DEPT. CONSERVATION AND LAND MANAGEMENT
MERREDIN DISTRICT OFFICE
P.O. Box 332,
MERREDIN W.A. 6415

REPORT ON RARE FLORA OF THE IRONCAPS AREA

Knowledge of the rare flora in the area between Mt Holland and Hatter Hill is very limited. This brief report aims to provide basic information on the species that CALM considers to be rare which occur within this area. The need for this report has arisen because of increasing pressures from mining companies to develop the mineral resources of the area. The need for such a report has also stemmed from the increased demands of Departmental staff and biological consultants to know what species of rare flora occur in this area.

The Ironcaps Area for the purpose of this exercise is defined as the area between Mt Holland in the north and Hatter Hill in the south. To the west the area is bound by the State barrier fence and to the east by Lake Hope. The area is centred on Lake Cronin and Forrestania and includes features such as North, Middle and South Ironcap, Digger Rock and Jackson Rock.

Currently most of the area is vacant Crown land. A small nature reserve exists near North Ironcap and is centred on Lake Cronin. Several other reserves are currently proposed for the area. The area is covered by numerous exploration leases for nickel and gold, especially along the greenstone belt running north-south to the east of the Ironcaps. The area lies in the transitional zone between the South-West Botanic Province and the Eremaean Botanic Province and hence is in a region rich with endemic species. Many of the endemics are rare and/or geographically restricted.

Currently within the Ironcaps Area there are 25 species which CALM considers are either rare, geographically restricted, in need of special protection or in need of further survey to accurately determine their conservation status. Five of these species are currently on the Schedule of Declared Rare Flora. The remainder are on the Reserve Flora List. Descriptions, habitat information and locations for each of these species is provided below.

Declared Rare Flora

Declared Rare Flora are those species which are protected under Section 23F of the Wildlife Conservation Act. They are species which have been thoroughly searched for by competent botanists and these searches have revealed that the species are either rare (less than 10,000 plants in the wild), in danger of extinction or are deemed to be threatened and in need of special protection. There are currently 238 species listed on the Schedule of Declared Rare Flora of which 5 occur in the Ironcaps Area.

The five species are:

DRF 2 *Banksia sphaerocarpa* var. *dolichostyla*

This species is currently known from six localities between Mt Holland and Digger Rock (Figure 1). The species grows on laterite-ironstone hills and rises, where it generally forms the dominant component of a heathland community. In a few instances it grows as a large shrub in *Eucalyptus* woodlands.

The species forms a large dome-shaped shrub up to 3 m tall. The foliage is glaucous and the flowers are golden yellow. The follicles are generally small. This species differs from other members of the *B. sphaerocarpa* group in its longer perianth and pistil. Flowering occurs from March to May (Figure 2).

Boronia revoluta

Boronia revoluta has only been collected from three localities, Hatter Hill, Middle Ironcap and South Ironcap. Until September 1989 the species was thought to be extinct at the Type locality of Hatter Hill however, it has since been relocated there in small numbers. The species has not been relocated at Middle Ironcap since it was collected there in 1976 (Figure 3). The species prefers well drained sandy loam and laterite on the tops of ridges and small hills. It has been reported growing in lateritic heath and in *Eucalyptus - Allocasuarina* woodlands.

The species is a shrub to 80 cm tall with sparsely arranged branches. The leaves are cylindrical and have margins which are strongly rolled. The flowers are pale pink and are located singly in the leaf axils. The species flowers from September to October.

Eucalyptus steedmanii

This *Eucalyptus* is at present known from six populations located in two separate areas, one to the south and the other to the east of North Ironcap. Until 1988 this species was only known from two populations south of North Ironcap (Figure 4).

Prior to 1978 this species was thought to be extinct as it had not been collected or reliably observed in the wild since 1983. Between 1928 and 1938 this species was collected on several occasions but the locality information provided on specimens was vague and ranged from between Hatter Hill and Forrestania. An unconfirmed report of the species occurring in the Digger Rock - South Ironcap area has been received but this has not been confirmed to date.

The species appears to favour sites with gravelly clay loam over greenstone in gently undulating terrain. It generally forms a woodland community with *E. salmonophloia, E. flocktoniae, E. salubris* and *E. eremophila*. At sites where it is regenerating after fire, *E. steedmanii* is the dominant species forming a dense pole stand.

It is a small tree up to 12 m tall with rounded canopy and smooth bark. The leaves are attenuate, 6.5 cm long and dark green. The flowers are yellow and hang downwards in clusters of three. The fruits are very distinctive, being shaped like an inverted pyramid with four prominent wings. Flowering occurs from December to March (Figure 5).

DRF 13 *Eremophila inflata*

This species has been collected on five occasions. Currently it is known from three, one near Lake King and the other two near Middle Ironcap. The Type specimen was collected from Mt Holland

in the late 1800s. It has also been collected from near Lake Moore, north of Merredin, in 1899. The two currently known localities in the Ironcaps area are on the edge of the main road between Middle Ironcap and the Lake Cronin crossroads. The sites are 9.3 and 19 km south of the Lake Cronin crossroads (Figure 6).

The sites are on flat to gently undulating terrain in brown clay loamy soil. They are in open situations in *Eucalyptus* woodland dominated by *E. flocktoniae* and *E. calycogna*. Both sites occur on the shoulder of graded roads suggesting that this species may be a disturbance opportunist.

The distinguishing features of this *Eremophila* are its reflexed calyx segments, prominently inflated corolla and short obtuse corolla lobes. The species is a shrub up to 2 m tall with somewhat resinous and worted branches. The flowers are solitary, 7.5 mm in length and violet or pink in colour. Flowering occurs from September to December (Figure 7).

Eremophila racemosa

Although first discovered some 125 years ago only six collections have been made of this species, all from the Lake Cronin area. It is currently known from three sites along the Lake Cronin - Mt Holland Road. These locations are 7.4, 9.7 and 10.3 km north of the Lake Cronin crossroads (Figure 8).

The species grows in red-brown clay loams in disturbed sites. The associated vegetation is generally low *Eucalyptus* woodland dominated by *E. flocktoniae* and *E. salmonophloia*.

This species, like *E. inflata* appears to be a disturbance opportunist that is relatively shortlived. This aspect of the species biology is highlighted by the decline from 56 plants in 1979 to 7 plants in 1984 at one of the known populations.

This species superficially resembles *E. laanii* but differs from it by its lack of pubescent stems and leaves and pedicilate flowers. The diagnostic features of the species are its erect, glaucous leaves, spotted immature fruit and dilated stigma which has a prominent hairy head. It is a shrub up to 160 cm tall with ascending branches. The flowers are reddish purple outside while inside the corolla is whitish purple with darker purple flecks. Flowering occurs from October to December (Figure 9).

Priority One Species

A total of ten Priority One species have been recorded in the Ironcaps Area. These species are only known from one or a few localities on lands under immediate threat. These species are under consideration for declaration as rare flora but are in need of urgent high priority further survey. Figure 10 is a map showing the current known distribution of these species.

The species are:

Drosera sp. (G.J. Barrett 16.9.89)

This recently discovered species is only known from the one population in the Hatter Hill area. It is similar to *D. bolbosa* in habit however, its flowering scapes are much longer, the flowers are lilac and not yellow-cream, and flowering occurs in September and not May-July. Currently known to grow only in a *Casuarina campestris* woodland.

DRF 146 *Grevillea lissopleura*

First collected in 1979 by Ken Newbey this species is only known from the Type locality some 25 km NNW of Mt Holland. It is an upright shrub up to 1 m tall, has very small flowers and is closely related to *G. scabrida*, from which it differs in having smooth leaves and almost sessile inflorescences. The Type locality consists of open low scrubland on a slight ridge of Banded Ironstone formation. Flowering occurs in August.

Grevillea lullfitzii

Only known from the Type locality which is on the hill at Digger Rock. The original specimen was collected in 1964 by F. Lullfitz, after whom the species is named. It is a small shrub up to 1.5 m tall with off-white flowers and prickly leaves. It is related to *G. manglesioides* differing in having smooth margins to the leaves and a more oblique style-end. The species flowers in December.

Grevillea pilosa subsp *dissecta*

This *Grevillea* is currently known from two localities, 34 and 57 km north of the Lake Cronin crossroads on the Mt Holland Road. This species was first collected by W.H. Butler in 1973 from the Lake Barker area. The plant forms a shrub to 1 m tall and has deeply divided leaves with linear or subulate lobes. It flowers in February.

Halgania tomentosa

This species has been collected on only three occasions since it was described in 1910. The most recent of these was in 1962 from Moorine Rock, however, in 1929 it was collected from near Hatter Hill. It is a woody herb to 30 cm with a wiry, densely hairy stem. The flowers are solitary, terminal and are covered with short brown hairs. The species flowers in November.

Latrobea sp. (K.R. Newbey 6532).

Very little is known about this undescribed species. It has only been collected on three occasions, twice by Ken Newbey from the Hatter Hill area and once by Mark Burgman from near Peak Eleanora. Newbey's two collections, one from Hatter Hill and the other from 6 km to the SSE mention that the species was common in *Eucalyptus* woodland on a gentle undulating plain. Newbey tentatively identified both specimens as species of *Pultenaea*.

Melaleuca agathosmoides

This species is currently only known from four collections. Three were made in the Hatter Hill area and the other was from Lake King. At Hatter Hill it is found in gravelly red clay loam which is well drained. The species flowers from September to November.

Mirbelia densiflora

This species has been collected on three occasions since it was described by Charles Gardner from material collected in the Young River area. One collection has been made at Hatter Hill and the other two from Newdegate and near Lake King. At Hatter Hill the collection details indicate that the specimen was growing on a small eroded breakaway and was abundant. The species has flowers which are in heads and is readily identifiable by its two posterior calyx lobes which are united.

This species was considered to be extinct until recent taxonomic work revealed that specimens had been incorrectly identified.

Mulleranthus crenulatus

Known only from the Type locality 13 miles south of Mt Holland on the road to Lake Cronin, this species is a small herbaceous plant with perennial underground parts and stem. The leaves are trifoliate and the leaflets have crenulate margins. The flower spike has 1-3 flowers which are brown and yellow. The species

flower in July and occurs in stony red loam. The Type collection was made in an area that had been recently burnt.

Stylidium aff *caricifolium* (D.J. Coates 4688)

This species is morphologically and genetically distinct from other members of the *Stylidium caricifolium* group. It is currently known from two areas, one being the Ironcaps and the other around Pingaring-Pederah. Most populations are known from the Ironcaps Area where the species is locally abundant. It grows in gravelly soil on the tops of lateritic hills and rises. Flowering occurs in September-October.

Priority Two Species

Six Priority Two species are known to occur in the Ironcaps area. These species are known from one or a few localities on lands not under immediate threat (i.e. nature reserves). These species are under consideration for declaration as rare flora. A map of the distribution of these species is provided in Figure 11.

The species are:

Acacia kerryana

First described in 1982 this species is currently known from four localities, three in the vicinity of Norseman and one 2 km north west of Lake Cronin. It is a low spreading shrub with filiform-terete phyllodes and obloid flowerheads. Near Lake Cronin the

species grows in stony red clayey loam on a moderately exposed slight slope on a low rocky hill. Flowering occurs from late October to mid-February.

Acacia aff *myrtifolia* (R.F. Maslin s.n.)

This species is one of many in the *Acacia myrtifolia* complex. It is currently known from three localities, these being Bottle Rock, Holt Rock and Digger Rock. It grows in well-drained soils and flowers in August to September.

DRF

Acacia aff *pachypoda* (K.R. Newbey 5820)

Represented in the W.A. Herbarium by 8 collections, this species is known from the Ironcaps Area and near Norseman. In the Ironcaps Area the species has been collected 6 times. The species grows in well-drained sand, loam and gravelly clay generally in *Eucalyptus* woodlands on gently undulating terrain and broad flat valleys. The species flowers from July to October.

Acrotrichne patula

This is somewhat of an enigmatic species. It occurs in both South and Western Australia. In South Australia it is relatively common however, in Western Australia, it is only known from two localities, Hatter Hill and near Marvel Loch. The species in Western Australia has larger flowers which are darker green than those found in South Australia. Further taxonomic research may

reveal that it is a distinct taxon that may be rare in its own right.

At Hatter Hill it is found growing in *Eucalyptus* aff *gardneri* mallee on an eroded breakaway of kaolinised granite. It flowers in September - October.

Eucalyptus aff *georgei* (S. van. Leeuwen 390)

This possible subspecies of *Eucalyptus georgei* is restricted to a small area to the east of Lake Cronin. It is a small tree to 10 m with straight, narrow stems. The bark is smooth and hangs in long trailing ribbons. The leaves are very glossy green and short, the peduncles are ridged and flattened and the pedicels are generally absent from the buds and fruits. These characters and the habitat in which the species occurs distinguish it from typical *E. georgei*. The species grows with *E. yilgarnensis* and *E.* aff *gardneri* in a clay loam depression. The species flowering period is unknown.

Logania sp. (G.J. Keighery 901)

This species has been collected on four occasions since it was determined to be a distinct taxon. Three collections came from within the Ironcaps area, two collected by Charles Gardner in 1929 from near Mt Holland and one by Greg Keighery in 1976 from 21 km south of South Ironcap. The other collection made in 1978 is from the Barker Lake area. Flowering occurs from September to March.

Priority Three Species

Two Priority Three species are known to occur in the Ironcaps Area. Priority Three species are those which are known from several localities on lands not under immediate threat. Such species are under consideration of declaration as rare flora but are in need of further survey. Figure 12 provides a map of the distribution of the Priority Three species within the Ironcaps Area.

The species are:

Drosera aff *bulbosa* (A.P. Brown 362)

This species is known to occur on several ironstone hills and rises in the area between Hatter Hill and Mt Holland. It differs from typical *D. bulbosa* in its smaller habit and very small basal rosette. Flowering occurs in June to July.

Dryandra aff *horrida* (A.S. George 9446)

A species very closely related to *D. nivea* which grows on ironstone rises and hills between Hatter Hill and Lake Cronin, especially in the vicinity of South Ironcap. This species differs from *D. nivea* in its inflorescences which are much larger. the habit and leaves are similar. This species generally grows in *Eucalyptus* woodland communities over heath on sandy gravel soils. Flowering occurs from July to September.

Priority Four Species

Two Priority Four species have been recorded in the Ironcaps Area. Priority Four species are those which are "presumed extinct". Presumed extinct is defined as not been collected or reliably observed in the wild over the past 50 years or whose total wild populations has been destroyed more recently.

The species are:

Sowerbaea multicaulis

This species was last collected in 1931. The area from where it was collected was between Mt Holland and Lake Hope. All four collections housed at the W.A. Herbarium have come from this area, probably along the "Holland Track". The species has numerous tufted flowering stems up to 20 cm tall. The flowers are purple or violet and flowering occurs in November.

Thomasia gardneri

This species has only been collected once in 1929 from near Mt Holland. It is an erect, multistemmed perennial to 50 cm high. The leaves are alternate and the flowers which number 1-2 per raceme are terminal. The flowers are prominently pink veined. The Type collection which is in flower was collected in September.

Figure 1

Distribution of Banksia sphaerocarpa var. dolichostyla.

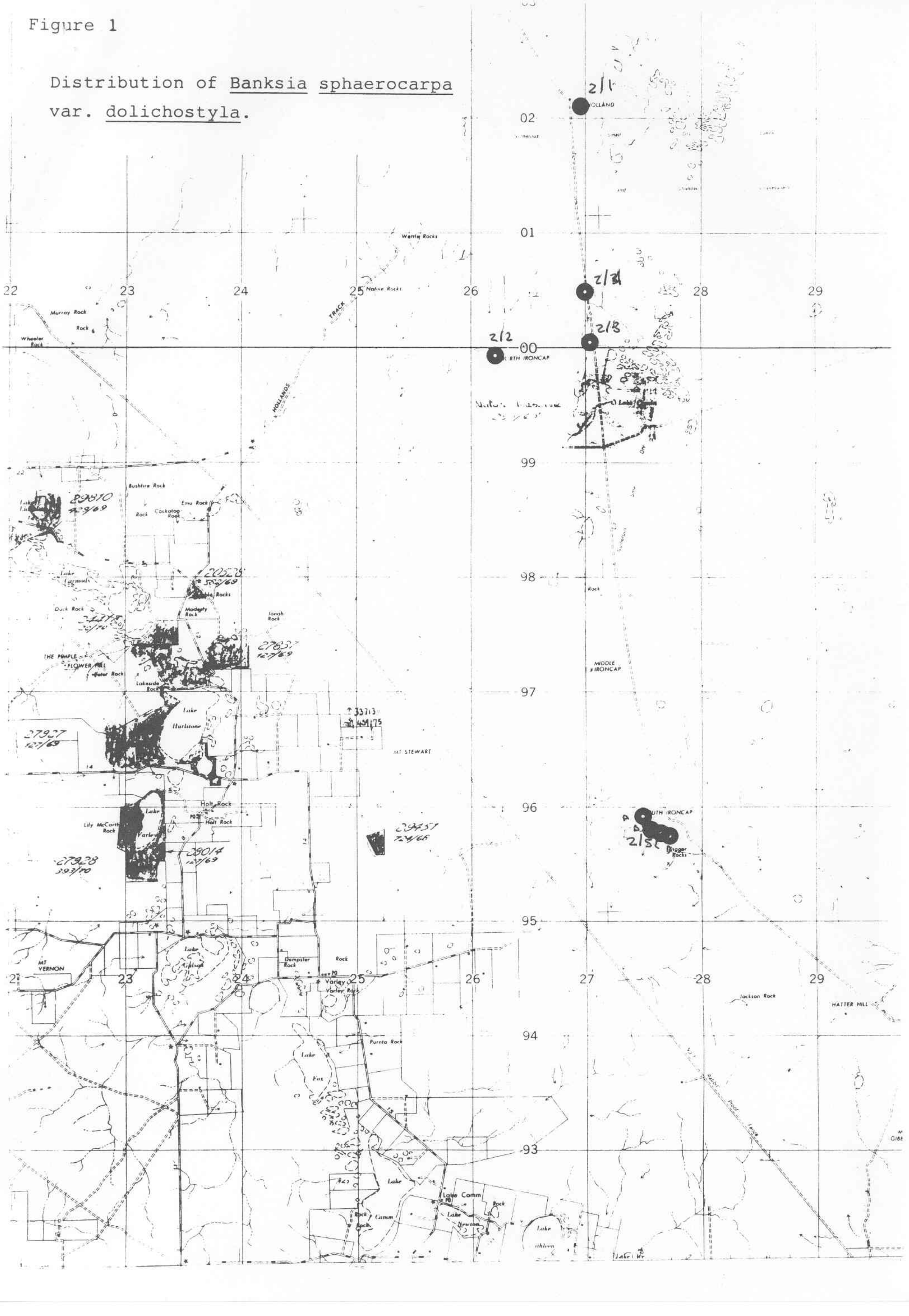


Figure 2

Diagram of Banksia sphaerocarpa
var. dolichostyla

Branch bearing flowering
cone and narrow leaves

Figure 3

Distribution of Boronia revoluta.

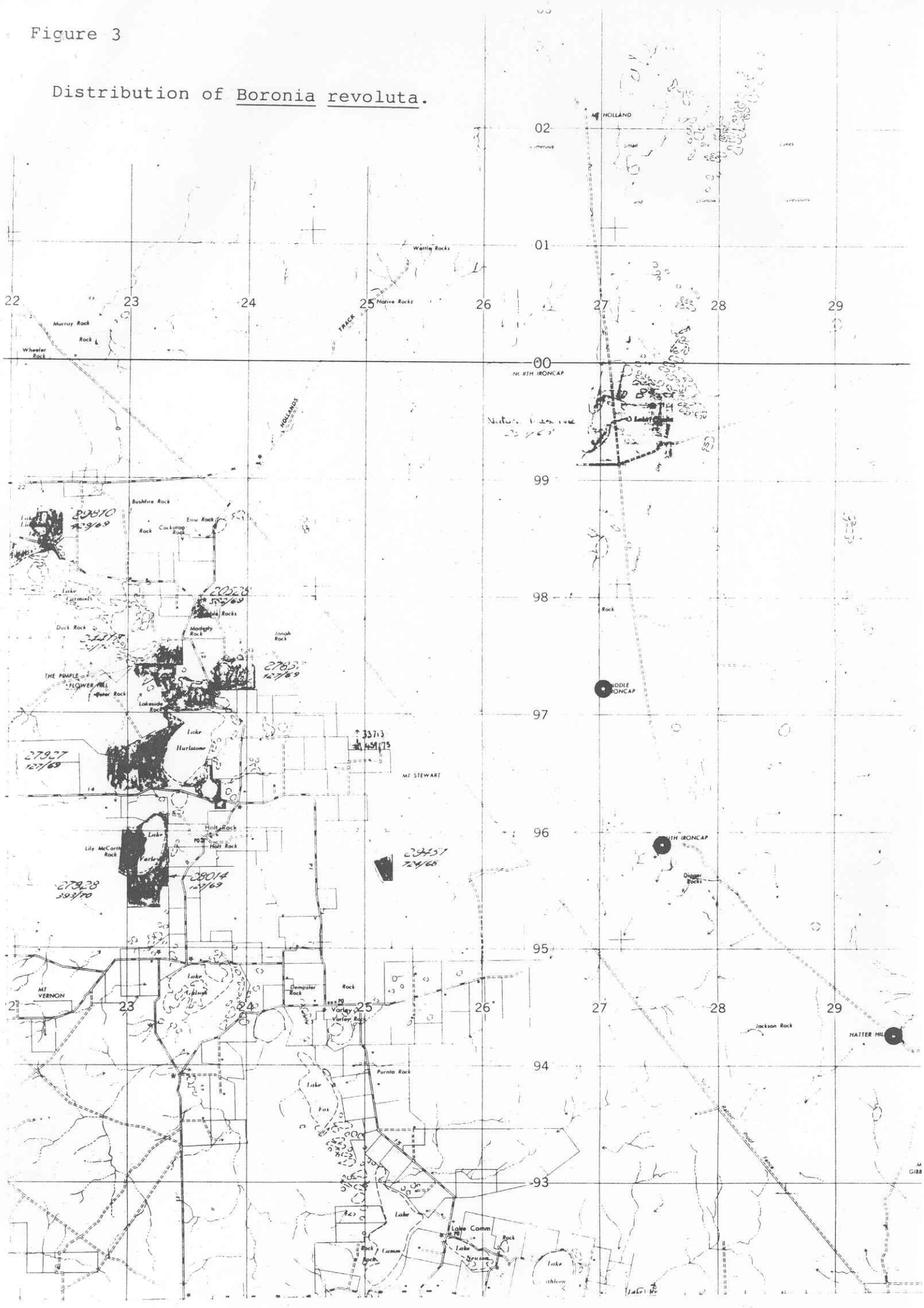


Figure 4

Distribution of Eucalyptus steedmanii

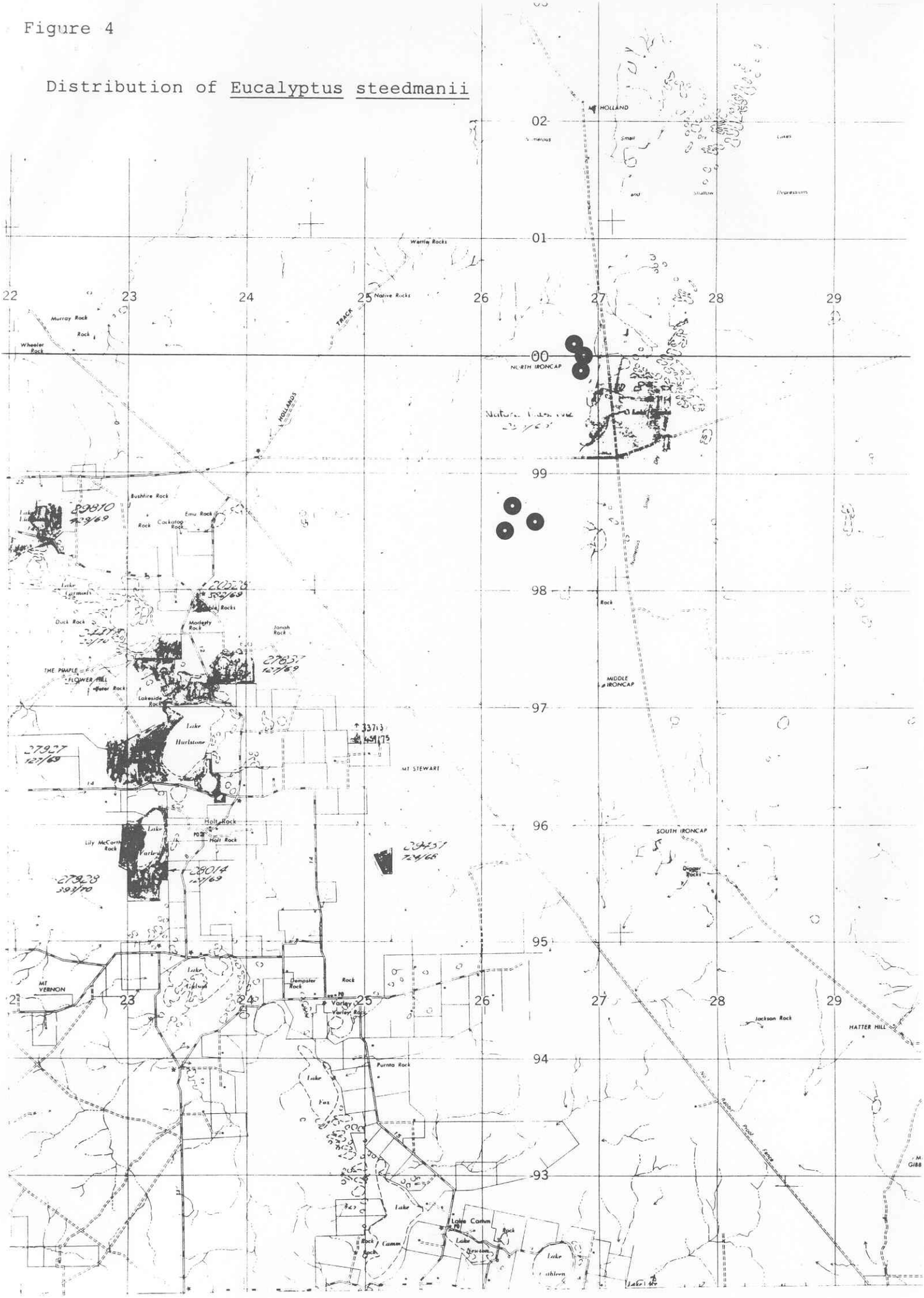


Figure 5

Diagram of Eucalyptus steedmanii

Figure 6

Distribution of Eremophila inflata

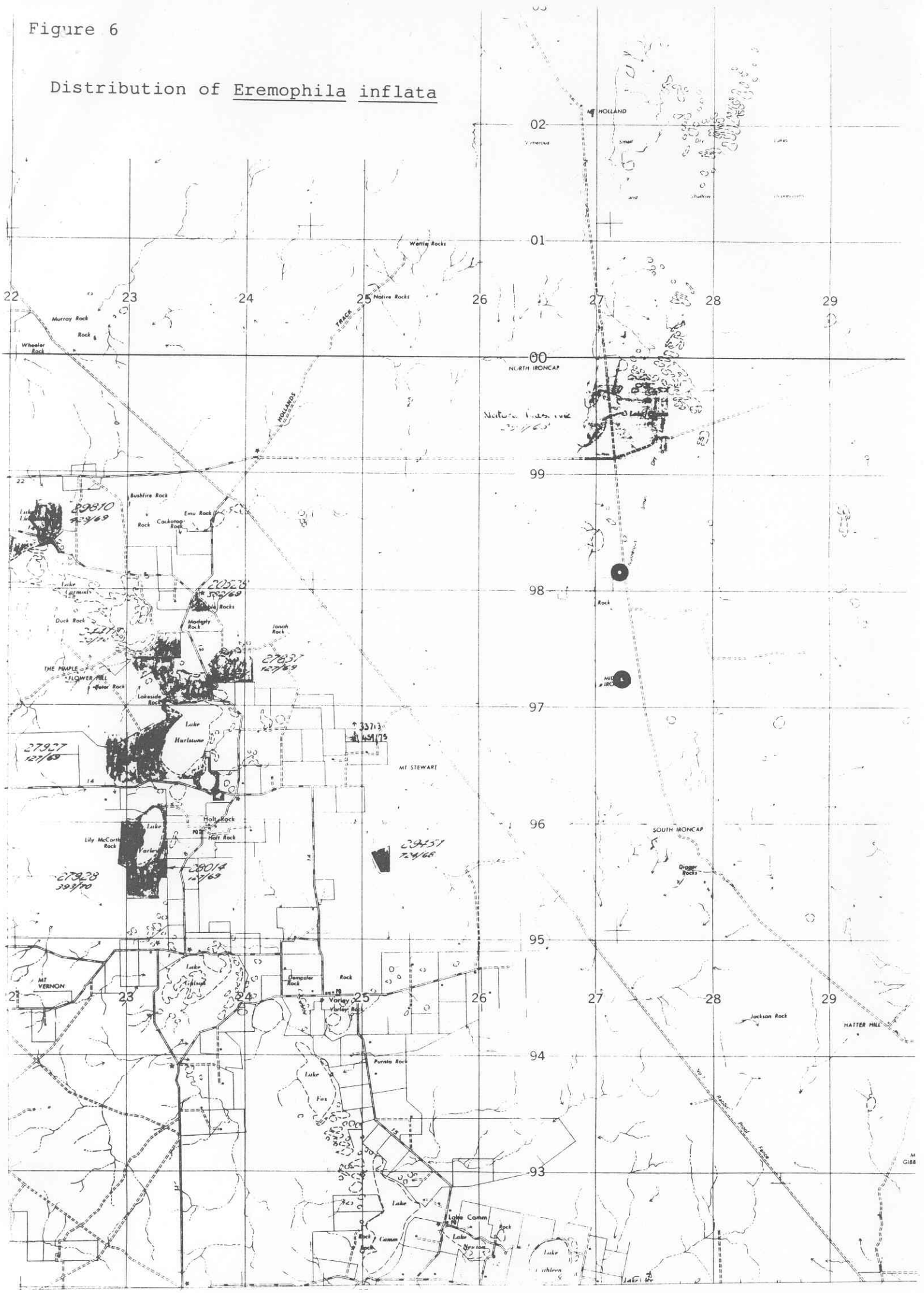
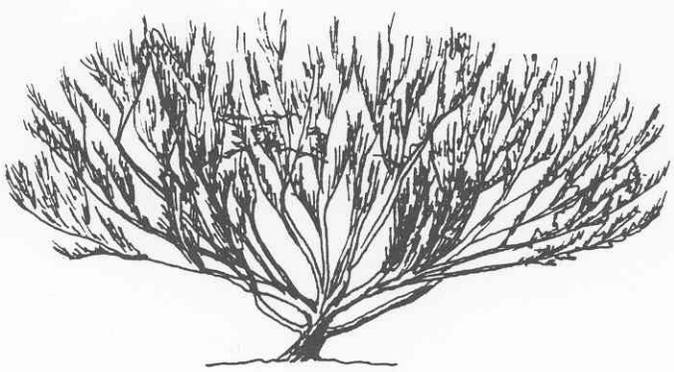


Figure 7

Diagram of Eremophila inflata



Habit of shrub up to
2 metres in height

Flower showing reflexed
calyx segments and
inflated corolla (x2)

Branch with leaves
and flowers

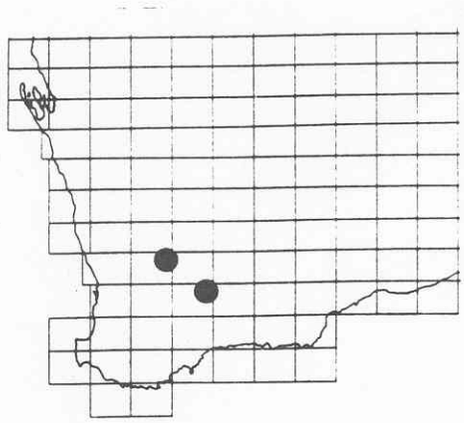


Figure 8

Distribution of Eremophila racemosa

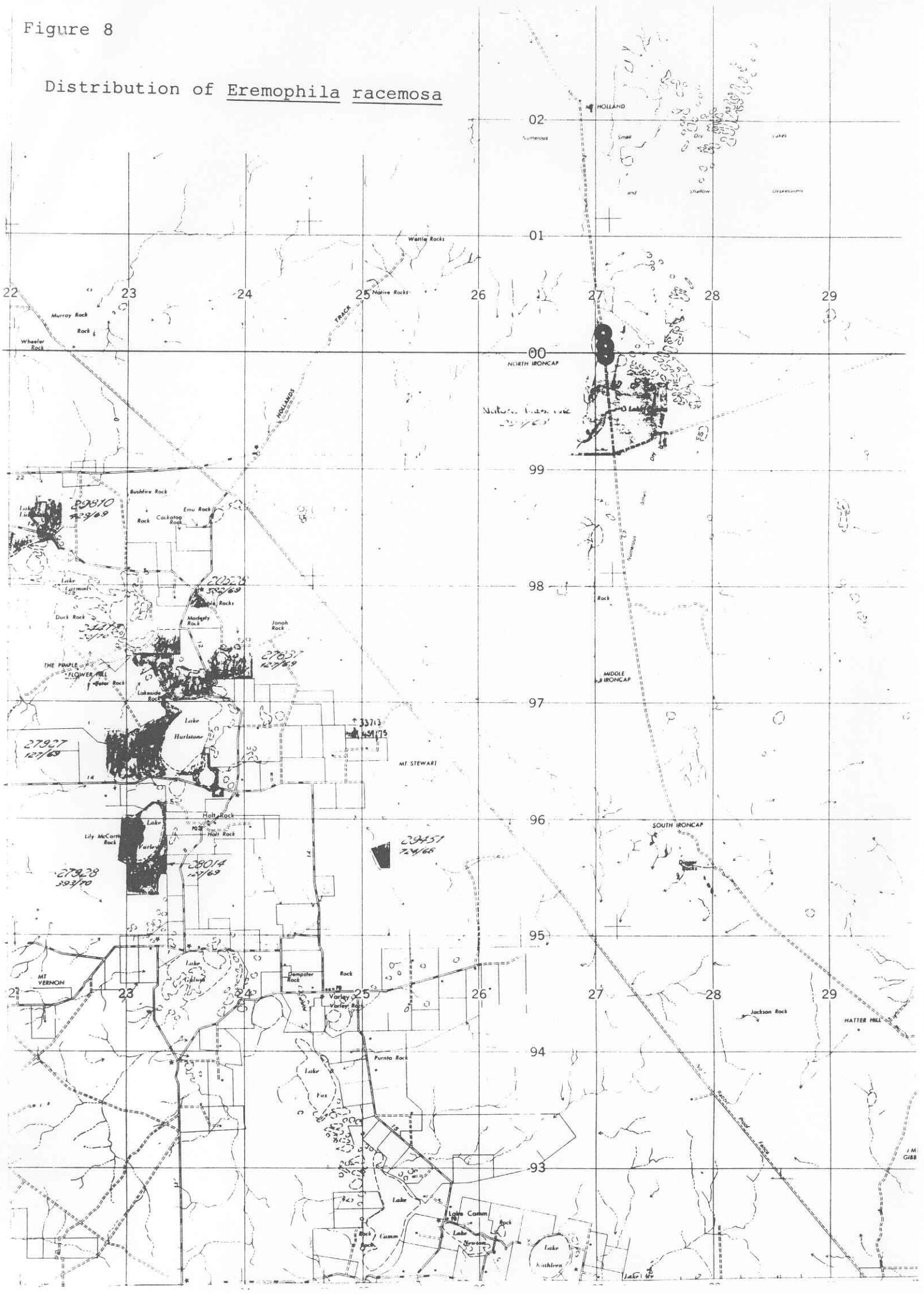


Figure 9

Diagram of Eremophila racemosa

Figure 10

Distribution of Priority One species

- ■ Drosera sp. (G.J. Barrett 16.9.89)
- ▲ Grevillea lullfitzii
- ● Grevillea pilosa subsp. dissecta
- ◉ Halgania tomentosa
- ▲ Latrobea sp. (K.R. Newbey 6532)
- ◇ Melaleuca agathosmoides
- ★ Mirbelia densiflora
- ✪ Mulleranthus crenulatus
- ▲ Stylidium aff. caricifolium (D.J. Coates 4688)

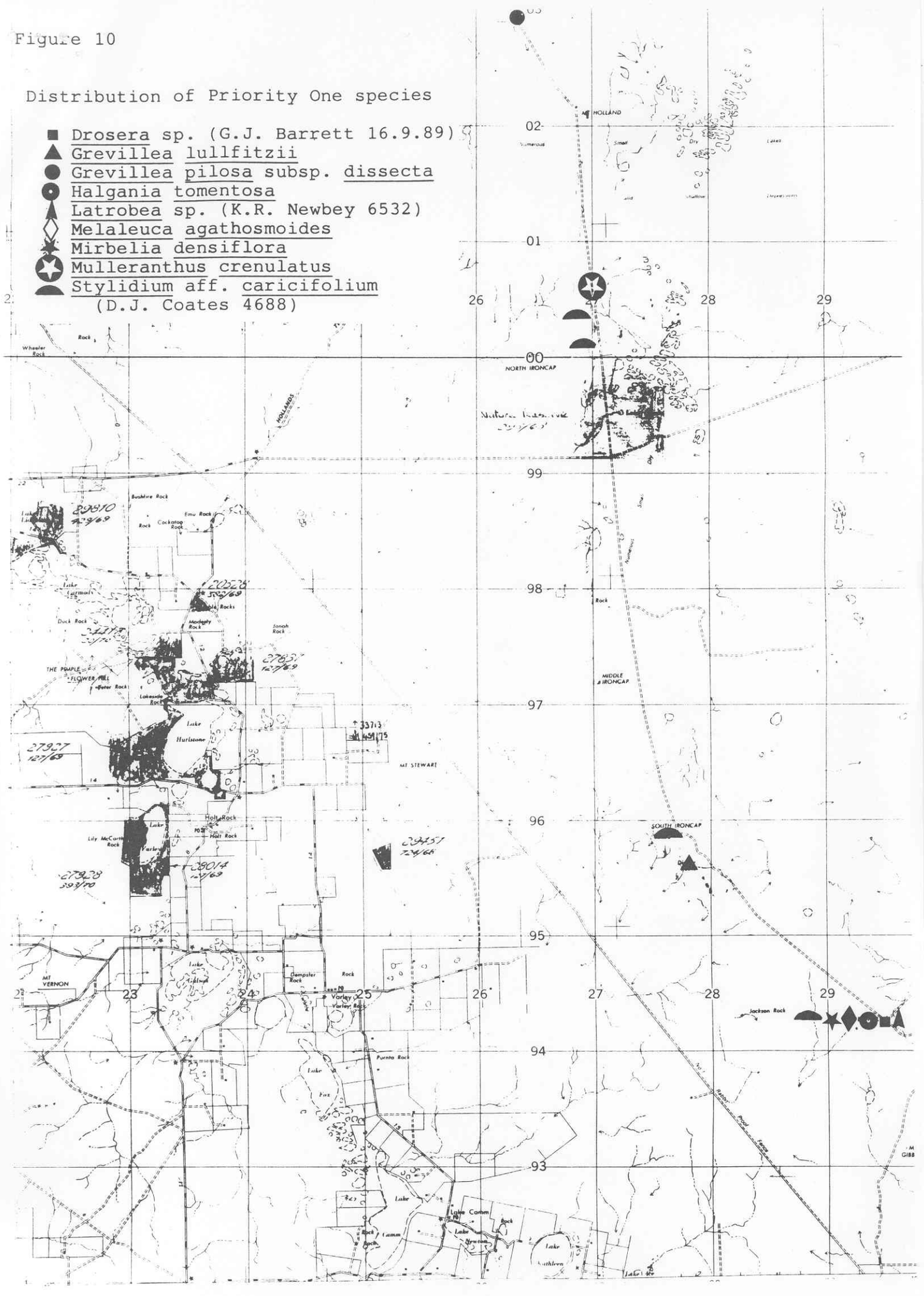


Figure 11

Distribution of Priority Two species

- ● Acacia kerryana
- ▲ Acacia aff. myrtifolia (R.F. Maslin s.n.)
- ★ Acacia aff. pachypoda (K.R. Newbey 5820)
- ■ Acrotrichne patula
- ⊙ Eucalyptus aff. georgei (S. van Leeuwen 390)
- ▲ Logania sp. (G.J. Keighery 901)

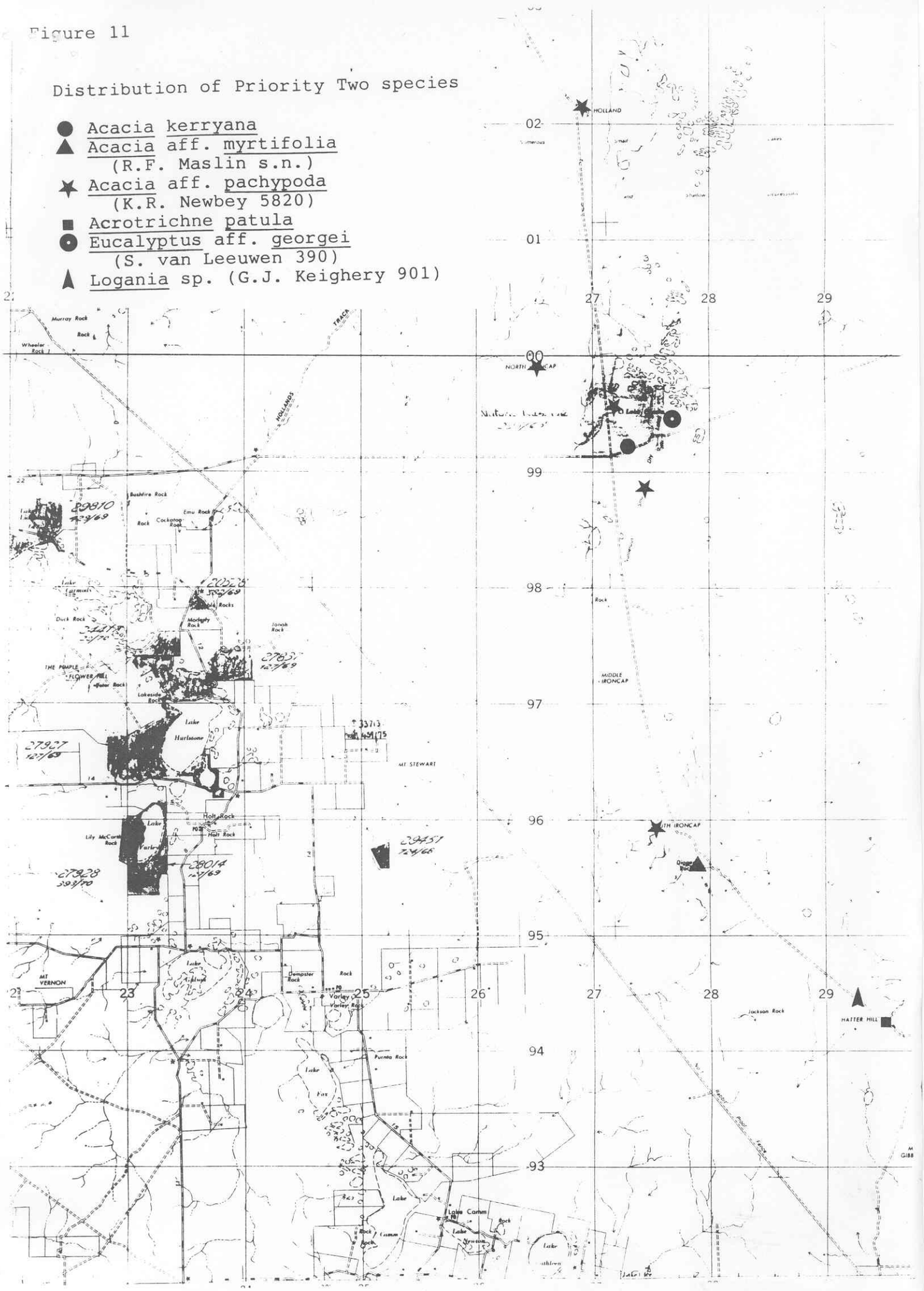


Figure 12

Distribution of Priority Three species

▲ Drosera aff bulbosa (A.P. Brown362)
● Dryandra aff. horrida (A.S. George 9446)