SCOPE ITEM 5

EX SITU CONSERVATION OF *PHYTOPHTHORA- AND* CANKER-THREATENED SPECIES OF WESTERN AUSTRALIAN NATIVE PLANTS

PART A

IDENTIFICATION, SEED COLLECTION AND GERMPLASM STORAGE OF THREATENED TAXA

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1 INTRODUCTION

There is no doubt that germplasm storage has an extremely important role to play in the *ex situ* conservation of rare and threatened plant taxa. Threatening processes, particularly loss of habitat, weed invasion, dieback (*Phytophthora* spp.) and canker diseases continue to be major factors in the local extinction of native species in Western Australia. Loss of populations or a substantial reduction in population size may not necessarily lead to immediate extinction, but more commonly to a loss of genetic diversity. Where population extinction in the wild cannot be avoided, genebanks or germplasm storage facilities can be utilised as an interim solution to prevent loss of genetic diversity within the range of a species or, as a last resort, to prevent extinction of the species. One of the most cost effective methods for genebanking is the long term storage (minimum of 50 years) of seed at low (-20° C) or ultra-low (-196°C) temperatures.

Genebanking can be readily incorporated into an integrated strategy for conservation. The highly compact nature of seeds make them ideal for long term storage at low temperature and this strategy is more economical than the maintenance of living plant collections in botanic gardens. The success of germplasm conservation depends on the longevity of seed subjected to a particular storage regime and the capacity to regenerate adequate quantities of high quality seed without genetic change when

viability declines (Morse *et al.*, 1993). The Threatened Flora Seed Centre (TFSC) has been operating as a long term germplasm storage facility for threatened Western Australian plant taxa since its establishment by the Department of Conservation and Land Management (CALM) in 1992 (Cochrane, 1997).

The work reported here is concerned with Scope Item No. 5 for the *Phytophthora* and *Diplodina* Canker project (1997/98). This Scope Item requires:

- the continued identification of species that are susceptible to *Phytophthora* and *Diplodina* canker; and
- collection and storage of their seed as part of an *ex situ* strategy of germplasm conservation.

2 OBJECTIVES

The current objective of the TFSC, which addresses Scope Item No.5, is to ensure the maintenance of genetically representative seed collections of threatened, Western Australian flora under long term storage conditions as an interim solution to prevent the genetic degradation or local extinction of critically affected populations. An important objective of seed collection is to systematically capture 90-95% of the common alleles from each threatened taxon on a representative range-wide basis. This broad sample of genetic variation is essential if the stored material is to be effectively used for long term re-establishment of species in the wild following removal of any threats.

3 METHODS

3.1 SEED COLLECTION

For the past year, collection activity has focussed on Western Australia's critically endangered taxa and on the acquisition of seed from dieback- (*Phytophthora*) and canker-susceptible species in the south-west of the State. Ongoing consultation with Kings Park and Botanic Gardens has highlighted gaps in the *ex situ* conservation of critically endangered species. Accordingly, efforts are being made to secure germplasm of currently unrepresented taxa in the face of declining populations and possible extinctions. CALM's Declared Rare and Priority Flora (DRPF) List for Western Australia (Ken Atkins, 03/12/97) has been used for the most recent collections. The ranking of DRPF into three categories (Critically Endangered, Endangered and Vulnerable) by the Western Australian Threatened Species and Communities Unit of CALM has greatly assisted the formulation of management decisions regarding selection of taxa for collection. As of May 1998, 95 critically endangered plant taxa were recognised in Western Australia.

The TFSC seed collection protocols are derived primarily from work by Brown & Briggs (1991) and Brown *et al.* (1989a, 1989b). They are based on guidelines used by CSIRO's Australian Tree Seed Centre (ATSC) and Wakehurst Place, Royal Botanic

Gardens, Kew, U.K. The collection protocols have been extensively documented by Cochrane & Coates (1997).

3.2 SEED STORAGE, VIABILITY TESTING AND INVENTORY SYSTEM

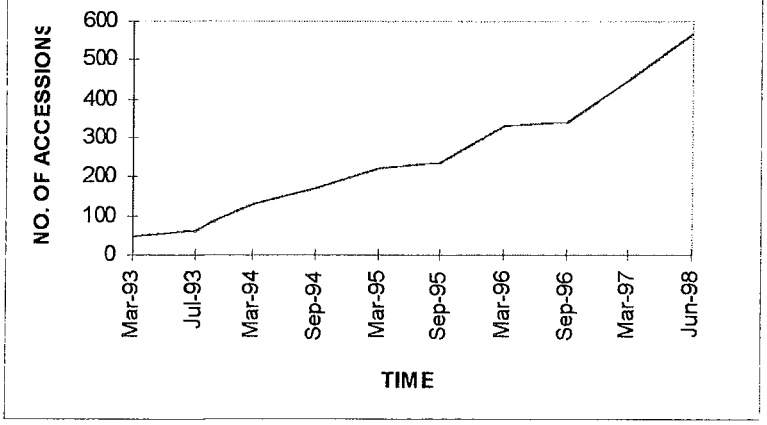
The TFSC laboratory protocols involve registration, cleaning, fumigation, testing, storage and monitoring of all collected seed. The design of genebanks and protocols recommended for use in genebanks have been formulated by the International Board for Plant Genetic Resources (Cromarty *et al.*, 1985; Ellis *et al.*, 1985a, 1985b). Information on the documentation, cleaning, fumigation, quantification, viability testing, moisture content determination, and reduction and drying of seeds at the TFSC is outlined in Appendix 1. A more detailed description of the various procedures is provided by Cochrane & Coates (1997). Data resulting from all TFSC activities are entered into the WASEED database. Considerable interest in WASEED has been shown by botanic gardens in the USA and the application is currently being trialed at the Berry Botanic Gardens in Portland, Oregon.

4 RESULTS AND DISCUSSION

4.1 SEED COLLECTION

Currently (June 1998), 567 accessions of rare and threatened flora are in storage at the TFSC (Figure 1 and Appendix 2). This represents 204 taxa in 47 genera in 18 families. These accessions represent a total of 435 seed collection sites.

FIGURE 1: No. of accessions held in storage, March 1993 to June 1998



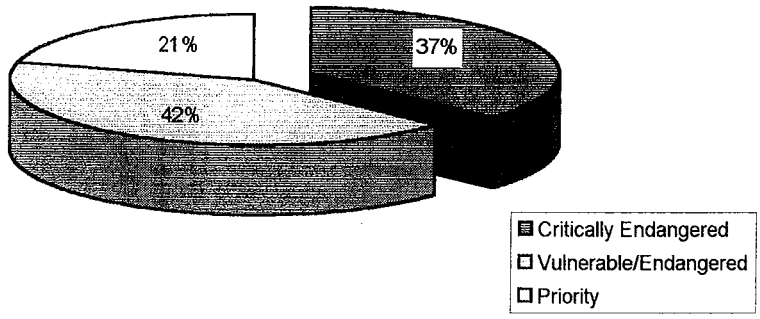
Good, genetically representative seed collections of 47 of the 95 critically endangered Western Australian plant taxa have been made by staff at the TFSC. Seed from at least some populations of an additional eight taxa are also held in long term storage. Of the other 40 critically endangered taxa, two are not known to produce seed and two appear to be extinct at known locations. Eleven taxa are in the family Orchidaceae and

research on germplasm storage of orchid seed is currently being conducted by the laboratory at Kings Park and Botanic Gardens. Seven of the critically endangered taxa have been listed as such only since May 1998. While populations of most other critical taxa have been surveyed, seed was not collected due to timing and/or low or sporadic fruit set, or because the majority of plants were still in a juvenile phase as a result of recent fire damage.

Seed of 70 endangered and vulnerable taxa (239 accessions) are presently held in long term storage and this is also true for 70 taxa (119 accessions) on Western Australia's priority flora list which comprises taxa that are poorly known and in need of further survey (Figure 2).

Since 1992, collection of seed from a number of rare and threatened taxa has proved very difficult due to small population size, low or sporadic seed production, high seed predation or disturbances such as disease, fire or drought which cause genetic fluctuations in the genepool. Differential fruiting of *Adenanthos* spp. has warranted the use of seed traps as a viable option for collection and this involves the assistance of the local community when long term continuous seed collecting is required.

FIGURE 2: Conservation status of accessions held in TFSC storage.



During the past year, research into reasons for low fruit production in one of the critically endangered *Acacia* spp.(*A. insolita* subsp. *recurva*) has been initiated by staff of the TFSC. The establishment and influence of herbivore exclusion cages, the regenerative response of *A. insolita* after fire, and an assessment of the soil seed-bank are some of the areas being investigated to increase our knowledge on the biology of this threatened taxon.

4.2 SEED STORAGE, VIABILITY TESTING AND INVENTORY SYSTEM

Monitoring of accessions is an integral part of seed storage. At the present time, more than 230 accessions representing 112 taxa have been tested for viability after one year in storage and 79% of these have maintained their initial viability. A relatively small number of accessions have shown a reduction in germinability after storage (21%). Further replication and testing of these taxa is needed to confirm whether some

species suffered a loss of viability, or whether dormancy was induced by drying and freezing. Of the accessions that showed a post-storage reduction in viability, 5% of cases were attributable to technical or procedural errors resulting in seed mortality. Protocols have since been established to ensure that the sequence of treatments prior to germination is standard. Fungal contamination during germination trials and small sample sizes also render comparison of pre- and post-storage germination results difficult. In addition, the narrow environmental tolerances of some wild seeds can present a potential problem in germination testing. Routine germination tests deplete seed accessions, and duplication of tests under different conditions is seldom possible due to the small size of samples.

In some cases it appears that the storage regime may have imposed dormancy on seeds. Although dormancy is considered to be biologically advantageous, it creates problems for research into the responses of seed to various storage regimes and it can limit the value of germination tests.

5 OUTCOMES

A long term germplasm storage facility capable of operating to international standards has been established at CALM's Western Australian Herbarium.

5.1 SEED COLLECTION

- An ongoing, well coordinated germplasm collection program has been established at the TFSC and a total of 567 accessions of rare and threatened Western Australian flora (representing 204 taxa) are currently held in the genebank. More than 75% of the State's threatened taxa, which are presumed susceptible to dieback and canker, are represented in low moisture, low temperature storage.

- New techniques for the collection of seed from differentially fruiting taxa have been developed. Seasonal re-sampling of populations associated with low levels of viable seed production has enabled sufficient quantities of seed of many taxa to be collected and stored.

- Effective communication links and collaborative activities have been fostered and maintained between the TFSC, CALM District staff and researchers, Kings Park and Botanic Gardens, and local community groups.

- A small proportion of the time spent on field work has been devoted to the collection of germplasm from various species for research into their population biology and to assess the taxonomic status of particular segments of the flora.

- During the last six years, our understanding of many of the variables that affect phenology, pollination, seed set, and seed ripeness has been enhanced in the course of field collections and research on seed biology. At the same time, essential

knowledge has been accumulated in regard to identification of seed from a diverse range of plant species.

5.2 SEED STORAGE, VIABILITY TESTING AND INVENTORY SYSTEM

- Research on various techniques designed to promote germination has resulted in a better understanding of the seed biology of many rare and threatened taxa. The use of growth hormones, smoke, heat treatment and scarification have provided useful information for assessment of seed viability and determination of the optimum methods for germination (Cochrane & Kelly, 1997). Research into seed storage, seed germination and dormancy-breaking mechanisms for the south-western flora has enhanced the operational effectiveness of the TFSC.

- Storage data are now available for a wide range of species. The effects of moisture content reduction and storage of germplasm in carbon dioxide at sub-zero temperatures are known for many taxa held in the genebank. Maintenance of high viability of stored seed has been demonstrated for the majority of accessions. In cases where high viability has not persisted, further research is required to determine a more appropriate storage regime. As fungal and bacterial infection may have contributed to the apparent loss of seed viability in many accessions, sterile conditions will be strictly implemented to enable accurate comparisons to be made between pre- and post-storage germination.

- For many taxa, knowledge of the optimum conditions for seed germination is still lacking and inability to break dormancy in some species limits efforts to store germplasm and maintain viability in storage.

- A comprehensive database is presently used to collate all aspects of the collection, processing, testing, storage, and monitoring of accessions. Detailed information on the phenology of a range of rare and threatened taxa will assist in the planning of fieldwork.

- Accessions will continue to be monitored on a yearly, then five-yearly basis until adequate knowledge of the flora's response to sub-zero storage is attained. A monitoring regime of ten years will then be implemented subject to viability figures.

5.3 OTHER DEVELOPMENTS

- Between June and September, 1997, the manager of the TFSC visited the International Plant Genetic Resource Institute in Rome (Italy), genebanks in the USA, the Seed Conservation Section of Wakehurst Place, Kew (UK) and seed biologists in South Africa. The impression gained from these visits was that the methods used in the TFSC for long term storage of conservation taxa are consistent with international standards. The overseas trip was supported by a Churchill Fellowship.

- Seedlings produced in the course of routine viability tests are being sent to researchers in CALM for assessment of susceptibility to *Phytophthora* spp.

- Germplasm stored in the TFSC is being used for a series of translocation proposals commencing in the current year. Seed from seven critically endangered taxa have already been germinated and subsequently cultivated at Kings Park and Botanic Gardens for planting in autumn 1998. This development equates with attainment of one of the major outcomes of the project, namely the provision of material for *ex situ* propagation as required in recovery programs.

- In March, 1998, staff of the TFSC conducted a preliminary workshop on the identification and collection of seed for CALM District personnel.

- In July, 1998, staff of the TFSC will conduct a national course on "Establishing a Seed-Based Genebank for Conservation Purposes". Participants attending the course represent botanic gardens and conservation agencies from around Australia.

6 REFERENCES

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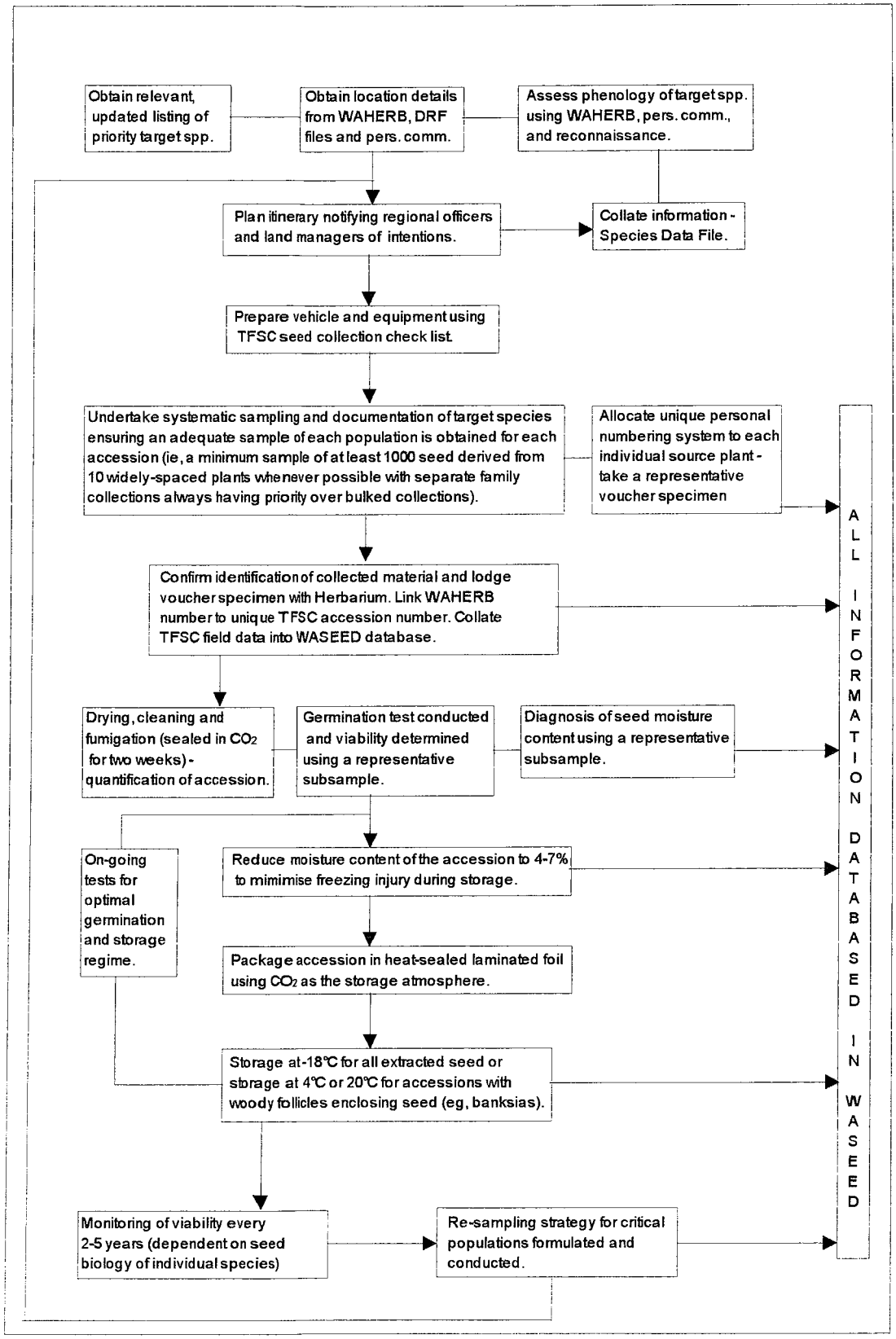
Appendix 1. Seed collection and storage protocols for the Threatened Flora Seed Centre



Appendix 2. Threatened Flora Seed Centre accessions to June 1998

Accession	Date(s) of Collection	Species	Collection Type
00196 V	4/12/94	*Acacia awestoniana*	B/7
00001 V	9/08/87	*Banksia brownii*	I/4
00002 V	2/11/88	*Banksia brownii*	I/14
00003 E	9/02/88	*Banksia cuneata*	I/6
00004 E	9/02/88	*Banksia cuneata*	I/10
00005 E	9/02/88	*Banksia cuneata*	I/13
00006 V	21/04/89	*Banksia brownii*	I/38
00007 V		*Banksia brownii*	I/29
00008 V	24/08/89	*Banksia brownii*	I/49
00009 P2	26/04/88	*Banksia epica*	I/45
00010 E	9/02/88	*Banksia cuneata*	I/30
00011 E	9/02/88	*Banksia cuneata*	I/7
00012 E	8/02/88	*Banksia cuneata*	B/23
00013 E	23/05/88	*Banksia cuneata*	I/23
00014 E	24/09/90	*Banksia cuneata*	I/29
00015 V	1/06/86	*Banksia verticillata*	I/6
00016 V	10/05/86	*Banksia verticillata*	I/11
00017 P3	15/03/94	*Verticordia attenuata*	B/20
00018 V	8/03/88	*Banksia oligantha*	I/10
00019 V	8/03/88	*Banksia oligantha*	I/20
00020 V	8/03/88	*Banksia oligantha*	I/10
00021 V	26/11/86	*Banksia verticillata*	I/20
00022 V	1987	*Banksia verticillata*	I/9
00023 V	10/05/86	*Banksia verticillata*	I/13
00024 C	28/11/90	*Dryandra ionthocarpa*	I/19
00025 V	9/08/90	*Banksia oligantha*	I/14
00026 V	9/08/90	*Banksia oligantha*	I/11
00027 V	9/08/90	*Banksia oligantha*	I/10
00028 V	9/08/90	*Banksia oligantha*	I/30
00029 V	7/06/85	*Lambertia orbifolia*	I/9
00030 V	13/12/92	*Lambertia orbifolia*	B/15
00031 E	12/12/92	*Isopogon uncinatus*	I/16
00032 V	12/12/92	*Banksia verticillata*	I/10
00033 V	13/12/92	*Andersonia* sp. Two Peoples Bay	B/50
00034 P3	14/12/92	*Andersonia echinocephala*	B/30
00035 P3	15/12/92	*Andersonia grandiflora*	I/12
00036 E	18/12/92	*Adenanthos pungens* ssp. *Effusa*	B/10
00037 P3	22/01/93	*Dryandra seneciifolia*	I/13
00038 P3	22/01/93	*Andersonia grandiflora*	I/10
00039 C	23/01/93	*Dryandra ionthocarpa*	I/10
00040 V	25/01/93	*Banksia brownii*	I/22
00041 C	29/01/93	*Lambertia echinata* ssp. *Echinata*	I/3
00042 P2	30/01/93	*Isopogon alcicornis*	I/10
00043 P4	31/01/93	*Dryandra serra*	B/20
00044 V	18/09/92	*Banksia verticillata*	B/6
00045 P3	24/01/93	*Thomasia solanacea*	I/5
00046 P3	24/01/93	*Eucalyptus acies*	B/5
00047 P2	30/01/93	*Melaleuca coccinea* ssp. *Eximia*	B/10
00048 V	30/01/93	*Eucalyptus merrickiae*	I/5
00049 P3	16/03/94	*Verticordia attenuata*	B/30
00050 P3	16/03/94	*Verticordia attenuata*	B/50
00051 V	19/05/93	*Banksia goodii*	I/5

00052 V	9/05/86	*Banksia goodii*	I/12
00053 V	16/03/94	*Verticordia plumosa* var. *ananeotes*	I/10
00054 G	1/06/87	*Banksia semi-nuda* ssp. *remanens*	I/7
00055 V	4/04/93	*Banksia verticillata*	I/25
00056 V	6/04/93	*Banksia verticillata*	I/15
00057 V	7/04/93	*Banksia verticillata*	I/25
00058 V	15/05/93	*Lambertia orbifolia*	B/15
00059 V	15/05/93	*Lambertia orbifolia*	B/21
00060 V	18/05/93	*Banksia brownii*	I/16
00061 V	19/05/93	*Banksia brownii*	I/41
00062 P1	20/07/93	*Dryandra squarrosa* ssp. *argillacea*	I/10
00063 P1	21/07/93	*Dryandra squarrosa* ssp. *argillacea*	I/17
00064 G	22/07/93	*Banksia semi-nuda* ssp. *remanens*	I/17
00065 G	22/07/93	*Banksia semi-nuda* ssp. *remanens*	I/14
00066 G	23/07/93	*Banksia semi-nuda* ssp. *remanens*	I/3
00067 G	23/07/93	*Banksia semi-nuda* ssp. *remanens*	I/18
00068 V	24/07/93	*Banksia brownii*	I/25
00069 P1	6/08/93	*Isopogon scaber*	B/16
00070 C	18/08/93	*Dryandra anatona*	B/15
00071 P3	19/08/93	*Dryandra seneciifolia*	I/16
00072 P2	19/08/93	*Dryandra ferruginea* ssp. *pumila*	I/17
00073 P2	20/08/93	*Andersonia* sp. Mt.Lindesay	B/10
00074 P4	21/08/93	*Dryandra serra*	B/32
00075 P4	21/08/93	*Dryandra serra*	I/11
00076 V	21/08/93	*Banksia brownii*	I/4
00077 V	22/08/93	*Banksia brownii*	I/15
00078 V	23/08/93	*Banksia verticillata*	I/8
00079 V	23/08/93	*Banksia verticillata*	I/16
00080 P3	24/08/93	*Dryandra seneciifolia*	I/10
00081 P2	14/09/93	*Dryandra acanthopoda*	I/12
00082 P1	14/09/93	*Dryandra lepidorhiza*	B/20
00083 P3	15/09/93	*Dryandra meganotia*	B/10
00084 P2	15/09/93	*Dryandra octotriginata*	I/20
00085 P2	16/09/93	*Dryandra erythrocephala* var. *inopinata*	I/21
00086 P2	16/09/93	*Dryandra epimicta*	I/21
00087 P4	17/09/93	*Dryandra conferta* var. *conferta*	I/17
00088 V	21/09/93	*Lambertia fairallii*	B/100
00089 E	9/11/93	*Dryandra mimica*	B/1?
00090 V	9/11/93	*Lambertia orbifolia*	B/10
00091 P4	10/11/93	*Astroloma* sp. Nannup	I/20
00092 C	11/11/93	*Dryandra ionthocarpa*	I/15
00093 C	11/11/93	*Dryandra ionthocarpa*	I/16
00094 V	11/11/93	*Lambertia fairallii*	B/50
00095 C	3/11/93	*Daviesia microcarpa*	B/12
00096 E	25/11/93	*Daviesia pseudaphylla*	I/11
00097 E	25/11/93	*Daviesia pseudaphylla*	B/25
00098 E	25/11/93	*Daviesia pseudaphylla*	B/20
00099 P3	26/11/93	*Andersonia echinocephala*	I/22
00100 P4	28/11/93	*Banksia laevigata* ssp. *laevigata*	I/20
00101 V	14/01/98	*Darwinia squarrosa*	B/80
00102 V	30/11/93	*Adenanthos ellipticus*	B/8
00103 V	1/12/93	*Daviesia megacalyx*	B/30
00104 P1	1/12/93	*Dryandra corvijuga*	I/13
00105 P2	1/12/93	*Dryandra folisissima*	I/10
00106 P2	2/12/93	*Dryandra folisissima*	I/10

00107 P1	2/12/93	*Dryandra corvijuga*	I/10
00108 V	2/12/93	*Daviesia megacalyx*	I/14
00109 V	2/12/93	*Daviesia megacalyx*	I/5
00110 P3	3/12/93	*Dryandra viscida*	I/23
00111 V	3/12/93	*Banksia sphaerocarpa* var. *dolichostyla*	I/20
00112 P4	4/12/93	*Daviesia oxylobium*	I/8
00113 V	1/11/90	*Eucalyptus crucis* ssp. *crucis*	B/?
00114 P4	8/09/93	*Dryandra serra*	I/10
00115 V	1/10/92	*Lepidium catapycnon*	I/1
00116 E	6/01/94	*Adenanthos pungens* ssp. *effusa*	B/3
00117 V	14/01/98	*Darwinia squarrosa*	B/150
00118 E	6/01/94	*Adenanthos pungens* ssp. *pungens*	B/10
00119 V	7/01/94	*Adenanthos velutinos*	I/4
00120 V	9/01/94	*Banksia verticillata*	I/13
00121 V	10/01/94	*Adenanthos ellipticus*	B/40
00122 P4	11/01/94	*Adenanthos labillardieri*	I/20
00123 E	11/12/96	*Acacia pygmaea*	B/10
00124 C	14/01/94	*Lambertia echinata* ssp. *echinata*	I/3
00125 E	14/01/94	*Myoporum turbinatum*	I/10
00126 P2	15/01/94	*Astroloma* sp. Grass Patch	B/40
00127 P4	16/01/94	*Daviesia campophylla*	I/21
00128 E	7/07/93	*Banksia cuneata*	B/?
00129 P3	9/02/94	*Andersonia echinocephala*	I/20
00130 P4	11/02/94	*Dryandra* sp. Fitzgerald	I/10
00131 P4	13/02/94	*Dryandra* sp. Fitzgerald	I/12
00132 C	15/02/94	*Andersonia* pinaster	I/12
00133 P2	15/02/94	*Andersonia* sp. Mt. Lindesay	I/10
00134 P2	16/02/94	*Banksia occidentalis* ssp. *formosa*	I/18
00135 V	12/93-1/94	*Daviesia spiralis*	B/25
00136 P4	1/09/93	*Eucalyptus carnabyi*	B/5
00137 E	15/03/94	*Petrophile latericola*	B/40
00138 V	20/04/94	*Banksia verticillata*	I/13
00139 C	20/04/94	*Dryandra montana*	I/5
00140 E	21/04/94	*Verticordia harveyi*	I/16
00141 G	22/04/94	*Lambertia echinata* ssp. *citrina*	I/10
00142 G	22/04/94	*Lambertia echinata* ssp. *citrina*	I/6
00143 P2	26/04/94	*Dryandra aurantia*	B/15
00144 V	12/05/94	*Lambertia fairallii*	B/8
00145 V	1/05/85	*Eucalyptus rhodantha*	I/6
00146 V	1/04/85	*Eucalyptus rhodantha*	I/21
00147 V	1/04/85	*Eucalyptus rhodantha*	I/32
00148 V	1/08/85	*Eucalyptus rhodantha*	I/14
00149 V	15/04/85	*Eucalyptus rhodantha*	I/8
00150 V	12/07/93	*Eucalyptus rhodantha*	I/11
00151 V	13/07/93	*Eucalyptus rhodantha*	I/6
00152 V	2/09/93	*Eucalyptus rhodantha*	I/35
00153 V	23/06/93	*Eucalyptus rhodantha*	I/34
00154 V	13/07/93	*Eucalyptus rhodantha*	I/4
00155 V	17/12/92	*Stylidium coroniforme*	B/6
00156 V	16/12/93	*Stylidium coroniforme*	B/9
00157 V	16/12/93	*Stylidium coroniforme*	I/13;B/15
00158 V	15/12/93	*Stylidium coroniforme*	I/11
00159 V	15/12/93	*Stylidium coroniforme*	I/25
00160 V	16/12/93	*Stylidium coroniforme*	I/14;B/27
00161 V	1/06/87	*Banksia verticillata*	I/19

00162 P1	26/07/94	*Dryandra fraseri* var. *oxycedrus*	I/14
00163 P1	26/07/94	*Dryandra borealis* ssp. *elatior*	B/20
00164 V	27/07/94	*Leucopogon obtectus*	I/6
00165 P1	27/07/94	*Dryandra stricta*	I/11
00166 V	25/07/94	*Dryandra serratuloides*	B/12
00167 V	28/07/94	*Dryandra serratuloides*	I/15
00168 P3	28/07/94	*Dryandra pteridifolia* ssp. *vernalis*	I/10
00169 V	28/08/94	*Banksia verticillata*	I/13
00170 C	1/09/94	*Dryandra anatona*	B/6
00171 V	1/06/94	*Eucalyptus rhodantha*	I/5
00172 G	28/09/94	*Lambertia echinata* ssp. *citrina*	I/10
00173 V	Sept-Dec 93	*Anigozanthus humilis* ssp. *chrysanthus*	I/44
00174 P2	18/11/94	*Melaleuca ordinifolia*	I/10
00175 E	19/11/94	*Daviesia pseudaphylla*	B/30
00176 C	16/11/94	*Rulingia* sp. Trigwell Bridge	B/4
00177 V	20/11/94	*Banksia brownii*	B/10
00178 P3	20/11/94	*Andersonia echinocephala*	I/13
00179 P4	21/11/94	*Darwinia lejostyla*	B/100
00180 C	21/11/94	*Darwinia oxylepis*	B/100
00181 E	21/11/94	*Darwinia wittwerorum*	B/100
00182 V	22/11/94	*Verticordia helichrysantha*	B/200
00183 P2	22/11/94	*Melaleuca sculponeata*	I/11
00184 V	23/11/94	*Daviesia megacalyx*	I/9
00185 V	23/1194	*Daviesia megacalyx*	B/10
00186 V	23/11/94	*Daviesia megacalyx*	B/50
00187 C	14/12/94+28/12/94+13/02/95	*Grevillea Mccutcheonii*	B/5
00188 P1	14/12/94	*Hakea* aff. *varia*	I/8
00189 P1	14/12/94	*Dryandra squarrosa* ssp. *argillacea*	I/10
00190 E	15/12/94	*Dryandra nivea* ssp. *uliginosa*	I/9
00191 E	15/12/94	*Petrophile latericola*	B/25
00192 P1	15/12/94	*Hakea* sp. Williamson	B/30
00193 P1	16/12/94	*Andersonia* aff. *latiflora*	B/100
00194 E	16/12/94+28/12/94	*Grevillea elongata*	I/22
00195 E	15/12/94+28/12/94	*Brachysema papilio*	B/5
00196 V	4/12/94+12/12/94	*Acacia awestoniana*	B/7
00197 E	28/12/94	*Grevillea elongata*	B/8
00198 C	14/12/94	*Andersonia pinaster*	B/10
00199 C	14/12/94	*Andersonia pinaster*	B/10
00200 C	14/12/94+11/01/95	*Andersonia pinaster*	B/10
00201 V	14/11/94-29/01/95	*Adenanthos pungens* ssp. *pungens*	I/10 (traps)
00202 V	9/01/95	*Lambertia fairallii*	B/250
00203 P3	9/01/95	*Andersonia grandiflora*	B/100
00204 E	12/01/95	*Isopogon uncinatus*	B/20
00205 E	12/01/95	*Isopogon uncinatus*	B/50
00206 P2	13/01/95	*Andersonia* sp. Mt Lindesay	B/20
00207 V	13/01/95	*Verticordia fimbrilepis* ssp. *australis*	B/200
00208 R	11/01/95	*Hibbertia* sp. Porongorups	B/6
00209 G	11/01/95	*Lambertia echinata* ssp. *propinqua*	I/11
00210 V	14/12/94	*Eucalyptus rhodantha*	I/8
00211 V	14/12/94	*Eucalyptus rhodantha*	I/9
00212 V	14/12/94	*Eucalyptus rhodantha*	I/11
00213 V	14/12/94	*Eucalyptus rhodantha*	I/23
00214 C	3/01/95	*Verticordia albida*	B/8
00215 P2	28/01/95	*Verticordia bifimbriata*	B/12
00216 P2	28/01/95	*Andersonia bifida*	B/35

00217 P1	13/02/95	*Verticordia plumosa* var. *pleiobotrya*	I/27
00218 P3	13/02/95	*Verticordia attenuata*	B/30
00219 E	13/02/95	*Dryandra nivea* ssp. *uliginosa*	I/10
00220 V	14/02/95	*Verticordia plumosa* var. *ananeotes*	B/30
00221 P1	15/02/95	*Verticordia endlicheriana* var. *angustifolia*	B/50
00222V	17/02/95	*Kunzea pauciflora*	B/50
00223 E	21/04/94	*Banksia cuneata*	B/57
00224 E	21/04/94	*Banksia cuneata*	B/6
00225 E	13/03/94	*Banksia cuneata*	B/10
00226 E	18/05/94	*Banksia cuneata*	B/10
00227 E	20/04/94	*Banksia cuneata*	B/78
00228 E	30/07/94	*Banksia cuneata*	B/50
00229 E	8/08/94	*Banksia cuneata*	B/90
00230 V	25/04/95+15/06/95	*Lambertia orbifolia*	B/20
00231 V	26/04/95	*Banksia verticillata*	I/6
00232 E	27/04/95	*Verticordia harveyi*	B/200
00233 V	28/04/95	*Banksia verticillata*	I/12
00234 E	11/05/95	*Banksia cuneata*	B/3
00235 V	15/06/95	*Lambertia orbifolia*	B/10
00236 P1	13/06/95	*Dryandra lepidorhiza*	B/60
00237 P2	13/06/95	*Dryandra acanthopoda*	I/10
00238 P4	26/09/90	*Banksia meisneri* var. *ascendens*	B/?
00239 V	24/08/95	*Dryandra serratuloides* ssp. *serratuloides*	I/10
00240 E	10/10/95	*Verticordia staminosa* ssp. *staminosa*	I/15
00241 V	10/10/95	*Melaleuca sciotostyla*	I/10
00242 P2	15/10/95	*Andersonia* sp. Mt. Lindesay	B/20
00243 E	18/10/95	*Eremophila denticulata* ssp. *denticulata*	B/20
00244 E	19/10/95	*Eremophila denticulata* ssp. *denticulata*	B/200
00245 P1	19/10/95	*Eucalyptus preissiana* ssp. *lobata*	B/200
00246 C	18/10/95	*Daviesia microcarpa*	I/15
00247 V	20/10/95	*Eucalyptus insularis*	B/10+
00248 V	20/10/95	*Eucalyptus insularis*	B/5+
00249 C	20/10/95	*Lambertia echinata* ssp. *echinata*	I/3
00250 C	21/10/95	*Prostanthera carrickiana*	B/40
00251 V	22/10/95	*Eucalyptus platydisca*	I/17
00252 P1	24/10/95	*Chamelaucium* sp. Hamersley	B/60
00253 V	26/10/95	*Myoporum cordifolium*	B/20
00254 V	26/10/95	*Myoporum cordifolium*	B/100
00255 V	26/10/95	*Verticordia helichrysantha*	B/1000
00256 V	27/10/95	*Grevillea maxwellii*	I/12 + B/5
00257 C	6/11/95	*Chamelaucium griffinii*	B/20
00258 E	6/11/95	*Grevillea calliantha*	B/14
00259 E	6/11/95	*Grevillea calliantha*	B/5
00260 E	6/11/95	*Grevillea calliantha*	B/10
00261 P1	8/11/95	*Grevillea kenneallyi*	B/40
00262 E	8/11/95	*Gastrolobium hamulosum*	B/9
00263 V	9/11/95	*Microcorys eremophiloides*	B/10
00264 C	9/11/95	*Acacia pygmaea*	B/6
00265 E	6/11/95	*Grevillea calliantha*	B/4
00266 P4	1/04/97	*Dryandra serra*	B/18
00267 E	22/11/95	*Darwinia acerosa*	I/10
00268 V	30/11/95	*Allocasuarina fibrosa*	I/24
00269 C	1/12/95	*Eremophila caerulea* ssp. *merrallii*	B/10
00270 P1	1/12/95	*Jacksonia quairading*	B/100
00271 C	4/12/95	*Darwinia carnea*	B/10

00272 E	5/12/95	*Acacia leptalea*	I/10
00273 E	5/12/95	*Acacia leptalea*	I/13
00274 V	5/12/95	*Verticordia staminosa* ssp. *cylindraceae* var. *cylindraceae*	I/7
00275 V	6/12/95	*Verticordia staminosa* ssp. *cylindraceae* var. *erecta*	I/10
00276 V	6/12/95	*Allocasuarina tortiramula*	I/10
00277 V	6/12/95	*Allocasuarina tortiramula*	I/11
00278 V	7/12/95	*Billardiera mollis*	B/20
00279 C	9/12/95	*Chamelaucium* sp. Gin Gin	I/10
00280 E	9/12/95	*Acacia* sp. Dandaragan	I/10
00281 P1	11/12/95	*Calothamnus aff. quadrifidus*	I/11
00282 E	12/12/95	*Brachysema papilio*	B/10
00283 P1	12/12/95	*Hakea aff. varia*	I/10*
00284 E	12/12/1995, 17/1/96	*Dryandra nivea ssp. uliginosa*	I/12
00285 E	12/12/95	*Petrophile latericola*	B/10
00286 C	12/12/95	*Lambertia echinata ssp. septentrionale*	B/6
00287 E	12/12/95	*Petrophile latericola*	B/15
00288 V	13/12/95	*Lambertia orbifolia*	B/15
00289 V	13/12/95	*Lambertia orbifolia*	B/20
00290 V	14/12/95+18/01/96	*Lambertia orbifolia*	B/50
00291 V	14/12/95	*Kennedia macrophylla*	B/?
00292 V	14/12/95	*Kennedia macrophylla*	B/20
00293 C	9/01/96	*Verticordia spicata ssp squamosa*	B/2
00294 C	9/01/96	*Eremophila nivea*	I/10
00295 C	9/01/96	*Eremophila nivea*	B/50+
00296 C	9/01/96	*Verticordia spicata ssp squamosa*	B/15
00297 C	9/01/96	*Verticordia spicata ssp squamosa*	I/1
00298 C	9/01/96	*Verticordia spicata ssp squamosa*	B/5
00299 C	10/01/96	*Verticordia albida*	B/500+
00300 C	10/01/96	*Verticordia albida*	B/10
00301 C	10/01/96+22/01/96	*Verticordia albida*	B/10
00302 C	10/01/96+22/01/96	*Verticordia albida*	B/16
00303 V	18/01/96	*Lambertia orbifolia*	B/100+
00304 V	19/01/96	*Lambertia orbifolia*	B/50+
00305 C	22/01/96	*Eremophila nivea*	B/13
00306 C	23/01/96	*Acacia sciophanes*	B/150+
00307 C	23/01/96	*Eremophila caerulea ssp merrallii*	I/10
00308 C	24/01/96	*Verticordia fimbrilepis ssp fimbrilepis*	B/10
00309 C	24/01/96	*Verticordia fimbrilepis ssp. fimbrilepis*	B/30
00310 C	24/01/96	*Verticordia fimbrilepis ssp. fimbrilepis*	B/150+
00311 C	9/12/95	*Eremophila caerulea ssp. merrallii*	B/15
00312 C	9/12/95	*Eremophila caerulea ssp. merrallii*	B/20
00313 C	9/12/95	*Eremophila caerulea ssp. merrallii*	B/42
00314 C	18/01/94	*Eremophila viscida*	I/10
00315 C	17/01/94	*Eremophila viscida*	I/10
00316 C	20/02/96	*Verticordia fimbrilepis ssp. fimbrilepis*	I/8
00317 C	20/02/96	*Eremophila veneta*	B/10
00318 V	21/02/96	*Darwinia collina*	B/10
00319 C	21/02/96	*Dryandra montana*	I/8
00320 E	22/02/96	*Isopogon uncinatus*	B/20
00321 E	22/02/96	*Isopogon uncinatus*	B/20
00322 V	22/02/96	*Verticordia fimbrilepis ssp. australis*	B/200
00323 V	23/02/96	*Lambertia orbifolia*	B/10
00324 V	23/02/96	*Lambertia orbifolia*	B/40
00325 x	14/11/95	*Hemigenia exilis*	I/10
00326 x	14/11/95	*Hemigenia exilis*	B/?

00327 x	14/11/95	*Hemigenia exilis*	B/15
00328 x	14/11/95	*Hemigenia exilis*	I/10
00329 x	14/11/95	*Hemigenia exilis*	B/15
00330 x	14/11/95	*Hemigenia exilis*	B/?
00331 x	13/11/95	*Hemigenia exilis*	B/15
00332 x	15/11/95	*Hemigenia exilis*	I/5
00333 C	21/04/96	*Dryandra anatona*	B/12
00334 P1	25/07/94	*Dryandra fuscobractea*	B/10
00335 E	16/04/96	*Verticordia harveyi*	B/30
00336 V	18/04/96	*Verticordia carinata*	B/100+
00337 E	18/04/96	*Verticordia harveyi*	B/500+
00338 P1	29/05/96	*Melaleuca pritzellii*	I/13
00339 P1	6/08/96	*Melaleuca pritzellii*	B/15
00340 P1	28/08/96	*Daviesia* sp. Cunderdin	I/5
00341 P1	5/09/96	*Dryandra fuscobractea*	B/11
00342 E	3/10/96, 25/10/96,19/11/96	*Verticordia staminosa* ssp. *staminosa*	B/50+
00343 E	26/10/96	*Grevillea dryandroides* ssp. *dryandroides*	B/10
00344 P2	27/10/96	*Acacia recurvata*	B/50
00345 C	27/10/96	*Daviesia bursarioides*	B/5
00346 C	27/10/96	*Daviesia bursarioides*	B/8
00347 C	27/10/96	*Daviesia bursarioides*	B/9
00348 C	27/10/96	*Daviesia bursarioides*	I/10
00349 P2	28/10/96	*Acacia recurvata*	B/100
00350 P2	28/10/96	*Acacia wilsonii*	I/18
00351 C	28/10/96	*Grevillea humifusa*	B/20, I/18
00352 C	29/10/96	*Chamelaucium* sp. Gin Gin	B/50
00353 C	29/10/96	*Chamelaucium* sp. Gin Gin	B/50
00354 C	14/10/96	*Andersonia axilliflora*	B/6
00355 C	15/10/96	*Andersonia axilliflora*	B/42
00356 V	11/11/96	*Banksia brownii*	I/20, B/25
00357 V	13/11/96	*Banksia brownii*	I/21
00358 P1	14/11/96	*Acacia brachypoda*	I/10
00359 V	14/11/96	*Adenanthos pungens* ssp. *pungens*	I/10 traps
00360 C	18/11/96, 11/12/96	*Acacia pygmaea*	B/50
00361 V	18/11/96	*Microcroys eremophiloides*	B/50
00362 C	19/11/96	*Acacia vassallii*	I/13
00363 E	18/11/96	*Gastrolobium hamulosum*	B/11
00364 C	19/11/96	*Chorizema humile*	I/10
00365 C	19/11/96	*Acacia vassallii*	I/2
00366 C	20/11/96, 12/12/96	*Eremophila scaberula*	I/5, I/12
00367 V	20/11/96	*Gastrolobium hamulosum*	B/10
00368 P1	20/11/96	*Acacia cochlocarpa* ssp. *cochlocarpa*	I/11
00369 C	20/11/96	*Hemiandra gardneri*	B/9
00370 C	20/11/96	*Hemiandra gardneri*	B/30
00371 P3	20/11/96	*Acacia aprica*	B/30
00372 C	21/11/96	*Chorizema humile*	B/10
00373 P1	21/11/96	*Grevillea murex*	B/50
00374 P1	21/11/96	*Grevillea murex*	B/15
00375 C	27/11/96	*Calytrix breviseta* ssp. *breviseta*	B/40
00376 C	2/12/96, 19/12/96	*Orthrosanthus muellerii*	B/40
00377 E	3/12/96, 19/12/96	*Hibbertia* sp. Porongorups	B/50
00378 P2	10/01/97	*Andersonia gracilis*	B/150
00379 V	3/12/96, 19/12/96	*Acacia awestoniana*	B/9
00380 V	4/12/96	*Lambertia fairallii*	B/50
00381 E	4/12/96	*Darwinia oxylepis*	B/100
00382 E	4/12/96	*Darwinia wittwerorum*	B/20

00383 V	5/12/96, 19/12/96	*Acacia awestoniana*	B/50
00384 C	5/12/96	*Grevillea maxwellii*	I/8
00385 C	5/12/96	*Grevillea maxwellii*	I/10
00386 C	6/12/96	*Acacia insolita* ssp. *recurva*	B/5
00387 V	6/12/96	*Thomasia montana*	I/10
00388 C	11/12/96	*Jacksonia quairading*	B/60
00389 C	12/12/96	*Eremophila scaberula*	I/10
00390 C	12/12/96	*Eremophila scaberula*	I/12
00391 P2	13/12/96	*Darwinia chapmanianna*	B/100
00392 P1	23/02/97	*Verticordia plumosa* var. *vassensis*	B/40
00393 P1	13/12/96	*Grevillea curviloba* ssp. *incurva*	B/??2
00394 P1	19/12/96	*Acacia heteroclita* ssp. *valida*	B/20
00395 P2	20/12/96	*Grevillea rara*	B/50
00396 V	15/10/96	*Banksia brownii*	B/10
00397 P1	17/12/96	*Grevillea curviloba* ssp. *incurva*	B/10
00398 P1	17/12/96	*Grevillea curviloba* ssp. *incurva*	B/30
00399 P1	17/12/96	*Grevillea curviloba* ssp. *incurva*	B/7
00400 P1	17/12/96	*Grevillea curviloba* ssp. *incurva*	B/20
00401 P1	17/12/96	*Grevillea curviloba* ssp. *incurva*	B/30
00402 P1	17/12/96	*Grevillea curviloba* ssp. *incurva*	B/10
00403 P1	13/01/97	*Nemcia* aff. *rubra*	B/30
00404 V	13/01/97	*Darwinia macrostegia*	B/50
00405 V	14/01/97	*Darwinia squarrosa*	B/50
00406 V	14/01/97	*Darwinia collina*	B/50
00407 V	14/01/97	*Darwinia collina*	B/40
00408 C	15/10/96, 14/01/1997	*Dryandra montana*	B/10
00409 V	14/01/97	*Darwinia collina*	B/30
00410 P4	15/01/97	*Darwinia lejostyla*	B/50
00411 C	15/01/97	*Dryandra montana*	I/1
00412 V	16/01/97	*Darwinia collina*	B/100
00413 C	16/01/97	*Andersonia axilliflora*	B/10
00414 V	17/01/97	*Darwinia squarrosa*	B/100
00415 P1	21/01/97	*Jacksonia pungens*	B/20
00416 P1	21/01/97	*Jacksonia pungens*	I/11
00417 C	22/01/97	*Verticordia spicata* ssp. *squamosa*	B/13
00418 P1	22/01/97	*Verticordia comosa*	B/30
00419 C	22/01/97	*Verticordia spicata* ssp. *squamosa*	I/1
00420 C	22/01/97	*Verticordia spicata* ssp. *squamosa*	I/1
00421 C	22/01/97	*Verticordia spicata* ssp. *squamosa*	I/1
00422 C	22/01/97	*Verticordia spicata* ssp. *squamosa*	B/10
00423 C	22/01/97	*Verticordia spicata* ssp. *squamosa*	I/1
00424 C	22/01/97	*Verticordia albida*	B/12
00425 C	22/01/97	*Verticordia albida*	B/25
00426 C	23/01/97	*Verticordia albida*	B/7
00427 C	23/01/97	*Verticordia albida*	B/20
00428 V	23/01/97	*Eremophila microtheca*	I/10
00429 C	30/01/97	*Eremophila lactea*	B/50
00430 P1	30/01/97	*Eremophila chamephila*	B/25
00431 C	31/01/97	*Lambertia echinata* ssp. *echinata*	I/3
00432 P1	31/01/97	*Dryandra longifolia* ssp. *calcicola*	I/15
00433 P1	31/01/97	*Dryandra longifolia* ssp. *calcicola*	B/30
00434 P4	2/02/97	*Adenanthos labillardierii*	I/10
00435 V	3/02/97	*Verticordia fimbrilepis* ssp. *australis*	B/100
00436 C	3/12/96, 4/02/1997	*Dryandra anatona*	B/500
00437 C	4/02/97	*Dryandra anatona*	B/25

00438 C	5/02/97	*Eremophila veneta*	B/2?
00439 C	5/02/97	*Eremophila veneta*	B/20
00440 C	5/02/97	*Eremophila veneta*	B/50
00441 C	4/02/97	*Andersonia axilliflora*	I/17
00442 V	18/02/97	*Lambertia orbifolia*	I/10, B/80
00443 E	19/02/97	*Dryandra nivea* ssp. *uliginosa*	I/17, B/25
00444 E	19/02/97	*Dryandra nivea* ssp. *uliginosa*	I/12, B/40
00445 P1	20/02/97	*Calothamnus* aff. *quadrifidus*	B/50
00446 P1	20/02/97	*Calothamnus* aff. *quadrifidus*	B/50
00447 P1	20/02/97	*Hakea* sp. Williamson	I/10
00448 P1	20/02/97	*Calothanmus* aff. *quadrifidus*	B/20
00449 E	20/02/1997, 7/4/97	*Dryandra nivea* ssp. *uliginosa*	I/5+ I/6
00450 P1	21/02/1997, 7/4/97	*Daviesia elongata* ssp. *elongata*	B/20
00451 C	21/02/97	*Lambertia echinata* ssp. occidentalis	B/7
00452 V	21/02/97	*Petrophile latericola*	B/4
00453 P1	4/03/97	*Dryandra mucronulata* ssp. *retrorsa*	I/10
00454 C	2/03/97	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/50
00455 C	2/03/97	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/40
00456 C	2/03/97	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/25
00457 V	9/04/97	*Verticordia carinata*	B/400
00458 C	29/01/97	*Eremophila nivea*	I/1
00459 E	9/04/97	*Verticordia harveyi*	B/50
00460 E	9/04/97	*Verticordia harveyi*	B/50
00461 P1	10/04/97	*Dryandra aurantia*	B/20
00462 P1	14/04/97	*Dryandra aurantia*	B/40
00463 P1	8/04/97	*Calothamnus* aff. *quadrifidus*	B/20
00464E	15/04/97	*Dryandra mimica*	B/20
00465 C	3/03/97	*Sphenotoma drummondii*	B/30
00466 C	3/02/97	*Dryandra montana*	I/2
00467 C	17/04/97	*Sphenotoma drummondii*	B/6
00468 C	31/03/97	*Dryandra ionthocarpa*	B/36
00469 C	31/03/97	*Dryandra ionthocarpa*	B/35
00470 E	8/09/97	*Dryandra mimica*	B/40
00471 P3	21/01/96	*Eleocharis* sp. Kenwick	B/20
00472 P2	25/06/97, 1/07/97	*Eremophila pinnatifida*	I/1, I/4
00473 E	1/07/97	*Dryandra mimica*	B/10
00474 C	7/08/97, 28/08/97	*Davesia cunderdin*	I/4
00475 V	3/09/96	*Banksia cuneata*	I/25
00476 C	23/08/96	*Banksia cuneata*	I/59
00477 C	4/11/96	*Banksia cuneata*	I/1
00478 C	4/11/96, 26/11/96	*Banksia cuneata*	I/76
00479 C	16/10/96	*Banksia cuneata*	I/28
00480 C	25/02/98	*Banksia cuneata*	I/38
00481 V	mid 1980's	*Kennedia glabrata*	I/10
00482 C	16/10/97	*Grevillea humifusa*	B/20
00483 C	20/10/97	*Grevillea maxwellii*	B/15
00484 C	20/10/97	*Grevillea maxwellii*	B/10
00485 C	21/10/97	*Grevillea maxwellii*	I/13, B/15
00486 C	28/10/97, 14/11/97	*Cyphanthera odgersii* spp. *occidentalis*	B/30
00487 V	29/10/97	*Hakea aculeata*	I/22
00488 V	29/10/97	*Hakea aculeata*	I/10
00489 V	7/08/97	*Hakea aculeata*	I/1
00490 V	7/08/97	*Hakea aculeata*	B/4
00491 V	various	*Adenanthos velutinos*	I/20 (traps)
00492 V	various	*Adenanthos pungens* ssp. *pungens*	I/20 (traps)
00493 E	3/02/92	*Villarsia calthifolia*	I/14
00494 E	3/02/92	*Villarsia calthifolia*	I/18

00495 P5	27/10/97	*Guichenotia seorsiflora*	B/4
00496 C	12/12/95	*Darwinia* sp. Williamson	B/5
00497 V	13/12/95	*Darwinia ferricola*	B/10
00498 P4	3/02/92	*Villarsia marchantii*	I/11
00499 C	11/11/97	*Chamelaucium* sp. Gin Gin	B/50
00500 C	11/11/97	*Chamelaucium* sp. Gin Gin	B/50
00501 P2	11/11/97	*Acacia aristulata*	B/30
00502 P2	12/11/97	*Acacia aristulata*	B/60
00503 C	12/11/97	*Hemiandra gardneri*	B/15
00504 C	12/11/97	*Acacia cochlocarpa* ssp. *cochlocarpa*	B/30
00505 C	12/11/97	*Daviesia bursarioides*	B/30
00506 C	12/11/97	*Daviesia bursarioides*	B/7
00507 C	12/11/97	*Daviesia bursarioides*	B/8
00508 C	12/11/97	*Daviesia bursarioides*	B/5
00509 C	13/11/97	*Acacia aprica*	B/60
00510 C	13/11/97	*Acacia vassallii*	B/13
00511 C	13/11/97	*Chorizema humile*	B/11
00512 C	13/11/97	*Grevillea dryandroides* ssp. *dryandroides*	B/10
00513 C	13/11/97	*Acacia vassallii*	B/12
00514 C	20/11/97, 5/12/97	*Acacia insolita* ssp. *recurva*	B/12, I/44
00515 P1	5/11/97	*Verticordia dasystylis* ssp. *oestopoia*	B/8
00516 C	26/11/97	*Grevillea althoferorum*	B/20
00517 C	26/11/97	*Darwinia carnea*	B/20
00518 C	26/11/97	*Darwinia carnea*	B/4
00519 C	27/11/97	*Chamelaucium* sp. Gin Gin	B/80
00520 C	25/11/97	*Daviesia euphorbioides*	I/4
00521 C	2/12/97	*Darwinia* sp. Williamson	B/30
00522 C	2/12/97	*Brachysema papilio*	B/20
00523 C	2/12/97	*Lambertia echinata* ssp. *occidentalis*	B/5
00524 C	4/12/97	*Orthrosanthus muellerii*	B/80
00525 C	4/12/97	*Adenanthos pungens* ssp. *effusa*	I/14, B/10
00526 V	5/12/97	*Adenanthos pungens* ssp. *pungens*	I/10, B/30
00527 C	11/12/97	*Hemiandra* sp. Watheroo	B/100
00528 C	11/12/97	*Hemiandra* sp. Watheroo	B/60, I/11
00529 C	25/11/97	*Acacia pharangites*	B/?
00530 C	25/11/97	*Acacia auratiflora*	B/5
00531 C	13/11/97	*Gastrolobium hamulosum*	B/?
00532 E	?	*Eucalyptus balanites*	I/1
00533 E	3/02/92	*Villarsia calthifolia*	I/10
00534 C	1/01/1998, 2/2/98	*Grevillea McCutcheonii*	B/2
00535 C	1/01/98	*Grevillea elongata*	B/20
00536 E	30/11/97	*Grevillea christinae*	B/?
00537 C	1/12/97	*Acacia insolita* ssp. *recurva*	B/7?
00538 C	20/01/98	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/30
00539 C	22/01/98	*Petrophile latericola*	B/50
00540 C	22/01/98	*Verticordia plumosa* var. *vassensis*	B/30
00541 P1	22/01/98	*Daviesia elongata* ssp. *elongata*	B/15
00542 P1	23/01/98	*Daviesia elongata* ssp. *elongata*	B/4
00543 P1	23/01/98	*Daviesia elongata* ssp. *elongata*	B/80
00544 V	23/01/98	*Dryandra squarrosa* ssp. *argillaceae*	I/30
00545 P2	2/02/98	*Grevillea brachystylis* ssp. *australis*	B/5
00546 E	2/02/98	*Verticordia plumosa* var. *vassensis*	B/20
00547 C	2/02/98	*Petrophile latericola*	B/50
00548 C	3/02/98	*Verticordia plumosa* var. *ananeotes*	B/150
00549 E	3/02/98	*Dryandra nivea* ssp. *uliginosa*	I/12

00550 C	9/02/94	*Darwinia oxylepis*	B/50
00551 C	21/1/98, 3/2/98, 2/03/98	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/10
00552 C	4/02/98	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/250
00553 C	4/02/98	*Verticordia fimbrilepis* ssp. *fimbrilepis*	B/15
00554 C	10/02/98	*Eremophila nivea*	B/8
00555 C	11/02/98	*Eremophila nivea*	I/21
00556 C	11/02/98	*Jacksonia pungens*	B/50
00557 C	10/02/98	*Verticordia spicata* ssp. *squamosa*	B/11
00558 P1	18/02/98	*Jacksonia* sp. Collie	I/11
00559 P1	18/02/98	*Jacksonia* sp. Collie	I/20
00560 C	4/03/98	*Sphenotoma drummondii*	I/18
00561 C	5/03/98	*Sphenotoma drummondii*	I/2
00562 C	10/03/98	*Dryandra mimica*	B/?
00563 E	2/10/96	*Darwinia* sp. Carnamah	B/30
00564 E	2/10/96	*Darwinia* sp. Carnamah	B/10
00565 C	11/02/98	*Eremophila nivea*	I/1
00566 C	13/10/96	*Sphenotoma drummondii*	B/2
00567 V	7/04/98	*Verticordia carinata*	B/100

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WESTERN AUSTRALIA

FINAL REPORT

TO THE THREATENED SPECIES AND COMMUNITIES UNIT

BIODIVERSITY GROUP

ENVIRONMENT AUSTRALIA

DECEMBER 1998

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