether any species listed by Martin (1940) are absent at the present time.

The physiography, geology, soils and climate of Mt. Wellington are dealt with by Martin (1940) and will not be discussed here. More recent accounts of these subjects for Tasmania as a whole are to be found in the Atlas of Tasmania (Davies 1965). Although Martin (1940) took an ecological approach to his survey, the present authors do not. The intention here is to present a list of plants that are currently in the survey area, to indicate the frequency of occurrence in the various zones, which with one exception, are the same as those used by Martin (1940), and to present a table which lists anomalies between the present study and the earlier study. It is hoped

that this material can then be used by ecologists to make deductions concerning the effect of fire upon plant communities.

SURVEY AREA AND VEGETATION ZONES

The survey was begun in February 1973 and continued until March 1975, a period of slightly over two years, representing a time lapse of six to eight years after the bushfire of 1967. Both authors visited the survey area together at various weekends, but it is estimated that one of us (A.V.R.) visited some portion of the survey area on more than 300 days during that period of time. The survey area itself is somewhat more extensive than that of Martin (1940), covering the entire Wellington Range (Fig.1). The authors have made use of the existence of a large network of fire roads in the range, which although not available to the public for vehicular traffic, gives foot access to portions of the range not readily accessible to Martin (1940). Figure 1 shows the fire road system, names the more important peaks of the range and shows the boundaries of the survey area. The western boundary of the survey area is the fire road extending the Jeffreys Track from Lachlan to the Crabtree Road, the southern boundary is the system of power lines paralleling the Huon Highway, the northern boundary is the Molesworth Road from Berriedale, and the eastern boundary is the Derwent River. In all cases the 240 m (ca. 800 ft.) contour is the minimum elevation. Hence, areas over 240 m in the various foothills which are outliers of Mt. Wellington, such as on Knocklofty, Chimney Pot, Tolmans, Badger and Watchorns Hills, and on Mt. Nelson, are included in the survey area. The more restricted area surveyed by Martin (1940) is shown by a dot-and-dash line on fig. 1.

Martin (1940) divided his survey area into seven vegetation sections or zones, and although other divisions could be devised (cf. Costin 1954), Martin's are retained in the present survey in order to facilitate a comparison between the two surveys. The one difference is that a zone has been added in the present work, referred to as zone 3b, which is characterized by a preponderance, amongst the eucalypts, of the gum-topped stringybark, *E. delegatensis*. Pure (or almost pure) stands of this species occur in some areas of the survey zone, and form a transition between the zone dominated by *E. obliqua* (Zone 4) and the zone dominated by *E. urnigera* (Zone 3a in the present work and Zone 3 in Martin, 1940). The characteristics of the zones used in the present study are described in the following paragraphs.

Zone 1 - Summit plateau

The summit plateau occupies a region of rather limited extent of approximately two sq. km above an elevation of ca. 1220 m at the summit of Mt. Wellington and a very much smaller area at the summit of Collins Bonnet. The region is characterized by a complete absence of trees of any kind. The zone can be divided into two distinct regions, each region having its own characteristically abundant flora, although there are areas of transition between the regions. The regions contain (i) more or less permanently wet, grassy areas, and (ii) rocky, well-drained shrubby areas. Generally a species can occur in both regions of a zone, but some species are predominant only in one region. Species common throughout zone 1 are the monocotyledons *Calorophus minor, Astelia alpina, Poa gunnii*, the shrubs *Epacris serpyllifolia, Monotoca empetrifolia*, the dwarf perennial *Rubus gunnianus* and the dicotyledonous herbs *Celmisia longifolia, Helichrysum scorpioides*. Species common only in the wet, grassy areas include the shrubs *Helichrysum hookeri, Olearia algida*, and the herbs *Epilobium gunnianum, Acaena novae-zelandiae, Plantago tasmanica*. Species common only in the rocky areas are the shrubs *Orites revoluta, Helichrysum ledifolium, Leptospermum rupestre* and the herbs *Haloragis montana* and *Euphrasia diemenica*.

Zone 2 - *Eucalyptus coccifera* dominant.

The snow gum *E. coccifera* forms pure stands at elevations between ca. 1100-1220 m. It is found on the rocky areas of the zone, but cannot survive in the poorly drained swampy areas such as the extensive wet grasslands which feed the headwaters of the North West Bay River. Within these grasslands, an occasional island of rocks, such as

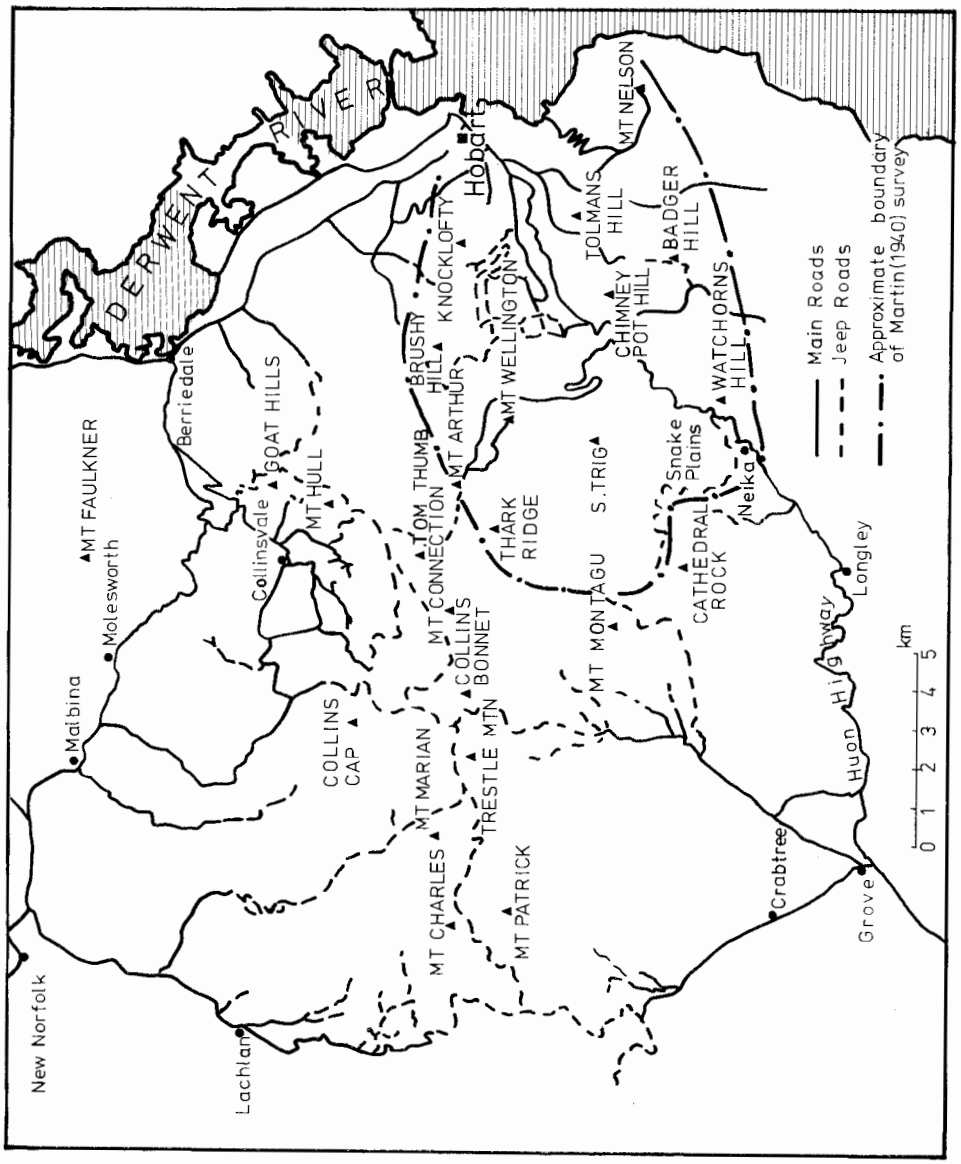

FIG. 1. - Map of the Mt. Wellington Range, showing the survey area.

'Dead Island' is found, upon which *E. coccifera* can grow. Similar to zone 1, there are two distinct regions within this zone, namely (i) wet, grassy areas, and (ii) rocky, shrubby areas. Species common throughout both regions of the zone are the fern *Gleichenia circinnata*, the monocotyledons *Calorophus minor, Astelia alpina, Poa gunnii, Schoenus calyptratus*, the shrubs *Baeckia gunniana, Sprengelia incarnata*, the dwarf perennial *Rubus gunnianus*, and the dicotyledonous herbs *Celmisia longifolia, Helichrysum scorpioides, Viola hederacea*. Species common only in the wet, grassy areas are the monocotyledons *Restio australis, Carpha alpina, Oreobolus oxycarpus* and the dicotyledonous herbs *Ourisia integrifolia, Epilobium gunnianum, Craspedia alpina, Haloragis micrantha*. Species common only in the rocky areas are the shrubs *Helichrysum ledifolium, Orites revoluta, Monotoca empetrifolia, Bauera rubioides, Epacris serpyllifolia*, and the herbs *Haloragis montana, Scaevola hookeri, Euphrasia diemenica, Geranium potentilloides, Plantago tasmanica*.

Zone 3a - *Eucalyptus urnigera* dominant

Below 1100 m to elevations down to as low as 760 m in some parts of the survey zone, the dominant species of eucalypt is the urn gum *E. urnigera*, which either forms pure stands or is accompanied by *E. coccifera* at the upper levels of the zone, and by *E. johnstonii* and *E. delegatensis* in the middle and lower levels of the zone, respectively. Similar to zones 1 and 2, there are wet, grassy areas within the zone (e.g. Midsky Swamp, Georges Flagland, marsh at head of Mountain River, Fools Tarn) as well as rocky, shrubby areas. Species common only in the wet, grassy areas are the fern *Gleichenia circinnata*, the monocotyledons *Calorophus minor, Astelia alpina, Carpha alpina, Restio australis, Oreobolus oxycarpus, Scirpus aucklandicus*, the shrubs *Baeckia gunniana, Sprengelia incarnata, Epacris serpyllifolia, Helichrysum hookeri*, the dicotyledonous herbs *Helichrysum scorpioides, Craspedia alpina, Celmisia longifolia, Haloragis micrantha*. Species common only in the rocky regions are the shrubs *Oxylobium ellipticum, Veronica formosa, Bauera rubioides* and the herbs *Haloragis montana* and *Hydrocotyle sibthorpioides*.

Zone 3b - *Eucalyptus delegatensis* dominant

In some portions of the survey zone (e.g. on Mt. Hull; at the upper (southern) end of the Lenah Valley Track; above Crabtree; above Collinsvale) large areas of pure or almost pure *E. delegatensis* occur, usually at elevations between 600-800 m. The frequency of species is given in the survey table in the Appendix.

Zone 4 - *Eucalyptus obliqua* dominant

The stringybark *E. obliqua* has a wide distribution throughout this zone, extending from the lower limit of elevation used in this survey (240 m) to an elevation of about 670 m, above which it seldom appears and is replaced by *E. delegatensis*, although the latter species can occur down to levels as low as 300 m. The mountain ash *E. regnans* attains its greatest frequency on the shadier, moister slopes of the mountain, e.g. near Neika and on the margins of gullies. A distinct region to be observed within this zone are the mudstone outcroppings where *E. tenuiramis* replaces *E. obliqua* as the dominant eucalypt. Other plants which reach great abundance on mudstone include the shrubs *Aotus ericoides, Pultenaea gunnii* var. *baeckioides, Acacia botrycephala, Daviesia ulicifolia, Leucopogon collinus*, the undershrubs *Tetratheca glandulosa, Amperea xiphoclada*, and the twining perennial *Cassytha pubescens*.

Zone 5 - Sandstone communities, *Eucalyptus johnstonii* dominant

The main areas of exposed sandstone occur at elevations of approximately 600-750 m and include such features as Snake Plains, The Springs, Sphinx Rock, as well as a variety of other outcroppings along the 'Pipeline Track' to Wellington Falls and in the vicinity of Collins Cap. The striking feature of these areas is the dominance, amongst eucalypts, of the yellow gum *E. johnstonii*. The abundance of species present at Snake Plains is somewhat different from those at the other areas of exposed sandstone, owing to the fact that the Plains are very flat and poorly drained, resulting in an acid, peaty soil. The following species are locally common at Snake Plains, but are absent at the other areas of sandstone: *Calorophus minor, Epacris lanuginosa,*

Melaleuca squamea, and the small prostrate species *Coprosma moorei* and *Boronia parviflora*.

Zone 6 - Gully communities

The bottom of gullies in sheltered areas at elevations up to 600 m that remain permanently wet have developed a dominant gully flora, the main species being *Olearia argophylla*, *Pomaderris apetala*, *Bedfordia salicina*, and to a somewhat lesser extent *Nothofagus cunninghamii*, *Atherosperma moschatum*. There is a large variety of fern species in the gully flora, including the tree fern *Dicksonia antarctica*; see Appendix.

Zone 7 - Dry sclerophyll forest

The lower slopes and foothills of Mt. Wellington consist either of mudstone or dolerite ridges which receive a comparatively low annual rainfall (600-750 mm). The dominant eucalypt of the mudstone ridges is *E. tenuiramis*, and there is a plant community associated with mudstone, in which certain species are locally abundant there, but of minor importance in the dolerite regions. These include the shrubs *Aotus ericoides*, *Pultenaea gunnii* var. *baeckioides*, *Acacia myrtifolia* and the undershrubs *Tetratheca glandulosa*, *Amperea xiphoclada*. In the dolerite section of the zone, the predominant eucalypt species are *E. pulchella* and *E. viminalis* in the drier areas, and *E. obliqua* and *E. globulus* in the wetter areas. Certain other plants are common throughout the entire zone. These include the monocotyledons *Themeda australis*, *Schoenus apogon*, *Lomandra longifolia*, *Diplarrhena moraea*, *Stipa pubinodis*, *Dichelachne sciurea*, *Danthonia setacea*, the shrubs *Epacris impressa*, *Astroloma humifusum*, *Pultenaea juniperina*, *Acacia dealbata*, *Leptospermum scoparium*, and the dicotyledonous herbs *Haloragis tetragyna*, *Viola hederacea*.

CENSUS OF THE PLANTS

The results of the survey are reported in the Appendix in the form of a census, the abundance of each native species being given for each zone in which it was found to occur (a list of introduced plants, not claimed to be complete, is also included). The sources of plant nomenclature and the meanings of the measures of abundance are given in the introduction to the Appendix.

COMPARISON WITH EARLIER SURVEY

Tables 1 and 2 compare various aspects of the present survey with that of Martin (1940). Table 1 contrasts the number of species reported in the two surveys, and in the case of Martin (1940), the tabulation is restricted to those actually observed by that author, and do not include the records of other collectors which he marked with an asterisk in his table. Many of these plants occur in coastal situations and/or at elevations below 240 m and the present authors feel justified in confining the comparison to those plants actually observed by Martin himself. Table 1 shows that

TABLE 1

NUMBER OF SPECIES REPORTED IN SURVEY

	Martin (1940)	The present study
Dicotyledoneae	247	313
Monocotyledoneae	84	137
Pteridophyta	39	35
Gymnospermae	2	2
Total	372	487

a considerably larger number of dicotyledons and monocotyledons have been observed in the present survey than in the earlier one. There are several reasons for the greater numbers in the present survey, e.g. the larger extent of the area surveyed, the greater frequency of visits by the present authors, and changes in nomenclature, which now recognize several taxa where earlier botanical works regarded several species as one taxon. Nevertheless, in spite of the increased numbers of species recorded in the present survey, there were 44 species reported by Martin (1940) but not seen by the present authors. Table 2 lists the discrepancies in the records of the two surveys under six subheadings, these being (a) species listed by Martin as occasional or frequent, but not observed in the present survey, (b) species listed by Martin as rare or very rare, and hence whose absence at present must be viewed as being of little consequence, (c) species listed by Martin which are believed by us to be possible mistaken identities, (d) species listed by Martin as frequent or common, but whose abundance at present is much less, (e) species absent from Martin's list but abundant at present, and (f) species whose abundance at present is much greater than in Martin's list. Comments are included in Table 2 in some cases either to help clarify discrepancies or to indicate changes in nomenclature.

TABLE 2

DISCREPANCIES IN RECORDS OF MARTIN (1940) AND THOSE OF THE PRESENT SURVEY

(a) Species listed by Martin as occasional or frequent, but not observed at present. Numbers refer to zones.

Name	Martin record	Comment
Acianthus caudatus	4:*f*;7:*o*	
A. viridis	4:*f*;7:*o*	
Asplenium flaccidum	6:*o*	
Blechnum patersonii	6:*o*	
Caladenia angustata	4:*o*	
C. dilatata	4:*o*;7:*f*	
Caleana minor	7:*o*	
C. major	7:*o*	
Centrolepis strigosa	5:*o*	
Epacris microphylla	7:*o*	
Goodia lotifolia	4:*o*	
Hibbertia fasciculata	5:*o*;7:*f*	
H. procumbens	7:*o*	
Lepidosperma squamata	4,5:*o*;7:*f*	
Leptospermum flavescens	4,5:*f*;7:*o*	
Lycopodium deuterodensum	1:*o*;6:*f*	
L. laterale	1:*f*	
Pleurosorus rutifolius	4,6:*o*	
Prasophyllum australe	7:*o*	
P. fuscum	1,4,7:*o*	
P. nigricans	7:*o*	
Schoenus tenuissimus	5:*o*	
Selaginella uliginosa	1:*f*;2:*o*	
Senecio velleioides	4:*o*	Often becomes more frequent after fires (Curtis 1963)
Thysanotus patersonii	7:*o*	
Thelymitra carnea	7:*o*	

(b) Species listed by Martin as rare or very rare, but not observed at present

Name	Martin Record	Comment
Anogramma leptophylla	1:*r*;4:*vr*	
Centrolepis fascicularis	5,7:*r*	
Cyrtostylis reniformis	7:*r*	Syn. *Acianthus reniformis*
Doodia caudata	2,3:*r*	
Eriochilus cucullatus	7:*r*	
Grevillea australis	2,3:*vr*	
Lyonsia straminea	4,6:*r*	Syn. *Parsonia straminea*
Microlaena tasmanica var. *subalpina*	1:*vr*	
Ozothamnus gunnii	1:*r*	Syn. *Helichrysum gunnii*, believed to be confined to the northeast and Flinders Island
Prasophyllum elatum	7:*r*	
Pultenaea tenuifolia	7:*vr*	
Spiranthes australis	7:*vr*	Syn. *S. sinensis*

(c) Species listed by Martin thought by the present authors to be possible mistaken identities

Name	Martin record	Comment
Brachyloma daphnoides	7:*f*	Not a Tasmanian species
Cyathodes acerosa	2,5,7:*o*;3,4:*c*	Syn. *C. juniperina*, but this species does not occur on Mt. Wellington (Curtis 1963)
Erythraea australis	4:*o*	Probably mistaken for *Centaurium erythraea* (see introduced species list)
Hakea sericea	3:*c*;4:*o*	Confined in Tasmania to islands of the Furneaux Group; probably *H. lissosperma* is meant
Olearia hookeri	7:*o*	Probably *O. ericoides* is meant (see Appendix)
Richea acerosa	1:*vc*;2:*c*	There is no other record from Mt. Wellington for this species and no herbarium material from this location

(d) Species listed by Martin as frequent, common or very common, but much less frequent at present

Name	Martin record	Present record
Dillwynia cinerascens	4:*o*;7:*f*	7:*l*
D. sericea	4:*o*;7:*c*	7:*l*
Kennedia prostrata	7:*c*	7:*r*
Orites acicularis	1:*vc*;2:*c*	1,2:*o*
Richea gunnii	1,2:*c*;3:*o*	2:*r*
Trochocarpa thymifolia	1,2:*vc*;3:*f*	1:*l*;2:*o*;3a:*vr*

(e) Species not observed by Martin, but frequent or common at present

Name	Martin record	Present record
Asperula gunnii	-	1:*f*
A. scoparia	-	7:*f*
Brachycome scapiformis	-	1,2,3:*f*;7:*c*
Hydrocotyle javanica	-	4,6:*c*
H. sibthorpioides	-	3a:*c*;3b:*f*
Leptorhynchos squamatus	-	7:*c*
Leucopogon collinus	-	7:*c*
Poranthera microphylla	-	3a,3b,4,7:*f*

(f) Species listed by Martin as rare or locally common, but more frequent at present

Name	Martin record	Present record
Australina pusilla	4,6:*r*	6:*c*
Cotula filicula	1:*r*	1,2,3a,3b,4,5:*o*
Gnaphalium spp.	1,2,4,5:*r*	1,2,3b,4,5,6:*o*;3a,7:*f*
Lagenophora stipitata	7:*r*	4,7:*f*
Pteridium esculentum	3,7:*lc*	3b,4,7:*c*;5:*f*
Scaevola hookeri	1:*r*	1:*f*;2,3a:*c*
Uncinia riparia	6:*r*	6:*f*

DISCUSSION

The major discrepancies between the two surveys, detailed in Table 2, could be of interest to ecologists who require information on the effect of fire on plant extinction or speed of plant regrowth or recovery after bushfires. It appears to be general that species of the genus *Richea* are making a slow recovery from the fire of 1967, and will not achieve their former abundance for some time. Ferns and fern allies are another group of plants whose abundance is generally less than during the time of Martin (1940). Not only are the number of species less than in the former survey, but of the 35 reported here, 9 of them are given as very rare. Although some species of ferns are amongst the first vascular plants to start regrowing after a fire, it appears that other species recover very slowly.

In spite of inevitable changes in abundances which reflect differences in seed dispersal and seedling establishment, the most encouraging finding of the present survey is the indication that a large number of species are still to be found in the Wellington Range. The total number of angiosperms found in the present survey was 450 (Table 1). This is more than one-third of the estimated 1200 native flowering species in Tasmania. Although the latter figure (Curtis 1969) is probably an underestimate, the fact that such a high proportion of the flora of the island is to be found on the Wellington Range eight years after a devastating fire is a tribute to the adaptability of the flora to fire.

Devasting fires occurred on Mount Wellington in 1898 and 1914. Other less serious fires have occurred periodically since settlement by European man, and it is reasonable to assume that the mountain was burnt in past millennia by Aboriginal man. Most species possess adaptations which favour the plants' survival or regeneration after fire. It is believed that fire has long been an important element in determining the structure and distribution of plant communities in Tasmania (Jackson 1968). Thus it is possible that the fire of 1967, destructive as it was, may not produce

significant long term changes in the distribution of communities or their species composition.

ACKNOWLEDGEMENTS

In addition to the people cited in the introduction to the Appendix, we are especially grateful to Dr. D. Martin, Officer-in-Charge of the CSIRO Tasmanian Regional Laboratory, who introduced the authors to the study of the Tasmanian Flora, and whose own pioneering survey begun four decades ago provided the groundwork upon which the current survey is based.

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APPENDIX

The following table has been compiled from observations between February 1973 and March 1975. The eight columns refer to the vegetation zones which are described in detail in the text. They are summarized below:

Zone 1 = Summit plateau
2 = *Eucalyptus coccifera* dominant
3a = *Eucalyptus urnigera* dominant
3b = *Eucalyptus delegatensis* dominant
4 = *Eucalyptus obliqua* dominant
5 = Sandstone communities, *E. johnstonii* dominant
6 = Gully communities
7 = Dry sclerophyll forest

Abundances of species in a particular zone are indicated by various abbreviations which are as follows:

c = common, i.e. abundant throughout zone
lc = locally common, i.e. abundant only in certain evironments within the zone
f = frequent
o = occasional
l = local, i.e. found in only a few localities within the zone, but neither sufficiently abundant to be called locally common, nor sufficiently sparse to be called rare
r = rare
vr = very rare

The following sources of botanical nomenclature have been used. Gymnosperms and dicotyledons: Curtis and Morris (1975), Curtis (1963 and 1967); Pteridophytes: Willis (1970); Grasses: Townrow (1969 and 1970), Vickery (1939, 1940, 1941, 1956 and 1970); Monocotyledons except grasses: Willis (1970), Black (1960), and the authors' own unpublished keys. In addition, the helpful assistance of the following people is gratefully acknowledged: Dr. W.M. Curtis (Hobart), Mr. D.I. Morris (Hobart) Mrs. J.E.S. Townrow (Hobart), Dr. L.A.S. Johnson (Sydney). Dr. E. Edgar (Christchurch) and Mr. R.J. Chinnock (Adelaide).

MONOCOTYLEDONEAE

	Zones							
	1	2	3a	3b	4	5	6	7
Gramineae (Poaceae)								
Agrostis parviflora[1] R.Br.	*o*	*o*	*o*	*o*	*o*	*l*	*r*	
A. venustra Trin.	*o*	*o*	*o*		*r*			
A. avenacea J.F.Gmel.				*r*	*o*		*r*	*o*
A. aemula R.Br.			*o*	*o*	*o*		*o*	*o*
Agropyron scabrum (Labill.) Beauv.								*vr*
Amphibromus archeri (Hook.f.)P.F.Morris								*vr*
Danthonia semiannularis (Labill.) R.Br.								*vr*
D. pauciflora R.Br.	*o*	*vr*						
D. purpurascens J.W.Vickery	*r*	*o*	*f*	*o*	*o*			*o*
D. setacea R.Br.					*o*		*l*	*c*
D. caespitosa Gaud.			*vr*		*o*		*o*	*o*
D. procera J.W.Vickery								*r*
D. laevis J.W.Vickery			*r*		*r*		*o*	*o*
D. pilosa[2] R.Br.			*o*	*o*	*o*	*l*	*r*	*f*
D. dimidiata J.W.Vickery					*l*			*l*
Deyeuxia quadriseta (Labill.) Benth.				*o*	*o*	*l*	*r*	*o*
D. monticola (Roem. & Schult.) J.W.Vickery	*o*	*f*	*f*	*f*	*f*	*o*	*o*	
D. rodwayi J.W.Vickery				*o*	*o*		*r*	
D. accedens J.W.Vickery		*vr*	*r*	*o*	*o*		*o*	
D. benthamiana J.W.Vickery				*r*	*o*			
D. scaberula J.W.Vickery				*o*	*o*	*l*	*o*	
D. sp.aff.*microseta*[3] J.W.Vickery	*l*	*l*	*l*					
Dichelachne sciurea (R.Br.) Hook.f.				*lc*	*f*	*l*	*r*	*c*
D. crinita (L.f.) Hook.f.					*r*			*o*
Distichlis distichophylla (Labill.) Fassett					*l*			*lc*
Echinopogon ovatus (Forst.f.) Beauv.			*l*	*o*	*o*		*r*	*r*
Festuca asperula[4] J.W.Vickery		*r*	*o*	*o*	*o*	*r*		*o*
Hierochloe redolens (Soland.) Roem. & Schult.	*f*	*f*	*f*	*o*	*r*	*r*	*r*	
H. fraseri Hook.	*o*	*o*						
Microlaena stipoides (Labill.) R.Br.				*r*	*o*		*r*	*o*
Pentapogon quadrifidus (Labill.) Baill.			*o*	*o*	*o*			*r*
Poa australis[5] sp.agg.	*c*	*c*	*c*	*c*	*c*			*c*
P. saxicola R.Br.		*f*	*f*	*o*				
Stipa aphylla (Rodway) Townrow								*r*
S. mollis R.Br.								*o*
S. pubinodis Trin. & Rupr.					*r*			*c*
Tetrarrhena distichophylla (Labill.) R.Br.								*o*
Themeda australis (R.Br.) Stapf								*c*
Cyperaceae								
Carex appressa R.Br.	*f*	*f*	*f*	*f*	*l*	*r*	*c*	*r*
C. archeri Boott	*vr*	*vr*	*vr*					
C. breviculmis R.Br.		*f*	*lc*	*l*	*o*			*f*
C. curta Gooden.					*l*			*r*
C. gaudichaudiana Kunth		*l*	*l*	*l*				
C. gunniana Boott			*l*	*l*				
C. inversa R.Br.				*r*				
C. inyx Nelmes								*vr*
C. longibrachiata Boeck.					*vr*			
Carpha alpina R.Br.	*f*	*f*	*f*	*o*				

Change in abundance of vascular plants on Mt. Wellington following fire

	Zones							
	1	2	3a	3b	4	5	6	7
Cyperus tenellus L.f.					*vr*			
Eleocharis acuta R.Br.					*vr*			
Gahnia graminifolia Rodway								*f*
G. grandis(6) (Labill.) S.T. Blake	*r*	*o*	*f*	*f*	*c*	*c*	*c*	*o*
G. radula (R.Br.) Benth.					*l*			*o*
Lepidosperma elatius Labill.					*o*		*o*	*o*
L. filiforme Labill.		*lc*	*lc*		*l*			*lc*
L. laterale R.Br.					*lc*			*lc*
L. lineare(7) R.Br.								*f*
Oreobolus distichus F.Muell.	*r*	*lc*	*lc*					
O. oxycarpus S.T.Blake		*lc*	*lc*					
O. pumilio R.Br.	*o*	*f*						
Schoenus apogon Roem. & Schult.			*r*	*o*	*f*		*f*	*c*
S. calyptratus Kükenthal & Blake	*o*	*c*	*o*					
S. maschalinus Roem. & Schult.					*l*			*l*
Scirpus antarcticus L.					*o*			*o*
S. aucklandicus (Hook.f.) Boeck.	*l*	*lc*	*lc*	*lc*	*lc*	*lc*	*l*	
S. crassiusculus (Hook.f.) Benth.	*lc*	*lc*						
S. fluitans L.			*r*	*r*	*l*			*l*
S. hookeranus (Boeck.) S.T. Blake			*l*		*l*	*r*	*l*	*o*
S. inundatus (R.Br.) Spreng.			*l*	*l*	*l*		*o*	*l*
S. platycarpus S.T.Blake				*r*	*l*		*l*	*o*
S. subtilissimus (Boeck.) S.T.Blake	*l*	*lc*	*lc*	*l*	*l*	*l*	*l*	
S. wakefieldianus S.T.Blake					*l*		*l*	
Tetraria capillaris (F.Muell.) J.M.Black					*l*			*vr*
Uncinia compacta R.Br.	*o*	*o*	*o*	*r*				
U. riparia R.Br.					*o*		*f*	
U. tenella R.Br.			*vr*	*vr*	*o*		*c*	
Restionaceae								
Calorophus minor(8) Hook.f.	*c*	*c*	*lc*	*r*	*l*	*f*		
Lepyrodia tasmanica Hook.f.			*l*			*lc*		
Restio australis R.Br.	*lc*	*lc*	*lc*					
Centrolepidaceae								
Centrolepis aristata Roem. & Schult.								*vr*
C. monogyna Benth.		*lc*	*o*					
Juncaceae								
Juncus australis Hook.f.				*l*	*l*	*o*		
J. gregiflorus L.Johnson					*lc*	*lc*		*lc*
J. holoschoenus R.Br.				*r*	*o*			*o*
J. pallidus R.Br.			*l*	*l*	*lc*	*o*		*lc*
J. planifolius R.Br.				*lc*	*lc*	*lc*	*lc*	*r*
J. procerus E.Mey.				*lc*	*lc*	*lc*		*lc*
J. pauciflorus R.Br.			*r*	*l*	*o*	*r*	*o*	
J. sandwithii Lourt.	*lc*	*l*	*l*	*l*	*o*	*l*		*l*
J. subsecundus N.A.Wakefield			*lc*	*lc*	*lc*			*lc*
J. sarophorus L.Johnson			*vr*	*lc*	*lc*	*lc*		*lc*
J. sp.aff. *sandwithii*(9) Lourt.		*lc*	*lc*					
Luzula sp.agg. (10)	*c*	*c*	*f*	*f*	*c*	*c*	*f*	*c*

	Zones							
	1	2	3a	3b	4	5	6	7
Liliaceae								
Anguillaria dioica R.Br.								*o*
Arthropodium milleflorum (DC.) Macbride					*r*			*f*
Astelia alpina R.Br.	*c*	*c*	*lc*	*r*				
Bulbine bulbosa (R.Br.) Haw.								*o*
B. semibarbata (R.Br.) Haw.					*l*	*vr*		
Dianella revoluta R.Br.					*o*			*o*
D. tasmanica Hook.f.				*c*	*f*	*o*		*o*
Drymophila cyanocarpa R.Br.		*r*	*o*	*o*	*o*	*o*	*f*	*o*
Laxmannia sessiliflora Decaisne								*l*
Lomandra logifolia Labill.				*vr*	*o*			*c*
Stypandra caespitosa R.Br.								*r*
Hypoxidaceae								
Hypoxis hygrometrica Labill					*r*			*o*
Iridaceae								
Diplarrhena moraea Labill.				*o*	*o*			*c*
Orchidaceae								
Caladenia carnea R.Br.				*o*	*o*			*o*
C. cucullata R.D.FitzG.					*r*			*r*
C. gracilis R.Br.					*o*			*o*
C. lyallii Hook.f.	*r*	*f*	*o*	*o*	*o*	*r*		
C. patersonii R.Br.								*l*
Calochilus robertsonii Benth.					*o*			*r*
Chiloglottis cornuta Hook.f.							*l*	
C. gunnii Lindl.		*vr*	*vr*	*lc*	*lc*	*f*	*o*	*l*
Dipodium punctatum (Sm.) R.Br.								*vr*
Diuris maculata Sm.					*l*			*l*
D. pedunculata R.Br.								*l*
D. sulphurea R.Br.								*l*
Gastrodia sesamoides R.Br.		*vr*	*vr*	*r*	*o*		*r*	*r*
Glossodia major R.Br.								*o*
Lyperanthus suaveolens R.Br.								*r*
Microtus parviflora R.Br.				*o*	*o*		*r*	*o*
Prasophyllum alpinum R.Br.	*o*	*o*	*o*					
P. brevilabre (Lindl.) Hook.f.								*r*
P. suttonii R.S.Rogers & B.Rees		*l*						
Pterostylis alpina R.S.Rogers	*o*	*o*	*o*			*o*		
P. decurva R.S.Rogers			*l*	*vr*				*l*
P. longifolia R.Br.				*l*	*o*			*o*
P. nana R.Br.					*r*			*r*
P. nutans R.Br.			*l*	*l*	*l*	*l*	*l*	*l*
P. pedunculata R.Br.								*l*
Thelymitra grandiflora R.D.FitzG.					*r*			*o*
T. ixioides Swartz					*o*			*o*
T. nuda R.Br.								*o*
T. pauciflora R.Br.				*o*	*o*	*vr*		*o*
T. venosa R.Br.		*lc*	*lc*			*lc*		

	Zones							
	1	2	3a	3b	4	5	6	7
Typhaceae								
Typha orientalis Presl					*l*			*l*
DICOTYLEDONEAE								
Ranunculaceae								
Clematis aristata R.Br. ex DC.		*vr*	*vr*	*o*	*o*		*f*	*o*
C. gentianoides DC.								*o*
Ranunculus lappaceus Sm.					*o*			*c*
R. scapigerus Hook.		*o*	*c*	*c*	*f*	*o*		
R. collinus R.Br. ex DC	*o*	*lc*	*c*	*o*	*r*			
R. pumilio R.Br. ex DC.				*vr*	*r*			*vr*
Dilleniaceae								
Hibbertia hirsuta (Hook.) Benth.								*f*
H. riparia (R.Br.ex DC.) Hoogl.					*l*			*c*
H. empetrifolia (DC.) Hoogl.		*l*	*l*	*lc*	*l*			
Winteraceae								
Drimys lanceolata (Poir.) Baill.	*o*	*o*	*o*	*o*	*o*		*o*	
Cruciferae (Brassicaceae)								
Rorippa dictyosperma (Hook.) L.Johnson				*o*	*o*		*r*	
Cardamine heterophylla Hook.	*o*	*o*	*o*	*o*	*l*		*vr*	*r*
Violaceae								
Viola hederacea Labill.	*c*	*c*	*c*	*c*	*c*	*lc*	*c*	*c*
Pittosporaceae								
Pittosporum bicolor Hook.		*r*	*o*	*o*	*o*	*o*	*f*	
Bursaria spinosa Cav.					*l*			*f*
Marianthus procumbens (Hook.) Benth.					*r*			*o*
Billardiera longiflora Labill.		*o*	*f*	*f*	*c*	*f*	*f*	*vr*
Tremandraceae								
Tetratheca glandulosa Labill.					*lc*			*lc*
T. pilosa Labill.				*lc*	*lc*			*c*
T. procumbens Gunn ex Hook.f.			*l*					
Polygalaceae								
Comesperma volubile Labill.					*f*			*c*
C. retusum Labill.			*r*			*o*		*l*

	Zones							
	1	2	3a	3b	4	5	6	7
Caryophyllaceae								
Stellaria flaccida Hook.				*l*	*o*		*c*	
Scleranthus biflorus (J.R. & G. Forst.) Hook.f.	*vr*	*vr*	*o*					*r*
Portulacaceae								
Calandrinia calyptrata Hook.f.								*vr*
Neopaxia australasica (Hook.f.) Ö.Nilss.			*lc*	*lc*	*l*			
Hypericaceae								
Hypericum gramineum Forst.f.					*lc*			*o*
H. japonicum Thunb. ex Murr.			*r*	*r*				
Malvaceae								
Asterotrichion discolor (Hook.) Melville			*r*	*r*	*f*		*f*	*o*
Elaeocarpaceae								
Aristotelia peduncularis (Labill.) Hook.f.		*o*	*o*	*o*	*f*	*r*	*f*	*vr*
Linaceae								
Linum marginale A.Cunn.								*c*
Geranicaceae								
Geranium potentilloides L'Hérit. ex DC.	*c*	*c*	*c*	*c*	*c*	*lc*		*c*
G. solanderi Carolin					*l*		*vr*	*o*
Pelargonium inodorum Willd.			*o*	*o*	*f*	*r*	*r*	*o*
Oxalidaceae								
Oxalis lactea Hook.		*r*	*o*	*o*	*o*		*o*	
O. corniculata L.			*vr*		*f*		*o*	*c*
Rutaceae								
Zieria arborescens Sims.					*f*	*f*	*f*	
Boronia pilosa Labill.					*l*			*lc*
B. nana Hook.								*r*
B. parviflora Sm.					*l*	*lc*		
Eriostemon verrucosus A.Rich.								*l*
Phebalium squameum (Labill.) Engler		*l*	*l*	*o*	*lc*	*c*	*c*	
Correa reflexa (Labill.) Vent				*r*	*f*	*o*	*o*	*f*
C. lawrenciana Hook.			*f*	*f*	*f*	*o*	*o*	
Stackhousiaceae								
Stackhousia monogyna Labill.			*r*	*o*	*o*			*f*

Change in abundance of vascular plants on Mt. Wellington following fire

	Zones							
	1	2	3a	3b	4	5	6	7
Rhamnaceae								
Pomaderris elliptica Labill.					*o*			*lc*
P. apetala Labill.				*f*	*c*	*o*	*c*	*r*
Spyridium ulicinum (Hook.) Benth.			*lc*	*l*	*l*			
Sapindaceae								
Dodonaea viscosa Jacq.								*r*
Mimosoideae (Mimosaceae)								
Acacia genistifolia Link					*o*			*c*
A. verticillata (L.Hérit.) Willd.				*r*	*f*			*f*
A. riceana Henslow		*l*	*l*	*o*	*f*		*o*	*f*
A. gunnii Benth.								*r*
A. verniciflua A.Cunn.					*c*		*o*	*lc*
A. stricta (Andr.) Willd.					*lc*			*c*
A. myrtifolia (Sm.) Willd.					*o*			*c*
A. melanoxylon R.Br.				*o*	*f*	*r*		*f*
A. botrycephala (Vent.) Desf.					*lc*			*lc*
A. mearnsii De Wild.		*vr*		*r*	*f*	*r*	*f*	*o*
A. dealbata Link			*r*	*o*	*c*	*r*	*f*	*c*
Papilionatae (Fabaceae)								
Oxylobium arborescens R. Br.				*vr*				
O. ellipticum (Labill.) R.Br.		*o*	*f*	*c*	*c*	*c*		*lc*
Sphaerolobium vimineum Sm.								*o*
Daviesia latifolia R.Br.					*l*			*l*
D. ulicifolia Andr.					*f*			*c*
Aotus ericoides (Vent.) G.Don					*lc*			*lc*
Pultenea daphnoides [11] Wendl.					*f*			*f*
P. stricta Sims.					*c*			*lc*
P. gunnii[12] Benth.				*l*	*lc*			*lc*
P. pedunculata Hook.					*l*			*l*
P. subumbellata Hook.				*vr*	*vr*			
P. juniperina Labill.		*l*	*f*	*f*	*c*			*c*
Dillwynia sericea A.Cunn.								*l*
D. cinerascens R.Br.								*l*
Bossiaea prostrata R.Br.					*r*			*c*
Hovea heterophylla A.Cunn. ex Hook.f.								*f*
Goodia pubescens Sims.					*vr*			
Indigofera australis Willd.					*r*			*o*
Kennedia prostrata R.Br.								*r*
Rosaceae								
Rubus gunnianus Hook.	*f*	*c*	*c*					
R. parvifolius L.					*r*			*r*
Acaena ovina [13] A.Cunn.					*o*			*c*
A. novae-zelandiae Kirk	*f*	*f*	*f*	*c*	*c*	*f*	*c*	*c*
A. montana Hook.f.	*o*	*o*						

	Zones							
	1	2	3a	3b	4	5	6	7
Cunoniaceae								
Bauera rubioides Andr.		*c*	*c*	*o*	*l*	*c*		
Escalloniaceae								
Anopterus glandulosus Labill.				*r*			*r*	
Tetracarpaea tasmanica Hook.f.		*r*	*vr*					
Crassulaceae								
Crassula sieberana (Schult. & Schult.f.) Druce		*r*	*o*	*o*		*o*		*o*
Droseraceae								
Drosera arcturi Hook.	*c*	*c*						
D. pygmaea DC.	*f*	*f*	*l*	*l*	*l*			
D. binata Labill.				*vr*				
D. auriculata Backh. ex Planch.				*f*	*f*		*l*	*f*
D. gracilis Hook.f. ex Planch.			*r*					
Haloragaceae								
Haloragis micrantha (Thunb.) R.Br.		*c*	*lc*	*r*	*r*	*o*		*l*
H. tetragyna (Labill.) Hook f.							*l*	*c*
H. teucrioides DC.				*c*	*c*	*f*	*f*	*c*
H. montana Hook.f.	*c*	*c*	*c*					
Myriophyllum pedunculatum Hook.f.		*r*	*l*					
Myrtaceae								
Baeckea gunniana Schauer ex Walp.	*c*	*c*	*lc*					
Leptospermum scoparium J.R. & G. Forst.				*f*	*f*	*c*		*c*
L. lanigerum (Ait.) Sm.		*f*	*c*	*f*	*f*	*c*	*o*	
L. rupestre Hook.f.	*lc*	*o*						
Callistemon pallidus (Bonpl.) DC.		*r*	*lc*	*vr*	*o*			*o*
C. viridiflorus (Sims.) Sweet			*l*		*r*			
Melaleuca squarrosa Donn ex Sm.					*l*			*vr*
M. squamea Labill.			*lc*	*r*	*r*	*lc*		
Eucalyptus ovata Labill.								*lc*
E. viminalis Labill.					*o*			*c*
E. rubida Deane & Maiden					*l*			
E. urnigera Hook.f.			*c*	*o*	*r*	*o*		
E. cordata Labill.								*l*
E. globulus Labill.					*o*		*r*	*c*
E. johnstonii Maiden			*o*	*o*	*r*	*c*		
E. obliqua L'Hérit.				*r*	*c*		*l*	*lc*
E. regnans F.Muell.					*lc*		*o*	
E. delegatensis R.T.Baker			*o*	*c*	*o*	*o*		
E. pulchella Desf.				*vr*	*l*			*c*
E. amygdalina Labill.								*o*
E. coccifera Hook.f.		*c*	*c*					
E. tenuiramis Miq.					*lc*			*lc*

Change in abundance of vascular plants on Mt. Wellington following fire

	Zones							
	1	2	3a	3b	4	5	6	7
Onagraceae								
Epilobium gunnianum[14] sp.agg.	*c*	*c*	*f*	*f*	*f*	*o*	*c*	*f*
E. rotundifolium[15] Forst.f.					*lc*		*lc*	
Umbelliferae (Apiaceae)								
Hydrocotyle sibthorpioides Lamk.	*lc*	*o*	*c*	*f*		*lc*		
H. javanica Thunb.				*o*	*c*	*o*	*c*	
Oreomyrrhis sessiliflora Hook.f.	*vr*							
Daucus glochidiatus (Labill.) Fisch. et al.								*r*
Rubiaceae								
Coprosma hirtella Labill.			*o*	*f*	*f*	*o*	*c*	*o*
C. quadrifida (Labill.) Robinson					*f*	*o*	*f*	*o*
C. nitida Hook.f.	*o*	*o*	*f*	*o*	*r*	*o*		
C. pumila Hook.f.	*l*	*l*						
C. moorei Rodway		*l*	*l*			*l*		
Opercularia varia Hook.f.					*o*			*f*
Galium gaudichaudii DC.					*l*			
G. australe DC.		*r*	*o*	*o*	*o*	*l*		
G. albescens Hook.f.				*l*	*l*			
Asperula scoparia Hook.f.				*l*	*o*			*f*
A. gunnii Hook.f.	*f*	*o*	*l*					
Compositae (Asteraceae)								
Lagenophora stipitata (Labill.) Druce		*r*	*l*	*o*	*f*	*r*	*vr*	*f*
L. huegelii Benth.					*vr*			*vr*
Brachycome decipiens Hook.f.								*o*
B. scapiformis DC.	*f*	*f*	*f*		*vr*			*c*
B. stricta DC.								*vr*
Olearia viscosa (Labill.) Benth.		*o*	*f*	*c*	*c*	*o*	*l*	*f*
O. argophylla F.Muell.				*o*	*c*	*r*	*c*	*r*
O. myrsinoides (Labill.) Benth.								*vr*
O. erubescens (DC.) Dippel		*o*	*c*	*f*	*f*	*o*		*f*
O. persoonioides (DC.) Benth.			*o*	*l*		*f*	*o*	
O. tasmanica[16] (Hook.f.) W.M.Curtis		*o*	*f*		*vr*			
O. obcordata (Hook.f.) Benth.	*l*	*lc*	*lc*					
O. pinifolia (Hook.f.) Benth.	*o*	*o*	*o*					
O. ledifolia (DC.) Benth.	*f*	*o*	*r*					
O. stellulata (Labill.) DC.					*f*	*f*	*o*	*o*
O. phlogopappa (Labill.) DC.	*r*	*o*	*f*	*c*	*c*	*c*	*o*	*vr*
O. ramulosa (Labill.) Benth.				*l*				*f*
O. ericoides (Steetz) N.A.Wakefield								*f*
O. floribunda (Hook.f.) Benth.		*l*	*lc*	*lc*	*o*	*f*		*f*
O. algida N.A.Wakefield	*o*	*o*	*o*			*o*		
O. glandulosa (Labill.) Benth.								*lc*
Celmisia longifolia Cass.	*c*	*c*	*c*	*vr*	*vr*	*f*	*vr*	
C. saxifraga Comber	*l*							
Erigeron pappochroma Labill.	*o*	*f*	*l*			*l*		
Vittadinia triloba (Gaud.) DC.								*r*
Gnaphalium involucratum Forst.f.					*r*		*l*	*o*
G. collinum Labill.		*o*	*f*	*o*	*o*	*o*	*o*	*f*

	Zones							
	1	2	3a	3b	4	5	6	7
G. umbricola J.H.Willis	*vr*	*l*	*l*	*l*	*r*			
G. traversii Hook.f.	*o*	*r*	*r*					
G. sp.[17]	*o*	*vr*	*vr*					
Ewartia planchonii (Hook.f.) Beauv.	*vr*	*l*						
Leptorhynchos squamatus (Labill.) Less.		*vr*			*o*			*c*
L. linearis Less.								*o*
Helichrysum scorpioides Labill.	*c*	*c*	*c*	*o*	*lc*	*o*	*r*	*c*
H. dealbatum Labill.					*vr*			*o*
H. apiculatum (Labill.) DC.			*r*	*r*	*o*	*r*		*lc*
H. semipapposum (Labill.) DC.		*vr*	*vr*	*r*				*c*
H. ledifolium (DC.) Benth.	*c*	*c*	*f*	*o*	*r*	*r*		*vr*
H. purpurascens (DC.) W.M.Curtis					*r*			o
H. rosmarinifolium (Labill.) Steud. ex Benth.			*l*	*l*		*r*		
H. dendroideum N.A.Wakefield					*c*	*o*	*f*	*f*
H. thyrsoideum (DC.) Willis & Morris			*o*	*f*	*f*	*o*	*r*	*r*
H. antennarium (DC.) F.Muell. ex Benth.		*r*	*o*	*o*	*o*	*r*	*r*	
H. obcordatum (DC.) F.Muell. ex Benth.					*r*	*vr*		*o*
H. backhousii[18] (Hook.f.) F.Muell. ex Benth.	*f*	*f*						
H. hookeri (Sond.) Druce	*f*	*f*	*o*	*vr*		*vr*		
H. expansifolium (Morris & Willis) N.T.Burbidge	*o*	*o*	*r*					
H. scutellifolium (Hook.f.) Benth.				*vr*	*r*			*r*
Cassinia aculeata R.Br.			*o*	*o*	*f*	*o*	*f*	*f*
Craspedia glauca (Labill.) Spreng.				*o*	*o*			*o*
C. alpina Backh. ex Hook.f.	*c*	*c*	*f*					
Podolepis jaceoides (Sims) Voss								*l*
Cotula filicula (Hook.f.) Benth.	*o*	*o*	*o*	*o*	*o*	*o*		
C. australis (Sieb. ex Spreng.) Hook.f.								*l*
Abrotanella forsterioides (Hook.f.) Benth.	*lc*	*lc*						
Senecio pectinatus[19] DC.	*o*	*lc*						
S. leptocarpus DC.		*o*	*l*					
S. brunonis[20] (Hook.f.) J.H.Willis		*vr*	*o*	*o*		*r*		
S. lautus sensu auct. Austral.		*o*	*o*	*o*	*f*			
S. linearifolius A.Rich.		*vr*	*f*	*c*	*c*	*o*	*c*	*f*
S. minimus Poir.		*r*	*o*	*o*	*f*		*f*	*o*
S. squarrosus A.Rich.					*o*			*o*
S. quadridentatus Labill.					*o*			*c*
S. gunnii (Hook.f.) Belcher	*f*	*f*	*o*					
S. glomeratus Desf. ex Poir.					*o*			*o*
S. hispidulus A.Rich.					*o*			*f*
Bedfordia salicina DC.		*vr*	*o*	*c*	*c*	*o*	*c*	*f*
B. linearis DC.								*lc*
Microseris scapigera (Sol.) Schultz-Bip.								*l*
Stylidiaceae								
Stylidium graminifolium Swartz				*l*	*f*	*f*		*f*
Goodeniaceae								
Goodenia ovata Sm.					*c*		*lc*	*c*
G. lanata R.Br.								*c*
Scaevola hookeri (de Vriese) Hook.f.	*f*	*c*	*c*	*vr*				

Change in abundance of vascular plants on Mt. Wellington following fire

	Zones							
	1	2	3a	3b	4	5	6	7
Campanulaceae								
Wahlenbergia gymnoclada N. Lothian				*vr*	*o*			*o*
W. consimilis N.Lothian				*l*	*o*		*r*	*f*
W. saxicola A.DC.	*l*	*f*	*o*					
Lobeliaceae								
Pratia pedunculata (R.Br.) Benth.								*vr*
Lobelia gibbosa Labill.				*vr*	*r*			*o*
Ericaceae								
Gaultheria hispida R.Br		*o*	*o*	*o*	*o*	*o*	*o*	
Epacridaceae								
Styphelia adscendens R.Br.					*l*			*r*
Astroloma humifusum (Cav.) R.Br.					*o*			*c*
Cyathodes glauca Labill.		*o*	*f*	*f*	*f*	*r*		*l*
C. straminea R.Br.	*vr*	*r*						
C. petiolaris (DC.) Druce	*lc*							
C. dealbata R.Br.	*o*							
C. divaricata Hook.f.				*r*	*r*			*l*
C. parvifolia R.Br.		*o*	*f*	*o*	*r*	*o*		
Pentachondra involucrata R.Br.		*o*	*o*	*o*				
P. pumila (Forst.) R.Br.	*f*	*l*						
Trochocarpa thymifolia (R.Br.) Spreng.	*l*	*o*	*vr*					
Lissanthe strigosa (Sm.) R.Br.								*c*
L. montana R.Br.	*o*	*r*						
Leucopogon collinus (Labill.) R.Br.					*lc*			*c*
L. virgatus (Labill.) R.Br.								*lc*
L. ericoides (Sm.) R.Br.				*l*	*l*			*lc*
Acrotriche serrulata (Labill.) R.Br.								*f*
Monotoca glauca (Labill.) Druce				*l*	*f*	*f*	*o*	*vr*
M. linifolia (Rodw.) W.M. Curtis				*l*		*l*		
M. empetrifolia R.Br.	*c*	*f*	*o*					
Epacris impressa Labill.				*f*	*c*	*f*	*vr*	*c*
E. lanuginosa Labill.						*lc*		
E. serpyllifolia R.Br.	*c*	*c*	*o*					
E. tasmanica [21] W.M. Curtis					*l*			
E. acuminata Benth.		*vr*	*lc*		*l*			
Sprengelia incarnata Sm.	*c*	*c*	*f*		*l*	*l*		
Richea sprengelioides (R.Br.) F.Muell.	*f*	*o*	*lc*					
R. procera (F.Muell.) F.Muell.		*l*	*lc*	*o*	*lc*	*c*		
R. gunnii Hook.f.		*r*						
R. scoparia Hook.f.	*f*	*o*	*lc*					
R. dracophylla R.Br.		*vr*	*o*	*o*	*o*	*f*		
R. curtisiae A.M. Gray		*vr*						
Oleaceae								
Notelaea ligustrina Vent.		*vr*	*o*	*o*	*o*			*o*

	Zones							
	1	2	3a	3b	4	5	6	7
Loganiaceae								
Mitrasacme montana Hook.f.	*f*	*o*	*r*	*vr*				
M. pilosa Labill.					*vr*			*vr*
Gentianaceae								
Sebaea ovata (Labill.) R.Br.					*r*			*o*
Gentianella diemensis (Griseb.) J.H. Willis	*f*	*f*	*o*	*l*	*f*			*o*
Boraginaceae								
Cynoglossum suaveolens R.Br.			*o*	*o*	*o*			*o*
C. australe R.Br.								*vr*
Myosotis australis R.Br.		*vr*	*o*	*o*			*r*	
Convolvulaceae								
Convolvulus erubescens Sims								*l*
Dichondra repens J.R. & G. Forst.								*vr*
Solanaceae								
Solanum laciniatum Ait.					*r*		*r*	*vr*
Scrophulariaceae								
Ourisia integrifolia R.Br.	*lc*	*lc*						
Veronica formosa R.Br.		*f*	*c*	*f*	*r*		*r*	*l*
V. derwentiana Andr.					*o*		*r*	*r*
V. nivea Lindl.		*o*	*o*		*vr*			
V. gracilis R.Br.					*o*			*lc*
V. calycina R.Br.			*vr*	*vr*				
V. serpyllifolia L.		*vr*	*l*	*o*	*f*	*r*	*f*	
Euphrasia collina R.Br.				*f*	*f*			*c*
E. diemenica Spreng.	*f*	*f*	*f*	*f*				
E. striata R.Br.	*f*	*f*	*lc*					
E. gibbsiae Du Rietz	*f*	*f*	*l*					
E. scabra R.Br.								*l*
Labiatae (Lamiaceae)								
Prunella vulgaris L.				*o*	*f*	*l*	*o*	*f*
Prostanthera lasianthos Labill.		*vr*	*o*	*f*	*f*	*r*	*c*	
Westringia angustifolia R.Br.				*l*	*l*			
Ajuga australis R.Br.								*r*
Plantaginaceae								
Plantago varia R.Br.					*l*			*c*
P. tasmanica Hook.f.	*c*	*c*	*c*	*f*				
P. daltonii Dcne.			*l*					

Change in abundance of vascular plants on Mt. Wellington following fire

	Zones							
	1	2	3a	3b	4	5	6	7
Polygonaceae								
Rumex brownii Campd.				*l*	*l*			*l*
Monimiaceae								
Atherosperma moschatum Labill.		*vr*	*r*	*r*	*r*	*r*	*f*	
Lauraceae								
Cassytha pubescens R.Br.					*lc*			*f*
Proteaceae								
Bellendena montana R.Br.	*f*	*r*	*vr*					
Persoonia juniperina Labill.								*l*
Orites diversifolia R.Br.		*o*	*c*	*f*				
O. revoluta R.Br.	*f*	*f*	*o*					
O. acicularis R.Br.	*o*	*o*						
Hakea epiglottis Labill.				*l*				*l*
H. lissosperma R.Br.		*o*	*o*	*o*	*o*	*r*		
Telopea truncata (Labill.) R.Br.		*o*	*o*	*r*		*r*	*r*	
Lomatia tinctoria R.Br.		*r*	*o*	*c*	*f*	*vr*		*c*
L. polymorpha R.Br.		*o*	*f*					
Banksia marginata Cav.			*f*	*o*	*o*	*o*		*c*
Thymelaeaceae								
Pimelea cinerea R.Br.			*r*	*r*	*r*	*r*		
P. linifolia Sm.					*l*	*vr*		*o*
P. humilis R.Br.								*c*
P. sericea R.Br.	*o*	*f*	*o*					
P. nivea Labill.		*l*	*l*	*f*	*lc*			*c*
P. drupacea Labill.		*vr*	*r*	*o*	*o*	*r*	*o*	
P. flava R.Br.					*l*			*l*
Santalaceae								
Leptomeria drupacea (Labill.) Druce					*vr*			*o*
Exocarpos cupressiformis Labill.					*o*			*f*
E. strictus R.Br.					*o*			*f*
E. humifusus R.Br.	*f*	*o*	*r*					
Euphorbiaceae								
Poranthera microphylla Brogn.			*f*	*f*	*f*	*o*	*o*	*f*
Beyeria viscosa Miq.					*o*		*l*	*o*
Amperea xiphoclada (Sieb. ex Spreng.) Druce				*r*	*lc*			*lc*
Phyllanthus australis Hook.f.					*lc*			*l*
Urticaceae								
Urtica incisa Poir.			*r*	*o*	*o*		*c*	
Australina pusilla Gaud.							*c*	
A. muelleri Wedd.							*l*	

	Zones							
	1	2	3a	3b	4	5	6	7
Casuarinaceae								
Casuarina stricta Ait.								*o*
C. littoralis [22] Salisb.		*l*	*l*		*r*			*f*
Fagaceae								
Nothofagus cunninghamii (Hook.) Oerst.		*o*	*o*	*lc*	*r*	*vr*	*f*	
PTERIDOPHYTA								
Schizaeaceae								
Schizaea fistulosa Labill.						*o*		
Gleicheniaceae								
Gleichenia circinnata [23] Swartz	*lc*	*lc*	*lc*	*l*	*vr*	*o*		
Sticherus tener (R.Br.) Ching				*vr*	*vr*		*vr*	
Hymenophyllaceae								
Mecodium flabellatum (Labill.) Copeland							*o*	
M. australe (Willd.) Copeland							*o*	
Hymenophyllum peltatum (Poir.) Desv.							*vr*	
Dicksoniaceae								
Dicksonia antarctica Labill.			*o*	*o*	*f*	*r*	*c*	*vr*
Dennstaedtiaceae								
Hypolepis rugosula (Labill.) J.Sm.		*r*	*o*	*o*	*o*	*o*	*o*	
H. australis N.A.Wakefield							*c*	
Pteridium esculentum (Forst.f.) Nakai			*r*	*c*	*c*	*f*	*o*	*c*
Histiopteris incisa(Thunb.) J.Sm.	*vr*	*r*	*r*	*r*	*o*	*o*	*c*	
Lindsayaceae								
Lindsaya linearis Swartz					*vr*			*vr*
Adiantaceae								
Adiantum aethiopicum L.								*l*
Cheilanthes tenuifolia (Burm.f.) Swartz								*vr*
Grammitidaceae								
Grammitis billardieri Willd.					*r*		*o*	
G. armstrongii M.D.Tindale		*o*	*o*					
Ctenopteris heterophylla (Labill.) M.D.Tindale							*vr*	
Polypodiaceae								
Microsorium diversifolium (Willd.) Copeland			*o*	*f*	*o*	*o*	*r*	*r*

Change in abundance of vascular plants on Mt. Wellington following fire

	Zones							
	1	2	3a	3b	4	5	6	7
Aspleniaceae								
Asplenium flabellifolium Cav.		*o*	*o*	*o*	*o*	*o*	*r*	*r*
A. bulbiferum Forst.f.			*vr*	*r*	*vr*	*vr*	*f*	
Aspidiaceae								
Rumohra adiantiformis (Forst.f.) Ching					*r*	*vr*	*o*	
Polystichum proliferum (R.Br.) C.Presl	*r*	*o*	*f*	*f*	*f*	*o*	*c*	*r*
Lastreopsis shepherdii (Kunze) M.D.Tindale							*vr*	
Blechnaceae								
Blechnum nudum (Labill.) Mett.			*r*	*lc*	*lc*		*r*	*vr*
B. aggregatum (Colenso) M.D.Tindale							*f*	
B. procerum [24] (Forst.f.)		*r*	*c*	*c*	*c*	*f*	*c*	*r*
B. fluviatile (R.Br.) E.J.Lowe			*r*	*lc*	*o*	*vr*	*c*	
B. penna-marina (Poir.) Kuhn	*lc*	*lc*	*lc*	*l*	*l*	*vr*	*vr*	*vr*
B. vulcanicum (Blume) Kuhn					*r*		*r*	
Lycopodiaceae								
Lycopodium scariosum Forst.f.	*o*							
L. varium R.Br.			*r*		*r*			
L. selago L.	*vr*							
L. fastigiatum R.Br.	*o*	*o*	*o*					
Psilotaceae								
Tmesipteris billardieri Endl.							*vr*	
GYMNOSPERMAE								
Podocarpaceae								
Phyllocladus asplenifolius [25] (Labill.) Hook.f.							*vr*	
Podocarpus lawrencii Hook.f.	*r*	*r*						

INTRODUCED SPECIES

(Alphabetical list)

Name	Zones in which species was observed
Agrostis tenuis/stolonifera	7,6,5,4,3b,3a,2,1
Aira caryophyllea	7,5,4,3b,3a
Aira praecox	5,3b
Anagallis arvensis	7,6,5,4,3b,3a
Anchusa sempervirens	4
Anthoxanthum odoratum	7,6,5,4,3b,3a,2
Arctotheca calendula	7
Arrhenatherum elatius	7,6,5,4,3b,2
Barbarea verna	7,6,4
Bellis perennis	7,6,5,4,2
Brassica spp.	7,4
Briza maxima	7
Briza minor	7,4
Bromus diandrus	7,6,4
Bromus mollis	7,6,4,3b
Calandrinia caulescens	4
Cardaria draba	7
Carduus tenuiflorus	7,4
Carex flacca	7,6,4,3b,3a
Centaurium erythraea	7,6,5,4,3b,3a
Centrantus ruber	7
Cerastium fontanum	7,6,5,4,3b,3a,2,1
Cerastium glomeratum	7,6,4
Chamaecytisus proliferus	7,4
Chrysantemoides monilifera	7
Chrysanthemum leucanthemum	7,5,4
Circium vulgare	7,4,3b,3a,2
Conium maculatum	7,6,4
Coronopus didymus	7,4
Cortaderia selloana	7
Crataegus monogyna	7,6,4
Crepis capillaris	5
Crepis setosa	7,6,5,4,3b,3a,2
Cynosurus cristatus	7,6,5,4,3b
Cynosurus echinatus	7,4
Dactylis glomerata	7,6,5,4,3b,3a,2
Digitalis purpurea	4,3b
Epilobium adenocaulon	6,4
Erica arborea	7,4
Erica lusitanica	7,4
Erodium cicutarium	7,4
Erodium moschatum	7
Euphorbia helioscopia	7
Euryops abrotanifolius	7,4
Europs abrotanifolius	7
Festuca arundinacea	3b
Festuca rubra	7,5,4,3b,3a,2
Foeniculum vulgare	7,5
Fumaria muralis	7
Galium aparine	7,4
Gastridium ventricosum	7
Genista monspessulana	7,6,4

Gnaphalium candidissimum	7
Holcus lanatus	7,6,5,4,3b,3a,2
Hypericum androsaemum	7,4
Hypochaeris radicata	7,6,5,4,3b,3a,2,1
Ixia maculata	7
Juncus articulatus	7,6,5,4,3b,3a
Juncus bufonius	7,6,5,4,3b,3a
Lapsana communis	7,6
Leontodon leysseri	7
Lepidium campestre	7,4
Leycesteria formosa	6,4
Linum catharticum	7,6,5,4,3b,3a
Linum trigynum	7
Lithospermum arvense	7
Lolium perenne	7,6,5,4,3b,3a
Lotus tenuis	7,3b
Lunaria annua	4
Malva sylvestris	7
Matricaria matricarioides	7
Medicago arabica	7
Medicago lupulina	7,5,4
Melilotus indica	7,6
Mimulus moschatus	4
Monerma cylindrica	7
Myosotis sylvatica	6
Nasturtium officinale	7,6,4
Oxalis latifolia	7
Oxalis pes-caprae	7
Papaver dubium	7,4
Parentucellia latifolia	7
Parentucellia viscosa	7,6,5,4,3b,3a
Picris echioides	7
Picris hieracoides	7,4
Pinus radiata	7,6,4
Plantago coronopus	7,5,3a
Plantago lanceolata	7,6,5,4,3b,3a,2
Poa annua	7,6,5,4,3b,3a,2,1
Potentilla anglica	7,4
Poterium polygamum	7,4
Ranunculus repens	7,6,5,4,3b,3a
Raphanus raphanistrum	7,4
Rapistrum rugosum	7
Reseda luteola	7
Rosa rubiginosa	7,6,4,2
Rubus fruticosus	7,6,5,4
Rumex acetosella	7,5,4,3b,3a
Rumex crispus	7,6,4
Sagina apetala/procumbens	7,6,5,4,3b,3a,2,1
Salix alba x fragilis	6,4
Sambucus nigra	4
Sarothamnus scoparius	7,6,5,4,3b
Sedum acre	7,5
Senecio jacobea	3b
Senecio vulgaris	7,4
Sieglingia procumbens	4,3b
Silene gallica	7,4
Silybum marianum	7,4
Sisyrinchium iridifolium	7,4

Sonchus asper	7,6,4,3a
Sonchus oleraceus	7,6,4,3b
Spergula arvensis	4,3b
Spergularia rubra	4
Stachys arvensis	7
Stellaria media	7,4
Taraxacum officinale	7,6,5,4,3b,3a,2,1
Tragopogon porrifolius	7
Trifolium repens	7,4,2
Trifolium subterraneum	7
Ulex europaeus	7,6,5,4,3b,3a
Verbascum thapsus	4,3b,3a
Verbascum virgatum	7,4
Veronica persica	7
Vicia angustifolia	6
Vicia hirsuta	7,4,3b,3a
Vicia sativa	7,5,4
Vicia tetrasperma	7,4
Vinca major	7,4
Vulpia bromoides	7,6,4,3b,3a
Vulpia megalura	3b
Vulpia myuros	7,4

NOTES TO THE APPENDIX

(1) Incl. *A. australiensis* Mez.
(2) Incl. *D. racemosa* R.Br. and *D. penicillata* (Labill.) Beauv.
(3) An apparently undescribed species, differing from *D. microseta* in the characteristics of the leaves and the callus.
(4) Incl. *F. plebeia* R.Br.
(5) Incl. *P. labillardieri*, *P. gunnii*, *P. rodwayi*, *P. tenera* and the introduced species *P. pratensis* and *P. trivialis* (cf. Vickery, 1970).
(6) Syn. *G. psittacorum* Labill.
(7) All Mt. Wellington material is referable to var. *inops* Rodway.
(8) Syn. *Hypolaena lateriflora* (R.Br.) Benth.
(9) Discovered by the authors; the species is more robust than *J. sandwithii* and many specimens have only 3 stamens.
(10) The record includes *L. oldfieldii* Hook.f. in the upper zones and *L. flaccida* (Buch.) Edgar at lower elevations.
(11) The Tasmanian form is var. *obcordata* (Andr.) Benth.
(12) The record includes *P. gunnii* Benth. var. *baeckioides* Rodw., which is locally common on mudstone in zones 4 and 7.
(13) Incl. *A. echinata* Nees and *A. agnipila* Gandoger.
(14) Owing to the historical confusion concerning the names *E. gunnianum* and *E. billardierianum*, all species other than *E. rotundifolium* are included under this aggregate name. Also included are *E. cinereum* A. Rich. and some forms described in Curtis (1963) as *E. sarmentaceum* and *E. junceum*.
(15) Discovered on Mt. Wellington by the authors and is the first Australian record of this species which was hitherto known only from New Zealand and its surrounding islands (cf. Ratkowsky and Ratkowsky 1974).
(16) Syn. *O. alpina* (Hook.f.) W.M. Curtis.
(17) A species with leaf surfaces covered with white, cottony hairs. Possibly undescribed (W.M. Curtis, pers. comm.).
(18) Incl. the narrow-leafed form var. *oreophilum* W.M.Curtis, which is rare to occasional in zones 1 and 2.

(19) Most plants on Mt. Wellington are referable to the white-flowered form var. *ochroleuca* Rodw., but a few yellow-flowered plants were seen near the summit of Collins Bonnet.
(20) Syn. *S. centropappus* F.Muell.
(21) Syn. *E. squarrosa* Hook.f.
(22) Incl. *C. monilifera* L. Johnson.
(23) Syn. *G. dicarpa* R.Br. The Mt. Wellington form is referable to var. *alpina.*
(24) Incl. *B. minus* (R.Br.) Ettingsh., which most botanists consider to be a separate species. A range of intermediate forms occur on Mt. Wellington.
(25) The record refers to a large tree and a smaller tree at Fern Tree Bower, which have probably been planted. Natural stands occur near White Timber Mountain, just outside the western bounday of the survey area.