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Mount Bakewell, an important remnant of natural vegetation in the York area

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ABSTRACT

Mount Bakewell is an important site for conservation, being one of few areas near York to retain some natural vegetation. This contains some rare taxa, and is also the type locality of six plant species, collected there in 1839 by J.A.L. Preiss. A provisional checklist of plant species is provided, and notes on rare, threatened and unusual species found there. Notes on the early collections of Preiss are also included.

INTRODUCTION

Mount Bakewell rises to 457 m above sea level, and dominates the town of York, which is situated at its foot. It is the highest point of the Dyott Range, on the north side of the town. The area is a rich agricultural region and was settled early in the history of Western Australia, so that the natural vegetation remaining on Mount Bakewell is an important remnant of the original bushland that occurred on the hills before much of it was cleared. There is no public road to the summit, which has minimized access to the natural vegetation, so that it generally remains in good condition. Until recently, management rested largely with the surrounding landholders.

Ownership of part of the remnant vegetation on Mount Bakewell is divided between a number of private individuals and the Shire of York, while other sections consist of either unvested and vested reserves, or freehold land owned by the State and Commonwealth governments. The mountain is an important site for telecommunications masts, and the summit is also an official Trig Point. Mount Bakewell also has great significance for Aboriginal people, and has its own Dreamtime legend.

The summit of Mount Bakewell is composed of massive quartzite, which is resistant to erosion and therefore forms areas of high relief, similar to Mount Brown, Red Knob and the Needling Hills in the same district. Patches of a quartzose duricrust have developed over the quartzite band. A quartz-feldspar-biotite gneiss is exposed on the southern and western slopes and to the north there is quartz-feldspar gneiss (Wilde and Lowe 1978).

The quartzite gives rise to soils which support wandoo (*Eucalyptus wandoo)* woodland, while york gum (*E. loxophleba*) woodlands occur on the more basic soils of the gneiss, which are fertile red loams, some of which are high in the landscape. The sandy areas support a species-rich heath and shrubland, and there are woodlands of rock sheoak (*Allocasuarina huegeliana)* on many of the lower slopes (Beard 1979).

The most recent bushfire took place in 1985, when a hot summer fire burnt the whole area of bushland. Subsequently, the vegetation has regenerated well, although there is some weed invasion.

This paper documents the plants currently known to exist in the area, together with their status, and a brief review of collecting history, with special reference to Preiss.

SPECIES CHECKLIST

A short checklist (Appendix 1) of the species occurring on Mount Bakewell has been compiled from several sources. A number of botanists have visited the locality during the 20th century, in every decade except the 1930s. These include Oswald Sargent, Charles Gardner and Fred Lullfitz. Their collections have been incorporated into the list as have those of several staff members of the Western Australian Herbarium, both past and present, who have also collected there. Finally, 26 species collected in 1839, by Ludwig Preiss, and listed in *Plantae Preissianae,* have been included (Appendix 2).

However, fairly extensive areas of undisturbed natural vegetation remain on Mount Bakewell, which have not been fully surveyed. It is probable the list would be considerably increased if a thorough survey were made.

PLANTS OF CONSERVATION VALUE

A number of the species found on Mount Bakewell are of particular significance. Some are formally recognized and

gazetted as Declared Rare Flora or are on the Priority Flora List, prepared by the Department of Conservation and Land Management, for taxa which appear to be rare but are in need of further survey. These are described.

Declared Rare Flora

These are taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection.

Thomasia montana is gazetted as Declared Rare Flora. It is a shrub growing to about 1 m in height, with oblong to ovate-cordate leaves which have short, stellate hairs. The flowers are in long stalked racemes. Each flower has a mauve calyx, *c.* 15 mm in diameter, divided to about the middle into five lobes. The petals are minute, dark purple in colour. Mount Bakewell is the type locality of this species, the plant having been collected there in 1839 by Ludwig Preiss. *Thomasia montana* has not been recollected at Mount Bakewell but is known to occur further south in the Beverley to Pingelly area.

Priority 1 - Poorly known Taxa

These are poorly known and are known from one or a few populations (generally less than 5), which are under threat and are under consideration for declaration as Rare Flora but are in urgent need of further survey.

Senecio gilbertii is listed as a Priority 1 taxon. It is an erect perennial plant growing to 1.5 m tall. Its deeply divided leaves are densely clothed with woolly, white hairs on the undersides. There are numerous heads of tubular, yellowish flowers.

S. gilbertii has also been recorded in the past from three localities in the jarrah forest between Bindoon and Wooroloo. The population occurring on Mount Bakewell is the most easterly known for the species, and is the only currently known population as it has not been refound recently at any of the other known localities.

Priority 4 - Rare Taxa

These are considered to have been adequately surveyed and, while being rare (in Australia), are not currently threatened by any identifiable factors. They require monitoring every 5-10 years.

Three taxa are listed as Priority 4, namely:

Caladenia integra was included on the 1989 Schedule of Declared Rare Flora. It is an orchid growing to 50 cm tall, with a long narrow leaf, and one or two flowers on each flowering stalk. The lateral sepals are upswept, and the greenish labellum has a dark tip and smooth edges. It was first recorded from Mount Bakewell in 1907, and in 1986 was found to be represented there by a large population in the recently burnt sheoak woodlands. In 1989 it was known from only a few populations between York and Kendenup but has since been found to be more common, occurring in rock sheoak woodland around granites.

Hemigenia platyphylla is a low shrub to 0.6 m in height, with opposite, obovate leaves which are covered with minute glandular hairs intermixed with longer ones. The flowers are lilac in colour. Mount Bakewell is the type locality of this species, where it is still represented by a large population around the summit. It was thought to occur only at this locality until recently, but is now known from the Stirling Ranges, with isolated records from Dwellingup, Harvey River and West River. Recent taxonomic study indicates that it is a variety of *H. incana*, distinguished by the long glandular hairs on the leaves and calyx (Rye[1] personal communication).

Hibbertia montana is a low shrub to about 0.5 m tall, with oblong to obovate, hairy leaves and yellow, five-petalled flowers. This species occurs from Mount Bakewell south to the Narrogin area. It has been confused in the past with *H. commutata* but differs in having the numerous stamens closely grouped around the four to five hairy carpels, completely hiding them. *H. commutata* has spreading stamens, grouped loosely into three bundles, exposing the carpels from above (Wheeler 1984). *H. montana* was known only from Mount Bakewell, the type locality, until populations were found at other localities in the central wheatbelt during survey for the species in 1983. It grows commonly around the summit and upper slopes of Mount Bakewell.

Apart from the recorded presence of these species, the vegetation of this area has other values, and warrants a full botanical survey. For example, a species of the cabbage family, *Lepidium phlebopetalum*, was collected there recently. This species is poorly recorded in the wheatbelt and is generally regarded as occurring in the more arid regions of the State. Some specimens of grass tree, *Xanthorrhoea drummondii*, growing on the higher areas are particularly fine, one having been measured at over 6 m in height. This specimen is thought to be over 300 years old.

EARLY PLANT COLLECTIONS FROM MOUNT BAKEWELL COLLECTED BY J.A.L. PREISS

The German botanist and naturalist, J.A.L. Preiss, visited Western Australia from the end of 1838 to 1842, and during his stay made substantial botanical collections. These, together with those of James Drummond, are important for early taxonomic studies of the Western Australian flora. Many of the specimens that Preiss collected formed the basis of the botanical publication, *Plantae Preissianae* (Lehmann 1844-1848).

From a search of *Plantae Preissianae* it has been ascertained that Preiss collected at least 26 species from Mount Bakewell, mainly on 5th, 8th, 11th, 12th and 13th September 1839. Six of the collections are type

[1] Barbara Rye, Western Australian Herbarium, Department of Conservation and Land Management, Como, Western Australia 6152.

specimens, the names *Acacia restiacea, Colobandra platyphylla (= Hemigenia platyphylla), Hibbertia montana, Leucopogon obtusatus, Thomasia montana, Trymalium wichurae(= Cryptandra wichurae)* having been based on them. Three of these taxa, *Hemigenia platyphylla, Hibbertia montana,* and *Thomasia montana* are rare, *T. montana* being gazetted as Declared Rare Flora, the others are listed as Priority 4, Rare Flora. *Acacia restiacea, Cryptandra wichurae* and *Leucopogon obtusatus* are more common and widespread species.

Although Mount Bakewell has been visited many times by botanists since 1839, 16 of the 26 species that Preiss collected there have not been recollected since. It is possible that some no longer occur there, the area of natural vegetation having been considerably reduced, particularly on the lower slopes. However, this further highlights the need for more extensive survey of the area.

MANAGEMENT

Management of Mount Bakewell has been difficult in the past, owing to its diffuse ownership. A draft plan was prepared in the mid-1980s, by the State Planning Commission, proposing the formation of a Regional Park, to include private property as well as the reserves on Mount Bakewell: however, this plan was not implemented.

More recently, a Management Plan for this important area has been prepared by a consultant for the Shire of York and the York Land Conservation District Committee, with funding from the State Landcare Program and the Shire of York (Underwood 1996).

The implementation of this plan will result in a consolidation of Crown lands into one reserve, vested in the Shire of York and managed for the purpose of preservation of Mount Bakewell's natural bushland.

ACKNOWLEDGEMENTS

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REFERENCES

Beard, J.S. (1979). *The Vegetation of the Perth Area, WA.* Vegmap Publications, Applecross.

Lehmann, J.G.C. (ed.) (1844-1848). *Plantae Preissianae.* Hamburg, Germany.

Marchant, N.G. (1990). The Western Australian collecting localities of J.A.L.Preiss. *In* Short, P. (ed.) *History of Systematic Botany in Australia.* pp. 131-135. Australian Systematic Botany Soc. (inc.). South Yarra, Vic.

Underwood, R. (1996). *A management plan for Mt. Bakewell.* Shire of York, Western Australia.

Wheeler, J.R. (1984). Taxonomic notes on some Western Australian species of *Hibbertia* (Dilleniaceae). *Nuytsia* 5(1), 31-42.

Wilde, S.A. and Lowe, G.H. (1978). Perth, Western Australia. 1:250 000 Geological Series-Explanatory Notes. Geological Survey of Western Australia, Perth.

APPENDIX 1

List of the flora recorded for Mount Bakewell. Introduced species are marked with an asterisk *.

Acacia baxteri
Acacia gilbertii
Acacia lasiocarpa var. *sedifolia*
Acacia multispicata
Acacia pulchella var. *pulchella*
Acacia ramosissima
Acacia restiacea
Acacia saligna
**Aira cupaniana*
Allocasuarina huegeliana
Allocasuarina humilis
Astroloma pallidum
Astroloma serratifolium var. *placidum*
Bracteantha bracteata
Burchardia umbellata
Caladenia filifera
Caladenia flava ssp. *flava*
Caladenia integra
Caladenia longiclavata
Calothamnus quadrifidus
Calytrix breviseta ssp. *stipulosa*
Calytrix sapphyrina
Chorizema aciculare ssp. *aciculare*
Conostylis setigera
Cryptandra wichurae
Cyanicula gemmata
Daviesia angulata
Dampiera eriocephala
Dampiera lavandulacea
Dillwynia sp. A
Dioscorea hastifolia
Diplopeltis huegelii
Diuris longifolia
Drakonorchis barbarossa
Dryandra armata
Dryandra sessilis
**Echium plantagineum*
Elythranthera emarginata
Eucalyptus accedens
Eucalyptus calophylla
Eucalyptus drummondii
Eucalyptus loxophleba
Eucalyptus wandoo
Gastrolobium calycinum
Gastrolobium parviflorum
Gastrolobium parvifolium
Glischrocaryon aureum
Gompholobium knightianum
Gompholobium tomentosum
Grevillea vestita
Guichenotia sarotes
Hakea gilbertii
Hakea incrassata
Hakea preissii
Hakea trifurcata
Hemigenia incana
Hemigenia platyphylla
Hibbertia enervia
Hibbertia montana
Hibbertia rupicola
**Homoglossum watsonium*
Hyalosperma glutinosum
Hypocalymma angustifolium
Isopogon dubius
Kennedia prostrata
Labichea lanceolata ssp. *brevifolia*
Lasiopetalum glabratum
Laxmannia squarrosa
Lechenaultia biloba
Lepidium phlebopetalum
Leptospermum erubescens
Leucopogon gracillimus
Leucopogon obtusatus
Melaleuca radula
Nemcia ilicifolia
Nemsia spathulata
Nuytsia floribunda
Olearia rudis
Opercularia vaginata
Petrophile heterophylla
Phyllanthus calycinus
Pimelea imbricata var. *piligera*
Pimelea sylvestris (large flowered form)
Platysace juncea
Podolepis lessonii
Podotheca gnaphalioides
Pseudanthus virgatus
Pterostylis sp.
Ptilotus sp.
Rhodanthe manglesii
Senecio gilbertii
Sollya heterophylla
Sowerbea laxiflora
Stackhousia pubescens
Stylidium breviscapum
Stylidium ciliatum
Stylidium repens
Stypandra glauca
Thomasia foliosa
Thomasia montana
Thysanotus patersonii
Trachymene ornata
Trachymene pilosa
Trymalium floribundum ssp. *floribundum*
Trymalium ledifolium var. *lineare*
Trymalium ledifolium var. *rosmarinifolium*
Wurmbea tenella
Xanthorrhoea drummondii

APPENDIX 2

A complete list of plants collected by Preiss from Mount Bakewell and cited in *Plantae Preissianae*, volumes 1 and 2 (Lehmann 1844-1848).

Current Name	Name in Plantae Preissianae	Vol. and page in Plantae Preissianae	Preiss no.	Date of collection
Acacia gilbertii Meisn.	*Acacia nigricans* (Labill.) R. Br. var. *subracemosa* Meisn.	1: 20	891	5.9.1839
Acacia lasiocarpa Benth. var. *sedifolia* (Meisn.) Maslin	*Acacia cygnorum* Benth.	1: 22	892,894, 896	5.9.1839
Acacia ramosissima Benth.	*Acacia ramosissima* Benth.	1: 16	940	30.3.?
Acacia restiacea Benth.	*Acacia restiacea* Benth.	1: 3	971	8.9.1839
Astroloma serratifolium (DC.) Druce	*Astroloma candolleanum* Sond.	1:302	466	5.9.1839
Calytrix sapphirina Lindl.	*Calycothrix empetroides* Schauer	1:105	195	-
Chorizema aciculare (DC.) C.A. Gardner ssp. *aciculare*	*Chorizema henchmanni* R. Br.	1: 34	1048	9.1839
-	*Chorizema baueri* Benth.	1: 34	1037	8.9.1839
Cryptandra wichurae (Nees) F. Muell.	*Trymalium wichurae* N. ab E	2:281	1220*	11.9.1840
?Dillwynia sp. A (Marchant *et al.* 1987)	*Dillwynia acicularis* Sieb.	1: 62	875	5.9.1839
Gastrolobium calycinum Benth.	*Gastrolobium calycinum* Benth.	1: 69	836	12.9.1839
Gastrolobium parviflorum (Benth.) Crisp	*Oxylobium parviflorum* Benth.	1: 31	801	5.9.1839
Gastrolobium parvifolium Benth.	*Gastrolobium parvifolium* Benth.	1: 69	1017	12.9.1839
Glischrocaryon aureum (Lindl.) Orchard	*Laudonia aurea* Lindl.	1:159	2067	-
Gompholobium knightianum Lindl.	*Gompholobium knightianum* Lindl.	1: 40	1104	12.9.1839
Hemigenia platyphylla (Bartl.) Benth.	*Colobandra platyphylla* (Bartl.) Benth.	1:358	2319	5.9.1839
Hibbertia enervia (DC.) Hoogland	*Pleurandra hibbertioides* Steudel	1:265	2164	8.9.1839
Hibbertia montana Steud.	*Hibbertia montana* Steud.	1:270	2135	5.2.1839
Laxmannia squarrosa Lindl.	*Laxmannia squarrosa* Lindl.	2: 42	1588	8.9.1839
Leucopogon gracillimus DC.	*Leucopogon gracillimus* DC.	1:312	395	13.9.1839
Leucopogon obtusatus Sond.	*Leucopogon obtusatus* Sond.	1:313	395 ex parte	13.9.1839
Nemcia spathulata (Benth.) Crisp	*Gastrolobium spathulatum* Benth.	1: 71	800	8.9.1839
Petrophile heterophylla Lindl.	*Petrophile heterophylla* Lindl.	1:501	658	12.9.1839
Pseudanthus virgatus (Klotzsch) Muell. Arg.	*Chrysostemon virgatus* Klotzsch.	2:232	1230	12.9.1839
Stackhousia monogyna Labill.	*Stackhousia pubescens* A. Rich.	1:180	1972	8.9.1839
Thomasia montana Steud.	*Thomasia montana* Steud.	1:230	1661	5.9.1839

*1220 *Trymalium wichurae*, was collected 11.9.1840, 'in confragosis montis Blackwell (York)'. This location is presumed to be in error for Mount Bakewell, although the year of collection is also later than for all Preiss's collections from that location. However, there are many inconsistencies of date of collection cited in *Plantae Preissianae* (Marchant 1990).

Of the 26 species collected by Preiss at Mount Bakewell, sixteen have not been recorded there since. These are:

Acacia ramosissima
Acacia restiacea
Calytrix sapphyrina
Chorizema aciculare
Chorizema baueri
Cryptandra wichurae
Dillwynia sp. *A*
Gastrolobium calycinum
Gastrolobium parvifolium
Laxmannia squarrosa
Leucopogon gracillimus
Leucopogon obtusatus
Nemcia spathulata
Petrophile heterophylla
Pseudanthus virgatus
Thomasia montana