

**MANAGEMENT OF COMMERCIAL HARVESTING OF
PROTECTED FLORA IN WESTERN AUSTRALIA**

1 July 1995 to 30 June 1998

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MANAGEMENT OF COMMERCIAL HARVESTING OF PROTECTED FLORA IN WESTERN AUSTRALIA

A. INTRODUCTION

A.1 BACKGROUND

1. Flora harvesting in Western Australia is a significant multi-million dollar industry. Data from the Australian Bureau of Statistics indicate that total exports of cut flowers (both native and exotic) from Western Australia were worth about \$13.2 million in 1993/94. Native wildflowers are estimated to have an export value of approximately \$12.1 million of which approximately \$6.2 million was from bush-picked wildflowers and foliage (from both Crown and private land natural stands) (ABS, 1993/94; Neville Burton, WA Department of Agriculture, pers. com.). There are no data available on the value of the seed industry. In 1994/95 there were a total of 645 licensed commercial Crown land pickers, and 430 private properties licensed to sell native flora. In comparison, the numbers of licences were 454 and 199 respectively in 1980/81. Prior to 1980, the Forests Department was responsible for flora management under the *Native Flora Protection Act 1935*. During this time all flora was considered to be forest produce under the *Forests Act 1918*, and commercial pickers were required to be licensed to pick on State forest, timber reserves and certain other Crown lands.
2. In 1980, legislation repealing the *Native Flora Protection Act 1935* and providing for flora conservation by amending the *Wildlife Conservation Act 1950* was proclaimed. The responsibility for flora conservation, including control of harvesting of protected flora (including seed), was transferred to the Department of Fisheries and Wildlife, with its management applying to all lands, rather than only some Crown land.
3. Under the *Conservation and Land Management Act 1984*, the Department of Conservation and Land Management (CALM) is responsible now for the conservation and management of protected flora throughout Western Australia, and for administration of the *Wildlife Conservation Act*. CALM thus has the authority to exert controls on the commercial harvesting of protected flora in Western Australia on all lands. CALM is also responsible for the management of various public lands including national parks, conservation parks, nature reserves, State forests and timber reserves.
4. Amendments to the *Conservation and Land Management Act* in 1993 give CALM the statutory authority to promote research on, and encourage the use of, flora for therapeutic, scientific or horticultural purposes. The amendments also give the Western Australia Minister for the Environment and the Executive Director of CALM powers to control the issue of licences for the purpose of developing the potential of products for therapeutic, scientific or horticultural purposes. These powers include the right to provide an exclusive licence.

A.2 THE BASIS FOR MANAGEMENT

5. Broad strategies for conservation have been developed in the *National Conservation Strategy for Australia* (Anon, 1983), and CALM's draft *Nature Conservation Strategy for Western Australia* (CALM, 1992). These strategies detail general objectives for maintaining biodiversity. The draft *Nature Conservation Strategy* addresses the special needs of harvested taxa.
6. The main objectives of the *National Conservation Strategy* are:
 - to maintain essential ecological processes and life support systems;
 - to preserve genetic diversity;
 - to ensure the sustainable utilisation of species and ecosystems;
 - to maintain and enhance environmental qualities; and
 - to optimise the quality of life for Australians.

7. CALM's draft Nature Conservation Strategy discusses major issues relating to the use of wildlife within Western Australia and proposes an overall conservation objective, viz: "For species which the Government decides shall be utilised, ensure that utilisation is sustainable, both for the species itself and for the ecosystem in which it occurs". The draft Nature Conservation Strategy has four major aims:
- to establish a vision for nature conservation in Western Australia, in which ecologically sustainable management across all lands and waters can ensure that the State's biological diversity is maintained;
 - to review the conservation objectives of CALM, to ensure that strategies for the maintenance of the State's biological diversity are in place;
 - to review the major issues involved in nature conservation in Western Australia, the scientific and social bases upon which it is managed and the constraints within which it is conducted e.g. biological diversity, system of conservation reserves, management of CALM-managed and non-CALM-managed lands for nature conservation, taxa management, and managing endangering processes such as *Phytophthora* dieback and habitat destruction; and
 - to act as a resource document for CALM, other Government agencies and the community, who are responsible for, or otherwise involved in, nature conservation management in Western Australia.
8. In addition, CALM has a series of formal policy statements on various issues. Policy Statement N^o. 13 addresses the issue of commercial flora harvesting, and outlines CALM's overall objective, policies and strategies for the commercial flora industry which are aimed at ensuring that commercial flora harvesting is ecologically sustainable. The Policy is copied in full as Appendix 1 to this management program.
9. Export of native flora is covered by the Commonwealth *Wildlife Protection (Regulation of Exports and Imports) Act 1982* administered by the Australian Nature Conservation Agency. The Commonwealth Act requires that the wild harvesting of native flora for export be undertaken under a management program approved by the Commonwealth Minister for the Environment, and in a manner that is not detrimental to, or contributes to trade which is detrimental to, the survival of the taxon. This Act applies to flora growing in its natural state on both Crown and private lands.
10. This management program provides for the harvesting of parts of plants (seeds, stems, foliage and flowers) of protected flora, and also the harvesting of whole plants of protected flora in CALM-approved salvage¹ operations, from Western Australia for commercial purposes. It has been prepared to fulfil the requirements of the Commonwealth Act, and to meet the legislative and other requirements of the Western Australian Government for the period from 1 July 1995 to 30 June 1998. It is intended to address the objectives and aims of the National Conservation Strategy of Australia and CALM's draft Nature Conservation Strategy.²

¹ Salvage operations under which whole plants may be taken under this management program are limited to situations where the original vegetation will be permanently destroyed under otherwise legally approved land clearing operations, including urban development, mining, or infrastructure development. Such salvage operations will be subject to CALM licensing and approval based on the following considerations and conditions:

- plants will only be taken from areas that are specifically designated and approved by the relevant land management authority for vegetation clearing;
- the clearing activity must be unrelated to the harvest operation; and,
- CALM will assess salvage proposals, and individually endorse such areas on flora collecting licences.

² Under the *Wildlife Conservation Act 1950*, flora includes seed, the collection of which is one component of the Western Australian flora industry. Seed is, however, exempt from export control under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982*, and hence there is no requirement under that Act to include seed in this management program. Seed is, nevertheless, included in this program as its harvesting has the potential to impact on species being harvested for other products.

11. This program replaces all previous management programs prepared for the export of flora from Western Australia, as prepared for the Commonwealth, and covers those taxa listed in the Export Flora List (Appendix 2), as updated throughout the term of this program. Taxa included in the Export Flora List may also be harvested and traded commercially within Australia. This program also covers any other flora taxa growing in natural stands that may, from time to time, be permitted to be harvested from within Western Australia and traded commercially only within Australia. CALM may also prepare separate subsidiary management programs for individual taxa, or groups of taxa, which may require additional management measures. Such management programs will be forwarded separately to the Australian Nature Conservation Agency for approval under the Wildlife Protection (Regulation of Exports and Imports) Act, where appropriate.

B. OBJECTIVES AND AIMS OF THIS MANAGEMENT PROGRAM

12. CALM's overall mission, as outlined in its Strategic Plan, is "to conserve Western Australia's wildlife and manage lands and waters entrusted to the Department for the benefit of present and future generations". The Wildlife Conservation Act provides for the regulation of commercial harvesting of protected flora.
13. CALM's overall objective or goal for the management of commercial flora harvesting is:
- "to manage the commercial harvesting of protected flora on Crown land and private property to ensure that harvesting is undertaken in a manner that does not jeopardise the conservation of the species [taxon] being harvested, nor, in the case of Crown land, the conservation values of the land" (from Policy Statement N^o.13, copied at Appendix 1).
14. The specific objectives of this management program are:
- to ensure conservation of the taxa subject to this program by maintaining populations throughout their existing geographical ranges in the State;
 - to manage the commercial harvesting of protected flora to ensure that it is undertaken in a manner that does not jeopardise the conservation of the taxon being harvested or, in the case of Crown land, the conservation values of the land; and
 - to provide for the development and operation of the flora industry in Western Australia in accordance with the principles of ecological sustainability, Government policy and the Wildlife Conservation Act.
15. It is necessary to set subsidiary aims which focus these broad objectives and therefore help to determine the appropriate management procedures. The first objective seeks to ensure the overall conservation of the flora taxa subject to commercial harvesting. The aims subsidiary to this objective are:
- to conduct a biological survey program in order to identify changes to the distribution and conservation status of protected flora;
 - to record and update information provided through the biological survey program and external sources on the distribution and conservation status of protected flora;
 - to encourage sustainable commercial flora harvesting on private land to promote the maintenance of biological diversity on such lands;
 - to progressively develop a representative system of reserves throughout the State to provide for the protection of flora taxa; and
 - to progressively develop the taxon-specific conservation system that provides full legal protection for threatened and other declared flora taxa on a statewide basis, as Declared Rare Flora (pursuant to the Wildlife Conservation Act).

16. The second objective focuses on the actual management of the harvest to ensure the conservation of the taxa involved and their habitats. Aims to achieve this objective are:
- to permit, harvesting (picking) of stems, fruit, seeds and foliage and flowers, and seed collection under licence on Crown land, subject to land use priorities, conservation needs and management conditions;
 - to permit whole plants to be taken from Crown land and sold from private property through special licence conditions where the taking is under a legitimate, CALM-approved, salvage operation;
 - to regulate the sale of protected flora derived from commercial harvesting on private land;
 - to implement management practices to conserve harvested species of flora and their habitats;
 - to define management categories for species sharing similar management requirements and, where relevant, implement a system providing for maximum harvest limits to be set; and
 - to develop and operate suitable monitoring, verification and analysis systems related to the status of plant taxa and the level and impacts of harvesting.
17. The third objective relates to the development and efficient regulation of the flora industry. The aims subsidiary to this objective are:
- to further develop and maintain an effective administrative, licensing and monitoring system to ensure sustainable operations of the industry;
 - to increase the return to the State so that the industry meets the cost of satisfying State and Commonwealth requirements;
 - to endorse harvesting on appropriate CALM-managed lands, and lands over which CALM has management agreements in place, within sustainable levels for individual taxa and to maintain the conservation values of those lands; and
 - to develop feedback strategies providing for modifications to management as required to adapt management to changes in the status of taxa and populations subject to harvesting.

C. TAXA COVERED BY THIS PROGRAM

C.1 PROTECTED FLORA

18. Flora is defined in the Wildlife Conservation Act as "any plant, including any wildflower, palm, shrub, tree, fern, creeper or vine which is either native to Western Australia or declared to be flora under the Act and includes any part of flora and all seeds and spores thereof". Protected flora includes all flowering plants, conifers and cycads (Spermatophyta), ferns and fern allies (Pteridophyta), mosses and liverworts (Bryophyta) and algae, fungi and lichens (Thallophyta). All parts of the plant including roots, branches, stems, leaves, flowers, seeds and spores come within the legal meaning of flora. Under the Wildlife Conservation Act, protected flora on Crown land is deemed to be the property of the Crown, until legally taken.
19. Protected flora may be harvested (i.e. picked) for commercial purposes subject to the management controls as outlined in this Management Program. This program therefore covers the commercial taking (picking) of all protected flora within Western Australia, and has been specifically prepared for approval by the Commonwealth Government in relation to the export of material from the Commonwealth, and State, approved Export Flora List (see Appendix 2). All approved flora products (eg. flowers, foliage, fruits, seed and plants) taken under this program may be traded within Western Australia and the rest of Australia, subject to individual State and Territory controls. Fruit and seed do not require an export permit or authority under the Commonwealth Wildlife Protection (Regulation of Exports and

Imports) Act, however, flowers, foliage and whole plants do require such a permit for export, and export authorisation may only be given where the flora has been harvested in accordance with this approved Management Program.

C.2 ESTABLISHMENT, APPROVAL AND REVIEW OF THE EXPORT FLORA LIST

20. The taxa to be permitted for export after being taken under this management program are listed on the Commonwealth, and State, approved Export Flora List. The Export Flora List is compiled by CALM in consultation with industry and through the WA Flora Industry Advisory Committee (paragraphs 72 and 73). The list is then forwarded to the Australian Nature Conservation Agency for consideration. If ANCA is satisfied that the taxa included on the draft list are being conserved adequately under the management arrangements in place through this program, that Agency may approve the Export Flora List, and therefore the export of the taxa included on it.
21. The Export Flora List can be reviewed and modified as determined necessary by ANCA and CALM during the period of operation of this management program, following the procedure outlined above and detailed in part F.4.2 of this program. This procedure includes the ability to temporarily add taxa to the Export Flora List on a small scale trial basis while the potential for full export listing is assessed. At the time of initial approval of this management program the Export Flora List was as attached at Appendix 2. Both ANCA and CALM will maintain copies of the current (at that date) approved Export Flora List during the operation of this program and copies of the current list will be freely available to interested persons.
22. The Export Flora List is arranged so that the extent of specific picking or trade restrictions for any listed taxon can be readily identified. The groupings of flora within the Export Flora List reflect the structured management strategy being used in Western Australia for commercial flora harvesting, ie:
- declared rare flora taxa may not be harvested at all and are not to be included on the list;
 - certain flora taxa may be harvested from Crown land, but only under special endorsement that has specific management conditions imposed;
 - State "priority" list flora taxa and certain other flora taxa identified as requiring specific management may not be harvested from Crown land, but may be harvested from private property; and
 - flora taxa that have no identified specific management requirements may be harvested from Crown land under general collecting licences with general management conditions.

From time to time the Export Flora List may, with the approval of both CALM and ANCA, also include taxa which are being trial export evaluated, as mentioned in paragraph 21, above.

23. The Export Flora List provides a clear means of restricting the number of taxa being exploited for the export market. At the time of approval of this program, the Export Flora List contained 206 taxa of the estimated 12,000 taxa of Western Australian flora.

D. MANAGEMENT MEASURES

24. The key measures available to CALM to provide the necessary management include:
- licences which control:
 - what flora/parts of flora are taken;
 - where they may be taken;

- how they are taken; and
- in the case of flora taken from private property, the sale of the flora;
- licence endorsements which give further control of:
 - specific localities where flora may be taken; and/or
 - specific taxa that may be taken by particular licensees;
- quotas to set an upper limit on the quantities of protected flora that may be taken or sold;
- a conservation reserve system to provide 'in-situ' protection of taxa and habitats from exploitation and destruction; and
- a Declared Rare Flora protection system to provide 'in-situ' protection of specific taxa from exploitation or destruction on all lands.

The application of these measures to the management of the commercial harvest is discussed in detail below.

D.1 LICENCES

25. Under the Wildlife Conservation Act "to take in relation to any flora includes to gather, pluck, cut, pull up, destroy, dig up, remove or injure the flora or permit the same to be done by any means". Under the Act, the taking of protected flora from Crown land is prohibited unless a licence is held. On private property, protected flora may be taken with the owner's permission without a licence, but such flora may only be sold under a licence held by the land owner/occupier.
26. The following licences apply to flora picked from Crown land.
- a) A Commercial Purposes Licence (under S 23C(a) of the Wildlife Conservation Act) is required when taking flora for commercial purposes, e.g. for sale.
 - b) A Scientific or Other Prescribed Purposes Licence (under S 23C(b) of the Wildlife Conservation Act) is required when taking flora for scientific or specified non-commercial purposes as prescribed in Wildlife Conservation Regulation 56B, i.e. education, hobby, propagation or personal enjoyment.
27. A Commercial Producer's or Nurseryman's Licence (under S. 23D of the Wildlife Conservation Act) applies to the sale of flora taken from private land. It is required for sale of flora by the landowner/occupier. Persons other than the owner/occupier cannot hold a licence to sell protected flora but they:
- may take flora with the permission of a landowner/occupier who holds a Commercial Producer's or Nurseryman's Licence; and
 - may sell flora on behalf of (as an agent for) an owner/occupier who holds a Commercial Producer's or Nurseryman's Licence.
28. The application of licence conditions, the screening process in considering licence applications and the flora harvest/sale returns required of licensees, all provide the basis for the control of harvesting, the strategies adopted in the control of harvesting and the monitoring of harvesting. For further information on these aspects see the sections on Management Strategies and on Monitoring and Assessment.
29. The State Minister for the Environment may revoke a flora licence issued under the Wildlife Conservation Act, such as in the case where the licensee is convicted of an offence against the Act.

D.2 ENDORSEMENTS

30. A CALM endorsement is the written permission given to a picker to operate on land managed by CALM pursuant to the Conservation and Land Management Act, or land on which CALM, by agreement, manages flora harvesting on behalf of the managing authority. It is an allocation of a specific area, and in some cases specific taxa, to a picker for their use and may specify particular conditions, or taxa and quantities, that may be harvested. The authority for this mechanism is established through licence conditions on a Commercial Purposes Licence. The principles and strategies for allocation of areas and taxa are outlined in the Management Strategies section.
31. Pickers applying for endorsements subsequent to all available endorsements being allocated are put on a waiting list until an endorsement becomes available.
32. Endorsements may not be issued beyond the expiry date of the Commercial Purposes Licence and may not exceed 12 months. It is recommended, however, that endorsements are issued on a three monthly basis to encourage contact between pickers and local (District) CALM staff, and to allow more flexibility in area and taxa allocation.
33. An endorsement may be cancelled for any breach of its provisions.
34. Under this program, the operation and use of endorsements as a management tool is tailored to particular situations related to the tenure of the land on which picking is proposed. The requirements for various tenures are outlined below.

D.2.1 Endorsements on Crown land managed by CALM

35. Endorsements are used to regulate picking on multiple use areas of State forests, timber reserves, other Crown land managed by CALM under the Conservation and Land Management Act or other Crown land where such land is managed by CALM under a management agreement. Holders of a Commercial Purposes Licence are required to obtain a CALM endorsement on their licence from the local CALM District Office. This endorsement (currently CALM form No. 727) identifies the area to be picked, the taxa and quantities which may be taken and the time period approved. The endorsement is accompanied by a map which identifies the area. Areas are normally identifiable in the field by physical boundaries.

D.2.2 Endorsements on other vested Crown lands or reserves

36. In such situations the licensee is required to obtain the written approval of the land manager prior to any picking, and this permission may specify conditions for the picking. Where the land vesting or management authority which has responsibility for a particular block of Crown land agrees, CALM may issue endorsements for flora harvesting on this land in consultation with the vesting or management authority.

D.2.3 Endorsements on vacant Crown land and unvested Crown reserves

37. Under agreement with the Department of Land Administration (DOLA), CALM has the ability to issue endorsements restricting picking on vacant Crown land (VCL) and unvested reserves. Endorsements are issued where there is an identified need to do so for conservation of particular taxa or for the management of the land. In all cases it is a responsibility of the licensee to ensure that the area is in fact either vacant Crown land or an unvested Crown land reserve, prior to picking.

D.2.4 Taxon-specific Endorsements

38. The harvesting of Declared Rare (Threatened) Flora (refer to paragraphs 45 to 50, below) is prohibited by law unless specific Ministerial permission is obtained, and this is reflected in conditions on the Commercial Purposes and Commercial Producer's or Nurseryman's Licences. The various options for restriction of harvesting of other protected flora are outlined below in the Management Strategies section.

39. Some taxa, however, which have special management needs (e.g. susceptibility to intensive harvesting, such as *Boronia megastigma*), may be able to be harvested only under certain conditions and, in these cases, the general licence condition is varied to allow restricted harvesting where this can be demonstrated to be sustainable. Measures to ensure that harvesting is sustainable may include:
- special licence conditions may be set, to cover such matters as specified harvesting methods and the amount of material (both vegetative and reproductive) which may be taken from any one plant in a season;
 - harvest quotas may be implemented;
 - specific areas may be closed for picking (e.g. following a fire for a specific number of years, or after a certain number of years of harvesting); and/or
 - restrictions can be placed on the number of pickers permitted to harvest the taxon.
40. Where taxa which are to be exported have special management requirements, they will be so identified in the Export Flora List.

D.2.5 Quotas

41. Where data on the level of exploitation of a particular taxon give rise to concerns about sustainability, CALM has the ability to impose a quota on the amount of material able to be legally taken for commercial purposes, or impose limits on the numbers of pickers allowed to harvest the taxon, or a combination of both strategies. Quotas may be varied from year to year according to criteria such as rainfall, time since last fire, other land use operations and the impact of past harvests. In addition, harvesting of taxa may also be prohibited on Crown land as a condition of licence, or, in the case of Declared Rare Flora, prohibited from all lands.
42. Where a taxon has a quota proposed, the setting of the quota is discussed with the WA Flora Industry Advisory Committee (paragraphs 72 and 73). Annual quota levels, when set, are notified to affected sections of the flora industry, the WA Flora Industry Advisory Committee, and the Australian Nature Conservation Agency.

D.3 CONSERVATION RESERVES

43. In addition to the general protection afforded to Western Australia's flora under the Wildlife Conservation Act, the establishment and management of conservation reserves is a strategic approach to achieve the aim of conserving genetic resources, biological communities, and ecological processes. Through an integrated system of conservation reserves, appropriately managed and broadly representative of the landforms, marine and inland aquatic systems, biogeographic districts and biota of Western Australia, the aim is to maintain habitats and the necessary evolutionary processes and ecological support systems which will maximise the long term persistence of taxa and communities. As well as being broadly representative, the reserve system also seeks to include "special" areas to encompass threatened taxa and ecosystems, geographical outliers, and unique or spectacular landforms.
44. Western Australia's system of protected areas makes a substantial contribution to the conservation of flora. Large areas of land have been reserved as national parks, conservation parks and nature reserves for the purpose of conserving native flora and fauna and natural ecosystems. Commercial harvesting is not permitted in these areas. The area of land reserved for national parks at 30 June 1995 was 4,870,828 hectares; 10,781,954 hectares were reserved as nature reserves; 117,253 hectares were gazetted as conservation parks and a further 12,971 hectares for the purposes of conservation and/or recreation. The total area of conservation reserves was 15,783,006 hectares or 5.9% of the terrestrial area of Western Australia. The identification and acquisition of conservation reserves is an ongoing process.

D.4 DECLARED RARE FLORA

45. The richness and high degree of endemism in Western Australia's flora and the localised distribution of many taxa have resulted in a situation where many flora taxa are naturally rare or have been made rare through habitat loss due to land clearing or other causes. Threats from land clearing, disease infection, weed invasion, drought and other local disturbances are major causes of endangerment of Western Australia's many naturally rare and localised plants.
46. Under the Wildlife Conservation Act any protected flora that the State Minister for the Environment considers is "*likely to become extinct or is rare or otherwise in need of special protection*" may be declared to be Rare Flora. No person is permitted to take (harvest or disturb in any way) any taxon gazetted as Declared Rare Flora from wild populations anywhere in Western Australia, either on Crown land or private land, without the written consent of the Minister, or his delegate. Failure to obtain this permission can result in substantial fines (up to \$10,000). Declaration as Rare Flora thus provides greater protection, focuses attention on the need for more detailed research and management, and helps to ensure the continued survival of a taxon in the wild. Normal procedure has been for only flora which is "likely to become extinct or is rare" to be Declared Rare Flora. There is, however, the facility for the Minister to declare flora "otherwise in need of special protection" to be Declared Rare Flora and therefore to protect that flora from taking (including harvesting) on all lands. This is seen as one final mechanism available to the Minister to prevent harvesting of particular flora taxa, if it is felt that such harvesting is unsustainable, or otherwise inappropriate.
47. Under CALM's Policy Statement N^o. 9, protected flora taxa may be recommended for gazettal as Declared Rare Flora (as flora which is likely to become extinct or is rare) if they satisfy each of the following criteria.
- a) The taxon (species, subspecies, variety) is well defined, readily identified and represented by a voucher specimen in a State or National Herbarium. It need not necessarily be formally described under conventions in the International Code of Botanical Nomenclature, but such a description is preferred and should be undertaken as soon as possible after listing on the schedule.
 - b) The taxon has been searched for thoroughly in the wild by competent botanists during the past five years in most likely habitats, according to guidelines approved by the Executive Director.
 - c) Searches have established that the plant in the wild is either:
 - (i) rare, or
 - (ii) in danger of extinction; or
 - (iii) deemed to be threatened and in need of special protection; or
 - (iv) presumed extinct (i.e. the taxon has not been collected from the wild, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently).
 - d) In the case of hybrids, or suspected hybrids, the following criteria must also be satisfied:
 - (i) they must be a distinct entity, that is, the progeny are consistent within the agreed taxonomic limits for that taxon group;
 - (ii) they must be self perpetuating, that is, not reliant on the parent stock for replacement; and
 - (iii) they are the product of a natural event, that is, both parents are naturally occurring and cross fertilisation was by natural means.

The status of a threatened plant in cultivation has no bearing on this matter. The legislation refers only to the status of plants in the wild.

48. Plants may be deleted from the schedule of Declared Rare Flora (as flora which is likely to become extinct or is rare) where:
- recent botanical survey as defined in 47(b) above has shown that the taxon is not rare, in danger of extinction or otherwise in need of special protection;
 - the taxon is shown to be a hybrid that does not comply with the inclusion criteria; or
 - the taxon is no longer threatened because it has been adequately protected by reservation of land where it occurs, or because its population numbers have increased beyond the danger point.
49. The Declared Rare Flora list is reviewed annually. As at June 1995 there are 272 extant taxa and 39 taxa that are presumed extinct gazetted as Declared Rare Flora (Appendix 3).
50. Commercial harvesting of Declared Rare Flora is not generally permitted. An exception may be made in special circumstances, such as where the Minister approves the taking of seed, cuttings or tissue culture material for commercial propagation, where the conservation status of the taxa in the wild would be assisted, or would not be adversely affected (e.g. the establishment of cultivated populations of a rare taxon that is attractive to the flora trade could reduce the likelihood of illegal picking in the wild).

E. MONITORING AND ASSESSMENT

E.1 FLORA INDUSTRY REGIONS

51. For the purposes of flora industry management, Western Australia has been divided into six regions which correspond as closely as possible with biogeographic, administrative and management boundaries. Figure 1 shows CALM's administrative boundaries, while Figure 2 shows the flora industry management regions, as adopted by CALM, and Figure 3 shows Beard's (Beard, 1979) biogeographic regions.
52. The six flora industry management regions comprise:
- Southern Sandplain (which largely corresponds with CALM's South Coast Region, plus the eastern part of CALM's Southern Forest Region);
 - Southern Forest (which consists of the western two thirds of CALM's Southern Forest Region, and the southern half of CALM's Central Forest Region);
 - Northern Forest (which consists of the northern half of CALM's Central Forest Region, with the southern half of Swan Region);
 - Northern Sandplain (the northern part of CALM's Swan Region, in addition to the sandplain north to Carnarvon);
 - Wheatbelt; and
 - Pastoral (including the goldfields, desert and Kimberley areas).

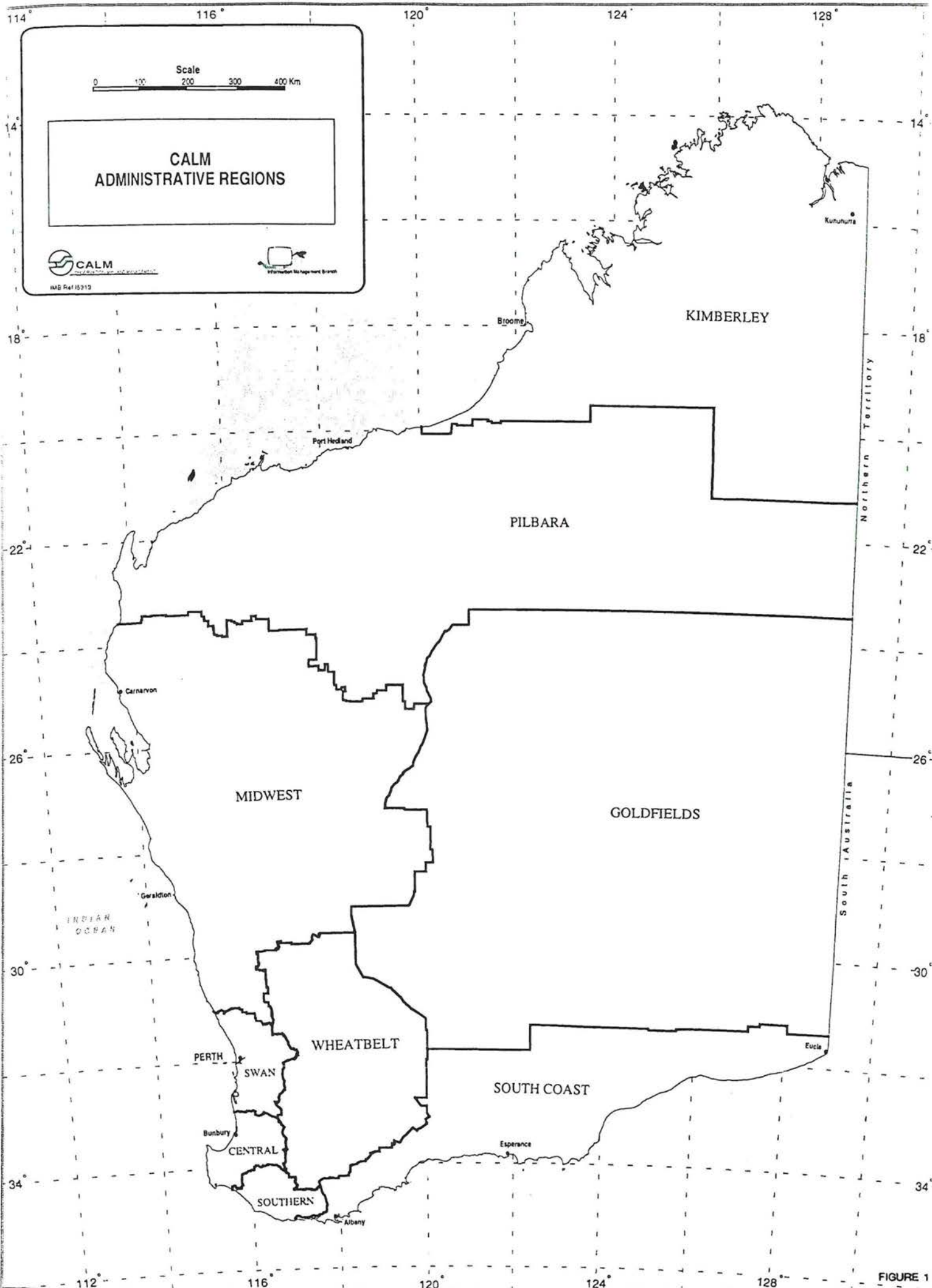
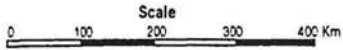
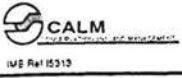


FIGURE 1

FLORA HARVESTING REGIONS OF WA



Legend



1:500 000

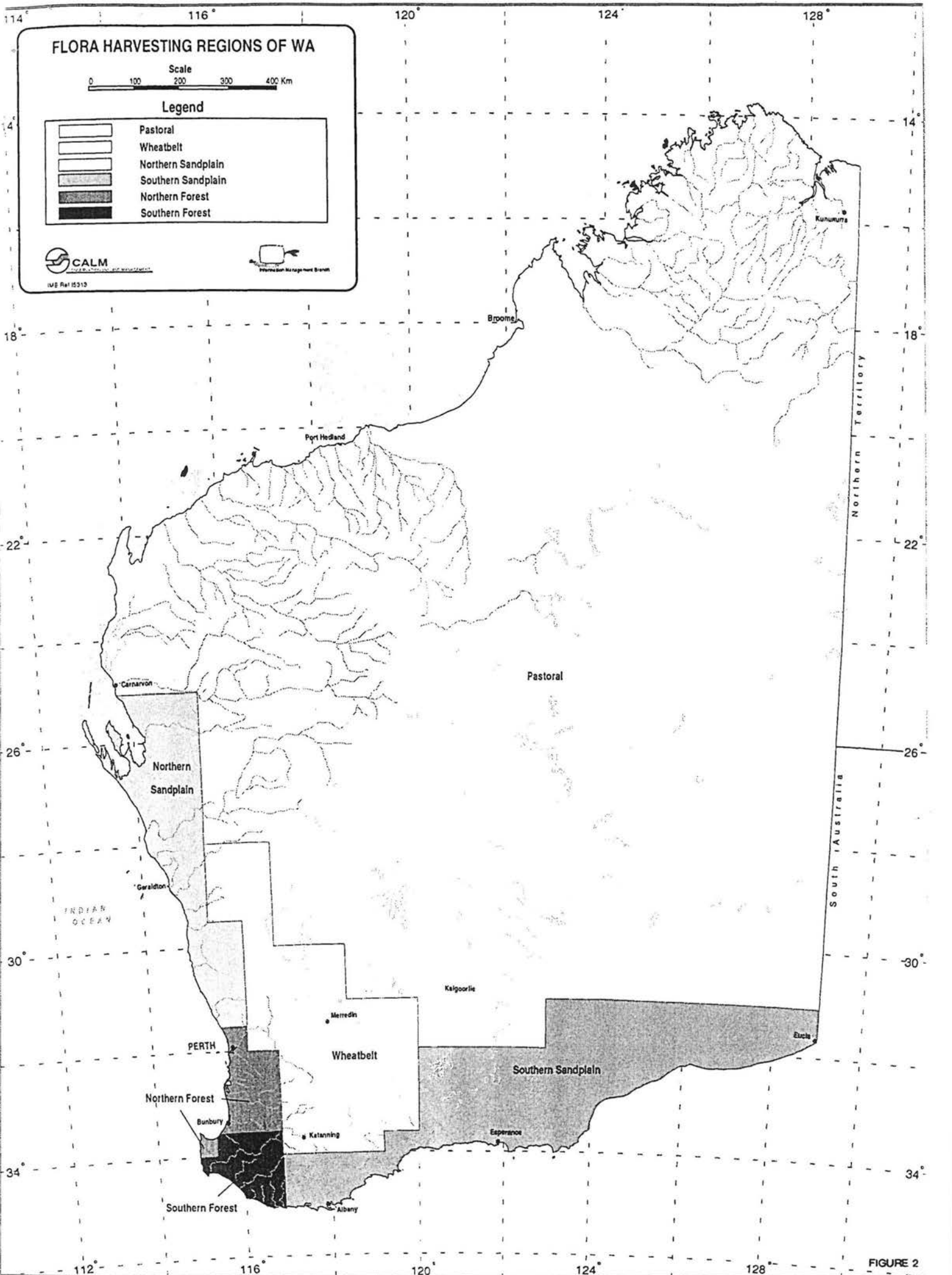


FIGURE 2

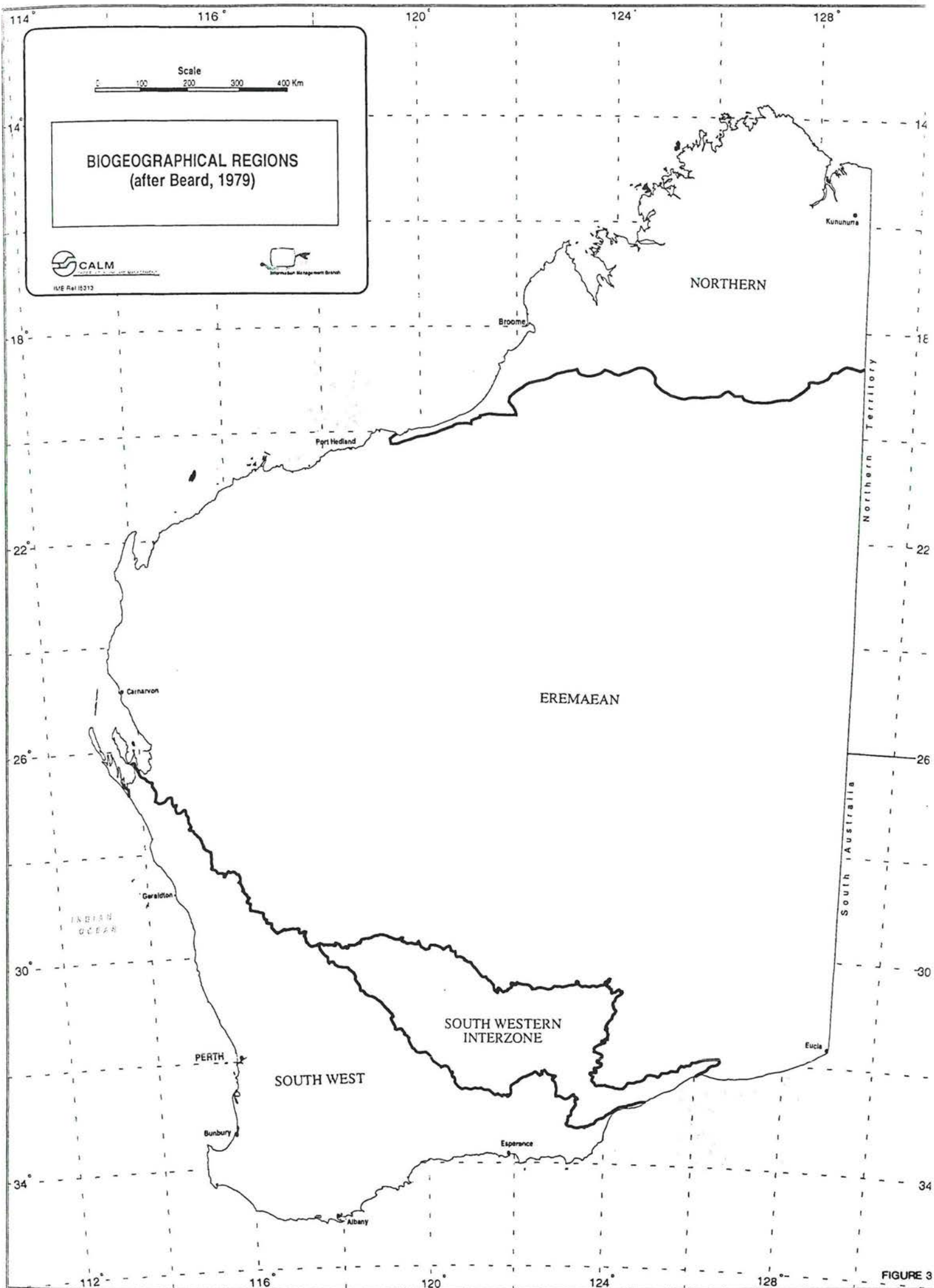


FIGURE 3

E.2 LICENCE APPLICATION, LICENSING PROCEDURES AND FLORA RETURNS

53. Each Commercial Purposes Licence applicant must nominate area(s) where they wish to pick, and produce written permission from the management authority for that land, where such an authority exists, as part of their licence application. This is to ensure that applicants are aware of the requirement to have permission of land managers before picking, in accordance with Wildlife Conservation Regulation 56E(2). The licence issued has the nominated picking area(s) endorsed on it. Additional areas can be picked provided that the written authority is carried by the picker, as required under licence conditions.
54. The licensing system is computerised, containing records of past and present licence holders and all licences held currently and in the past by these persons. In addition, a database management system containing records of flora returns submitted by licensees is maintained.
55. As a requirement of licence conditions, and in order to facilitate monitoring and enforcement, all commercial licence holders, on both Crown and private property, must submit quarterly returns detailing flora taken each month. Data required include taxon, quantity, the unit of measure, and part of flora taken, the status of the land where harvesting was undertaken, whether the flora is cultivated or wild picked, the name of the private property owner where taken from private land, the grid square location of the flora and the person to whom the flora was supplied. Reminder letters are automatically computer-generated for those licensees who have overdue flora returns. In addition, in the month prior to the expiry of their licences, licensees receive a renewal notice (if the requirement to submit flora returns has been complied with), or, where the requirement has not been met, notification that their licence will not be renewed unless returns are submitted. Failure to submit returns results in non-renewal of the licence.
56. The State Minister for the Environment may cancel or refuse to issue a licence to any person who has been convicted of any offence against the Wildlife Conservation Act or Regulations.

E.3 ANALYSES OF FLORA HARVEST

57. Harvest data are analysed based on the six regions outlined in paragraphs 51 and 52 above, and factors influencing biology, ecology and conservation status (including representation in conservation reserves, harvest levels, community/habitat rarity) are also assessed on a regional basis.
58. The following analyses of harvested taxa are undertaken using data from flora returns, and other information supplied by CALM officers and industry:
 - harvest levels are analysed by taxon to determine major, medium and low use taxa;
 - the main purpose of harvesting is determined, i.e dried flowers, fresh flowers, seed or hobby; and
 - harvest data are analysed at the level of each of the six regions detailed in paragraph 52, based on 1⁰ by 1⁰ 30' grid cells in the south west and 4⁰ by 6⁰ grid cells in the remainder of the State and a comparison of numbers of taxa and quantity within regions and grid cells is undertaken.
59. CALM's management is based on these analyses and factors such as the taxon's conservation status, monitoring reports from CALM field officers and research results. These data also help define priorities for research.

E.4 ASSESSMENT OF MANAGEMENT OPTIONS

E.4.1 Area-specific management

60. State forest and other Conservation and Land Management Act areas managed by CALM where flora harvesting is permitted are subject to specific management by a system of allocation and endorsements. Paragraphs 30 to 37 above describe the options that CALM has for management of such land areas. Specific Crown land areas, not managed by CALM under the Conservation and Land Management Act, may also have special management requirements. Where an inter-agency agreement is reached between CALM and the managing agency, CALM may manage these areas on a more intensive basis in regard to flora harvesting activities. CALM also makes recommendations to other managing agencies on their management of flora harvesting where this is appropriate. The need for special management on Crown lands is assessed according to the following criteria:

- land tenure and purpose;
- degree of harvest activity;
- conservation value;
- presence of Declared Rare Flora;
- proposals for areas to become conservation reserves; and
- the potential for detrimental impacts from, for example, over harvesting, *Phytophthora* dieback and erosion.

E.4.2 Taxon-specific management

61. As outlined in paragraphs 38 to 42, certain taxa may have special management requirements and are singled out for more intensive management, monitoring and research. Criteria that taxa are assessed on include:

- the quantity harvested;
- the status of the taxon within the conservation estate;
- the value of the harvested product;
- the potential for concern over harvest techniques (e.g. regeneration capacity from cut stems);
- the potential impact from pests and diseases (e.g. *Phytophthora* dieback on *Banksia* taxa and other taxa, aerial canker); and
- the level of concern in regard to regeneration, including from soil-borne seed banks.

E.5 FIELD MONITORING

62. On-ground administration, monitoring and management are undertaken by CALM. Monitoring and management of the flora industry considers the industry as part of the integrated management of multiple land use on lands where harvesting is permitted.

63. A standard question form is available to CALM officers dealing with the flora industry, to guide them in their day-to-day monitoring of pickers. This form includes such questions as the names and flora licence numbers of the pickers, taxa being harvested, quantity of flora taken, area in which operations occur and name of the dealer to whom flora will be sold, and any other relevant observations on picker activities.

64. District officers are required to be familiar with picking practices and the major commercial flora taxa in their areas. Regional or District reference flora collections are maintained which have specimens representing the major commercially exploited and rare or threatened taxa within the Region/District. These collections may be made available to flora pickers to assist with identifications.

65. District staff provide information on commercial taxa distribution and quantities for the compilation of records that assist in determining sustainable picker numbers and harvest levels, and numbers of pickers, for allocated blocks under the endorsements system. These data are used in conjunction with information supplied by pickers in flora returns to determine quotas, where applicable.
66. District offices are required to submit annual reports on the status of the industry within the District, addressing *inter alia* illegal activities, proposals for management and research, and administrative issues. These reports cover the preceding calendar year's flora industry activities. District reports are compiled and used for improving management of the flora industry.
67. Wildlife Officers have statutory appointment under the Conservation and Land Management Act, with powers defined under the Conservation and Land Management Act and the Wildlife Conservation Act. Wildlife Officers are located at each CALM Regional office and some District and other offices. The primary role of the Wildlife Officers is to ensure compliance with the Wildlife Conservation Act and Regulations, including picking licence conditions. Wildlife Officers monitor picker activity, as well as the status and condition of commercially harvested taxa, in the course of their field work. Because of the nature of their duties, Wildlife Officers are able to monitor taxa and populations from year to year and from area to area. Feedback on taxa and picker activities is provided to Head Office and management recommendations are made as a result of this monitoring. Further information on the role of Wildlife Officers is contained in paragraphs 119 to 124.

E.6 MONITORING OF FLORA DEALERS

68. Paragraph 118 outlines the legal obligations that dealers have under the *Wildlife Conservation Act* and Regulations. It also outlines the enforcement activities that facilitate compliance with these requirements. Wildlife Officers also carry out routine inspection of dealers' premises on a regular basis. The frequency of inspection depends, in part, on the size and nature of the dealer's operations. A report is filled out for each inspection. Data collected for each dealer include the date of the last inspection, the taxa of flora found on the premises, the names and licence numbers of the principal flora pickers who supplied the flora, and whether records are being kept according to legal obligations. These reports are forwarded to Head Office and are used for ongoing monitoring of dealer activity. These reports also assist CALM in making recommendations to the Australian Nature Conservation Agency (ANCA) on whether an export authority should be granted or renewed.

F. MANAGEMENT STRATEGIES

69. The mechanisms available to, and used by, CALM in order to regulate the harvesting of flora are detailed in section D above. The range of measures in place provides scope for tailoring management to specific taxa and specific situations. This section details how those measures can be manipulated, where required, in order to ensure conservation of flora.

F.1 ADVISORY COMMITTEES ON FLORA CONSERVATION

70. The National Parks and Nature Conservation Authority (NPNCA) is established as an advisory, vesting and controlling body under Section 21 of the Conservation and Land Management Act and is responsible to the WA Minister for the Environment. The NPNCA considers matters to do with the conservation estate and other nature conservation issues in Western Australia, and can provide advice to the Minister on the appropriateness of the measures contained within this management program for the conservation of flora.

71. The Endangered Flora Consultative Committee (EFCC) is established under CALM Policy Statement No. 9 - "Conservation of Threatened Flora in the Wild". The EFCC provides policy and management advice to CALM on threatened flora conservation. A major function of the EFCC is to provide recommendations for amendments to the schedule of Declared Rare Flora.
72. The WA Flora Industry Advisory Committee (WAFIAC) was formed in 1992 to provide a forum for consultation between CALM, the industry and other interested parties, and to provide advice to CALM and the WA Minister for the Environment on management and conservation of commercially harvested protected flora in Western Australia (e.g. cut flowers, seed, fruit, foliage, cuttings, beansticks).
73. The terms of reference for WAFIAC are to examine and provide advice on relevant legislation, management programs and other CALM management documents, and general issues including industry administration, industry education, plant diseases affecting the industry, research into conservation and management of exploited flora and cultivation as it relates to exploited flora conservation. Members of the Committee are appointed by the Minister to represent the following:
- Department of CALM;
 - National Parks and Nature Conservation Authority;
 - Western Australian Department of Agriculture.
 - Kings Park and Botanic Garden;
 - flora industry (dealers, pickers, seed industry and private growers);
 - tertiary institutions; and
 - voluntary conservation interests.
74. Where monitoring raises concerns over the commercial harvesting of a particular taxon, the following procedure is followed.
- a) CALM makes an assessment of the data and populations in the wild. Additional research and monitoring may be undertaken to provide recommendations for action and management.
 - b) CALM tables its recommendations for discussion at a meeting of the WA Flora Industry Advisory Committee wherever possible. However, if the conservation status of the taxon concerned warrants urgent changes, CALM may implement the necessary actions immediately and inform the Committee subsequently.
 - c) If restrictions are necessary, options such as limiting the number of pickers, setting quotas, restricting the season, and closing certain areas will be considered.
 - d) If CALM believes that a taxon cannot be harvested sustainably on Crown land, even with additional management as outlined above, a recommendation will be made to the Minister to ban the harvesting of the taxon from Crown land. If it is believed also that it cannot be sustainably harvested on private land, the taxon will be removed from the Export Flora List covered by this Management Program. Consideration may also be given to listing the taxon on the Priority Flora List (paragraph 85) or recommending it for declaration as rare flora.
 - e) Every effort will be made to give adequate notice to industry about changes affecting commercial harvesting of protected flora.

F.2 LICENCE CONDITIONS

75. Under the Wildlife Conservation Act, licences may be issued subject to conditions. A standard set of conditions forms part of the licence, and these are attached to each licence. These conditions outline CALM's requirements for management of picking. Licence conditions may include such matters as prohibition of taking of certain taxa, methods of taking flora, requirements to carry and produce the commercial flora licence, restrictions on areas from where flora may be taken, conditions relating to the control of the introduction and spread of dieback disease, and submission of flora returns. It is a requirement of a

76. The standard licence conditions may be modified by CALM as necessary to ensure conservation of the taxon concerned through the inclusion of special licence conditions. Special licence conditions can, for example, limit the locations where a taxon may be harvested, times when it may be harvested, the parts that may be harvested or the parts that must be left on the plant. Special licence conditions can also be used for situations where whole plants may be taken under CALM-approved salvage operations.

F.3 AREA SPECIFIC MANAGEMENT

77. While CALM is responsible for the conservation of flora on all lands, there are many land tenures (e.g. private, vacant Crown land, reserves vested in other agencies) where CALM is not the land manager. In order to ensure that commercial flora harvesting is sustainable, there need to be mechanisms in place for the management of the industry on all lands. Such mechanisms come from legislation and, more specifically, conditions on flora licences. Licence conditions apply on all land tenures, although conditions applying to Crown and private land differ. Consideration of licence issue, licence conditions and endorsement decisions are all measures that can be used to provide directed restrictions on harvesting in particular areas, where required. These measures have been described under the Management Measures section of this program. In implementing these measures, CALM has the ability to restrict or stop picking effort within an area, if there is an identified need to do so (e.g. because the populations have declined significantly), or to re-open or expand areas for picking (e.g. when populations have recovered). Ultimately, acquisition of land, as a conservation reserve can be used to provide permanent protection for particular flora populations and habitats.

F.4 TAXON SPECIFIC MANAGEMENT

78. There are several options for individual management of taxa where this may be necessary to ensure conservation, including:
- restrictions on harvest methods, or circumstances under which harvesting may occur;
 - restricting harvesting through quotas;
 - banning the harvesting of the taxon from Crown land;
 - removal from the list of flora permitted to be exported (Export Flora List);
 - listing on CALM's Priority Flora List as poorly known or rare (but not threatened) flora; and
 - gazettal as Declared Rare Flora (either as flora which is likely to become extinct or is rare, or flora otherwise in need of special protection) by the State Minister for the Environment.

Where the sustainable harvesting of a taxon requires specific management beyond that which may be provided by endorsements to licences, separate subsidiary management programs will be prepared.

F.4.1 Regulating, restricting or banning the harvesting of taxa

79. Through Commercial Purposes Licence conditions, the Department may specifically restrict or ban the harvesting of any flora taxa on Crown lands if monitoring and research show this to be necessary. Taxon-specific harvest techniques or commercial harvest quotas specifying the quantities of a particular species (or specific products) which may be harvested may be set where there is concern that the method or level of previous harvesting could be unsustainable. Similarly, circumstances in which particular products may be taken from Crown lands can be specified (e.g. salvage situations where whole plants may be taken). Exported taxa for which quotas on Crown land harvesting or other special restrictions will be used, are identified in the Export Flora List.

80. As outlined above, the taking of a plant taxon on private property can only be legally prevented under the Wildlife Conservation Act where the taxon is declared as Declared Rare (likely to become extinct, rare or otherwise in need of special protection) Flora. However, licence conditions and the Export Flora List can be used to prevent and otherwise restrict the commercial trading of flora harvested from these lands.

F.4.2 Amendments to the Export Flora List

81. Where ongoing monitoring and research show that commercial harvesting of a species is not sustainable, the species can be removed from the Export Flora List, where this is agreed to by ANCA and CALM, after advice to the WA Flora Industry Advisory Committee (see paragraphs 20 to 23, above). In addition, where industry considers that a particular species is no longer required for export, and hence does not need to remain on the Export Flora List, advice will be provided to CALM through the WA Flora Industry Advisory Committee (WAFIAC), seeking removal of that taxon from the list.
82. Where a proponent wishes to add a taxon to the Export Flora List, the following procedure will be followed.
- a) The proponent will provide voucher specimens of the taxon to CALM for formal identification. CALM will determine whether the taxon is already represented in the Western Australian Herbarium and the distribution of the taxon based on herbarium specimens.
 - b) CALM and the industry will collate information on distribution and population status of commercial stands, desired end product, harvesting technique and regeneration capability of the taxon.
 - c) CALM will assess the application and propose inclusion of the taxon on the Export Flora List, and any restrictions on harvests which may be applied, to WAFIAC for endorsement/comment. The proposal will then be forwarded to ANCA for endorsement and inclusion on the Export Flora List.
 - d) Amendments to the Export Flora List accepted by both CALM and ANCA will be appended to this approved program as supplements, and will be advised to persons engaged in the flora industry.
83. Where the full assessment of a taxon's suitability for inclusion on the Export Flora List is not possible due to a lack of information, that taxon may be considered for small-scale trial export in order to facilitate validation of its potential as a commercial export taxon. Inclusion of a taxon on the Export Flora List on a trial basis will be subject to endorsement by WAFIAC and ANCA, based on the case for export prepared by CALM. Any change from a trial harvest for export to full commercial harvesting for export will be dependent on assessment as detailed in paragraph 82 above.

F.4.3 Declared Rare Flora (DRF) and Priority Flora

84. Because of the special protection afforded to Declared Rare Flora, and the obligations that this places on land managers, CALM sets stringent requirements for adequate field surveys to reliably assess conservation status before a taxon will be recommended for declaration as Declared Rare Flora. Details of the factors taken into account in declaring a taxon to be DRF (flora which is likely to become extinct or is rare) are given in paragraph 47. As detailed in paragraph 46, flora can also be DRF as flora otherwise in need of special protection. The Minister's declaration of flora as Rare Flora is seen as one final mechanism available to the Minister to prevent harvesting of particular flora taxa, if it is felt that such harvesting is unsustainable, or otherwise inappropriate.
85. While there are strict requirements for listing a taxon as DRF (flora which is likely to become extinct or is rare), many taxa are known from only a small number of populations, and may be rare or threatened, but have not been adequately surveyed to demonstrate this. To provide some priorities for survey of these poorly known taxa, CALM maintains a Priority Flora List. In addition to the poorly known taxa, the Priority Flora List includes a further category for those taxa that have been adequately surveyed, and while being rare, are not considered to be threatened. These taxa are listed to facilitate the monitoring of

their conservation status. The four priority levels at the time of approval of this program, are as follows.

- Priority 1: taxa which are known from one or a few (generally less than five) populations which are under threat.
- Priority 2: taxa which are known from one or a few (generally less than five) populations, at least some of which are not believed to be under immediate threat.
- Priority 3: taxa which are known from several populations, at least some of which are not believed to be under immediate threat.
- Priority 4: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors.

- 86. Known populations of the poorly known priority taxa require monitoring to determine if their conservation status changes whilst field surveys are being undertaken. The list is distributed widely among field staff and interested botanists to encourage and provide a focus for monitoring and survey efforts.
- 87. The Priority Flora List is updated regularly, as information comes to light on taxa that may possibly be threatened.
- 88. It is unlikely that poorly known taxa would support commercial harvesting unless the specimens are propagated. In general, therefore, Crown land populations of flora listed on CALM's Priority Flora List will not be allowed to be commercially harvested unless it can be demonstrated that they can withstand such harvesting. This would normally be due to the identification of new populations, and the subsequent removal of the taxon from the Priority Flora List. Otherwise, taking of these taxa from Crown land will be restricted to harvesting for propagation or other purposes with conservation benefits. Priority flora populations being harvested on private property will be monitored to ensure their conservation status does not decline. Harvest control for priority flora is implemented through licence conditions.

F.5 EDUCATION

- 89. Education of industry operators on matters of flora conservation and licensing is seen as vital in the management of a sustainable commercial flora industry. Major avenues for education are listed below.
 - a) Talks and seminars are given by various organisations, including CALM, the WA Department of Agriculture and industry groups such as the Wildflower Pickers and Producers Association. Topics covered include dieback and other disease management, identification of flora, sustainable picking methods, legislative and licence requirements, industry code of ethics and management requirements for individual taxa.
 - b) CALM develops educational material on a variety of topics which is circulated to industry.
 - c) The WA Flora Industry Advisory Committee provides a mechanism whereby educational material and management advice can be disseminated widely to the various sectors of the industry.
 - d) CALM attends industry association meetings and forums and provides advice to these groups.
- 90. Legislative amendments are proposed to provide the power to require licence applicants to demonstrate that they have a reasonable knowledge of the flora provisions of the Act, licence conditions, and taxa identification and other relevant matters such as dieback management.

91. In addition, training of CALM officers involved in administration, management and enforcement in relation to the flora industry is ongoing to ensure that personnel are skilled in the conservation of taxa used by the commercial flora industry and are familiar with CALM's management objectives and their implementation. Avenues used for training include:
- formal education including short vocational courses and longer tertiary qualifications;
 - seminars and workshops;
 - internal CALM courses; and,
 - on-the-job training.

G. THREATENING PROCESSES

G.1 DIEBACK DISEASE CAUSED BY *PHYTOPHTHORA* SPECIES

92. The disease known as dieback has caused serious damage to large areas of forest, woodlands and heathlands in south-western Australia. It is caused by several species in the fungal genus *Phytophthora* which infect, rot and often kill the entire root systems and lower stems of susceptible plants. About one-third of the plant species in Western Australia's south-west flora are adversely affected. In many places, populations of most banksias and some heaths may be severely affected or destroyed.
93. Of the fifteen species of *Phytophthora* recorded in Western Australia, five (*Phytophthora cinnamomi*, *P. citricola*, *P. cryptogea*, *P. drechsleri*, and *P. megasperma*) have become widely established in the native vegetation of south west Western Australia. Of these, *P. cinnamomi*, is by far the most damaging, with *P. megasperma* the only other causing significant damage in the field. Various other species are important for nurseries, horticulture, vegetables and pastures. These fungi spread by the movement of spores in water. Thus, it is particularly easily spread in winter and in wetter areas. The fungi can also be spread widely by people transporting soil from infested to uninfested areas. Vehicles, especially when driven off tracks or roads, can carry infested soil on their tyres or underbody and so have the potential to spread the disease.
94. Species adversely affected by dieback include representatives of many of the families of native plants. Families and genera which contain a high proportion of Western Australian flora variously susceptible to *Phytophthora* are:

PROTEACEAE	MYRTACEAE	EPACRIDACEAE	OTHER
<i>Adenanthos</i>	<i>Beaufortia</i>	<i>Andersonia</i>	<i>Acacia</i>
<i>Banksia</i>	<i>Calothamnus</i>	<i>Astroloma</i>	<i>Allocasuarina</i>
<i>Conospermum</i>	<i>Calytrix</i>	<i>Leucopogon</i>	<i>Anarthria</i>
<i>Dryandra</i>	<i>Eremaea</i>	<i>Lysinema</i>	<i>Boronia</i>
<i>Franklandia</i>	<i>Eucalyptus</i>	<i>Monotoca</i>	<i>Conostylis</i>
<i>Grevillea</i>	<i>Hypocalymma</i>	<i>Sphenotoma</i>	<i>Dasyopogon</i>
<i>Hakea</i>	<i>Kunzea</i>	<i>Styphelia</i>	<i>Daviesia</i>
<i>Isopogon</i>	<i>Melaleuca</i>		<i>Eutaxia</i>
<i>Lambertia</i>	<i>Regelia</i>		<i>Hibbertia</i>
<i>Persoonia</i>	<i>Scholtzia</i>		<i>Hovea</i>
<i>Petrophile</i>	<i>Thryptomene</i>		<i>Jacksonia</i>
<i>Stirlingia</i>	<i>Verticordia</i>		<i>Lasiopetalum</i>
<i>Synaphea</i>			<i>Macrozamia</i>
<i>Xylomelum</i>			<i>Oxylobium</i>
			<i>Patersonia</i>
			<i>Phlebocarya</i>
			<i>Podocarpus</i>
			<i>Xanthorrhoea</i>

95. Many of the genera listed above include taxa which are amongst the most important for the industry, including *Adenanthos*, *Banksia*, *Dryandra*, *Hakea*, *Persoonia*, *Podocarpus*, *Xylomelum*, *Leucopogon*, *Lysinema*, *Verticordia* and *Xanthorrhoea* taxa.
96. The impact of an infection may vary between sites due to different interactions between the site environment and the fungi. It can take up to three years after infection for visible symptoms of dieback to show up in vegetation. On other sites, up to ten years may pass before plants die.

G.1.1 Disease Management

97. There is no known practical method of eradicating *Phytophthora* in native vegetation. Disinfectants and fumigants used in horticulture are toxic to plants, are not practical or cost effective for natural ecosystems, and if used in bushland could cause damage to the native vegetation. A number of systemic fungicides are available, the most promising of which is neutralised phosphorous acid (H_3PO_4), also known as phosphonate. Initial research indicates that applications can achieve control of *Phytophthora* development in infected plants. Currently, however, it is impractical to apply on a broad scale, although it has use for attacking fronts in areas of high conservation value such as populations of Declared Rare Flora. Research into the use of this chemical is continuing.
98. The current aims of disease management are to prevent introduction of the disease to uninfected areas, and to restrict the spread and intensification of the disease in infected areas. This is done by:
- rating disease hazard (the recognition of sites of different vulnerability so that priorities can be assigned for protection);
 - assessing the risk of introduction (this is affected by factors such as the proximity of diseased areas, the season of access and the type of operation planned);
 - hygiene (e.g. cleaning of machinery, vehicles, footwear, and whether dry or moist soil conditions);
 - quarantine (denying access to areas);
 - manipulation of conditions to disfavour the disease and enhance host resistance (e.g. by appropriate road and path construction, manipulation of drainage, stimulation of antagonistic microflora, use of fungicides); and
 - education and training.
99. Management of *Phytophthora* dieback on lands vested in the National Parks and Nature Conservation Authority (conservation reserves) and the Lands and Forest Commission (State forest and vested timber reserves) is through hygiene measures which aim to prevent the introduction and intensification of the disease. The management of access in forested lands is principally achieved through the declaration of areas as Disease Risk Areas under Part VII (Sections 79-86) of the Conservation and Land Management Act. Part VII may also apply to any other Crown land with the permission of the vesting authority. Other Acts, such as the *Mining Act 1978-1987* and the *Water Authority Act 1984* and relevant Acts, also provide for the control of access.
100. CALM's policy statement on dieback management, Policy Statement No. 3 - *Phytophthora* Dieback is at Appendix 4. This policy guides management of *Phytophthora* dieback, including in the area of flora harvesting .
101. Management plans for dieback disease have been prepared for CALM's South Coast Region and Moora District and a plan is drafted for Perth District to guide the implementation of policy. Interim guidelines, area management plans and regional management plans are being produced for lands managed by CALM. These documents, in conjunction with other procedural manuals and checklists (e.g. Dieback Hygiene Manual, Fire Control Checklists, Dieback Hygiene Evaluation) guide officers of CALM to plan and implement operations.

G.1.2 Control of Access

102. Control of access is a key element in minimising the vectored spread of *Phytophthora* dieback. The following strategies are employed to achieve this in the case of the commercial flora industry:

- as a condition of the Commercial Purposes Licence pickers may not take vehicles into areas containing, or suspected of containing, *Phytophthora* dieback;
- pickers must use existing tracks and roads as designated by the managing agency, and are not permitted to make, cut or extend new tracks by any means;
- in general, on CALM-managed lands commercial flora harvesters are restricted to all-weather access tracks and roads (i.e. those which are open to the general public) and may not use roads or pick within areas which are closed due to disease risk or within disease risk areas, except as described under "Hygiene Evaluation" (see below); and
- the following factors are evaluated before any commercial flora harvesting proceeds which has the potential to introduce, spread or intensify the impact of *Phytophthora* dieback on lands managed by CALM:
 - (i) Activity - whether the proposed activity needs to take place.
 - (ii) Hazard - the vegetation/landform type and the land uses for which the area is being managed.
 - (iii) Risk - the risk of introduction, spread and intensification of disease.
 - (iv) Consequence - the consequences of infection on landuse and ecological values.
 - (v) Hygiene - the hygiene measures required to minimise the consequences.
 - (vi) Evaluation - the judgement of the manager regarding the adequacy of hygiene tactics to minimise the consequences to a level that is acceptable.

103. This procedure is referred to as the "Hygiene Evaluation". It is used as a disease management tool to determine appropriate operational hygiene after balancing the risk of disease introduction and spread against the consequences of hygiene failure.

104. As outlined in paragraph 37 above, CALM has an inter-agency agreement with the Department of Land Administration for the management of certain other Crown lands where the need for specific management has been identified. *Phytophthora* dieback is an issue which may require additional management of access (i.e. restriction on areas where picking is permitted). CALM evaluates management of non-CALM-managed lands for commercial flora harvesting on a case-by-case basis, and applies management to these areas as required.

G.1.3 Phytosanitary Measures

105. The following phytosanitary measures aim to minimise the further spread of *Phytophthora* dieback by flora pickers:

- all vehicles capable of carrying dieback disease from infected to uninfected areas should be washed down and pickers should therefore wash down vehicles before moving from a flora picking area (pickers are urged never to assume that any vehicle is clean, or that the site does not contain dieback if it is within the region from which dieback is known to exist);
- washdown should be undertaken on bridges, rocky crossings or hard, well-drained surfaces within dieback areas (it is important not to wash down in dieback-free areas as these might then become infected from material being washed off the vehicle);

- the washdown liquid should be a hospital grade biocide suitable for use against *Phytophthora* and the washdown solution should not be kept longer than 24 hours so it is best that the solution is made up fresh each day when required; and
- to make the washdown effective, excess soil must first be removed. This can be done by using a brush or spade to knock off larger clods of soil.

G.1.4 Coordination of *Phytophthora* dieback management and research

106. The responsibility for implementation of policy and prescriptions which incorporate the protection of plant communities from disease caused by *Phytophthora* spp. lies with CALM Regional and District staff, with assistance and advice from specialist staff. CALM's Management Audit Branch have a role within CALM of periodically checking compliance of management activities with legislation, policies and procedures in relation to *Phytophthora* dieback.
107. CALM's major functions in respect to the coordination of *Phytophthora* dieback research and management are:
- the undertaking of research into the biology, ecology and management of *Phytophthora* species;
 - the development and promotion of a terminology which is accurate, consistent and readily understandable;
 - the development of policy on *Phytophthora* dieback disease management;
 - the identification of deficiencies in knowledge which limit the effectiveness of management and the setting of priorities for research;
 - ensuring the extension of research findings through the preparation of prescriptions to be used by operations staff in disease management;
 - arrangement of seminars or field trips for the education and interaction of CALM research and field staff and staff of other agencies associated with the management or potential spread of dieback;
 - liaison with external organisations and representation of CALM on external bodies dealing with the disease;
 - development of standards and operational guidelines, e.g. hygiene evaluation, dieback hygiene, disease hazard ratings, use of fungi sterilants;
 - provision of technical advice and information for such issues as;
 - the development of management plans and dieback protection plans,
 - advice to managers on difficult or unusual situations,
 - advice on other diseases such as *Armillaria* and aerial canker fungi,
 - application of operational tactics such as operational hygiene, disease sampling and interpretation;
 - development of an information system to allow the effective and efficient management of *Phytophthora* dieback, incorporating the hygiene manual, hygiene evaluation, monitoring and training roles of CALM's Environmental Protection Branch;
 - development and delivery of training packages for operational personnel addressing all aspects of disease management and provision of disease management training to external organisations;
 - monitoring the effectiveness of hygiene tactics over a range of operations and situations;
 - monitoring the effect of cultural operations on disease status - both distribution and intensity;

- liaison with operational managers to ensure *Phytophthora* dieback management is fully integrated into project planning and execution; and
- coordination of the development and management of a public education program to assist in the management of dieback on all land tenures.

G.2 AERIAL CANKER

108. Canker (particularly *Diplodina* sp.) is another disease affecting the State's flora in the south-west. It is particularly severe in the case of *Banksia coccinea* and research is being undertaken aimed at establishing causative fungi and susceptible hosts, and major factors linked to disease spread and options for disease control.
109. Current data show a slow pattern of disease development, and that the effect of disease may be small over a single year but devastating over the lifespan of the host. Occurrence of plant disease is dependant on a combination of a susceptible host, infective pathogen, infection site and favourable environmental conditions. Research carried out to date suggest that *Diplodina* sp. preferentially enters through wounds. Research into disease control is continuing.

G.3 FIRE

110. The issue of fire is a complex one. Fire may be either a natural event (e.g. lightning strikes) or started by humans, either deliberately (prescribed burning, arson) or by accident. Depending upon its timing, intensity, and frequency, fire may be a tool for regeneration or may adversely affect the conservation status of an area through, for example, changes to taxa composition or local extinctions as a result of too-frequent burning. In addition, in areas close to houses, farms or other property, prescribed use of fire may be necessary for protection of human values.
111. In forest production areas, CALM's burn prescriptions take into account protection of life and property, timber production and nature conservation requirements. On conservation reserves protection of life and property and nature conservation are the primary considerations.
112. CALM does not generally burn areas of land specifically for purposes associated with flora harvesting. However, wherever practical, flora harvesters have access to burn plans in State forest areas, and can plan harvesting operations accordingly. Harvesting is generally not permitted for several years after burning.

G.4 LAND CLEARING

113. Controls over the clearing of vegetation may be applied through various Acts. Under the *Soil and Land Conservation Act 1945* any proposal to clear vegetation greater than one hectare is referred to the Commissioner for Soil Conservation. Applications are assessed by the Department of Agriculture, and conditions may be imposed where the clearing is likely to result in a land degradation hazard. Specific restrictions apply to the clearing of land on properties, or in Shires, where less than 20% of the area is covered in vegetation.
114. Applications to clear vegetation, or other activities that may threaten vegetation, may be referred to the Environmental Protection Authority for assessment under the *Environmental Protection Act 1986*. Under an agreement with the Department of Agriculture, all applications to clear areas of remnant vegetation greater than 100 hectares are forwarded to the Environmental Protection Authority for its information and consideration for assessment.

115. Six catchments in the south-west of the State have clearing controls under the *Country Areas Water Supply Act 1947* for the protection of water quality of existing and potential water supplies. These controls are administered by the Water Authority of Western Australia.
116. In addition to legislative controls, the State runs a voluntary fencing subsidy scheme, the Remnant Vegetation Protection Scheme, for remnant vegetation, whereby recipients agree to fence off and conserve areas of vegetation for 30 years. Between 1988/89 and 1994/95, this scheme has resulted in 38,647 hectares of remnant vegetation being fenced and conserved.

G.5 MINING

117. Mining in Western Australia is regulated through the *Mining Act 1978* administered by the Department of Minerals and Energy and the *Environmental Protection Act 1986* administered by the Department of Environmental Protection. In general, areas where mining occurs are outside the main areas of commercial flora harvesting, with the exception of bauxite mining in the jarrah forest and mineral sands mining along the coast north and south of Perth. However, one aspect of the commercial flora industry, seed collection for rehabilitation, is involved directly in the revegetation of areas after mining is completed. The seed industry has formed an association which deals with such matters as seed source provenance and improvements to rehabilitation techniques using direct seeding.

H. COMPLIANCE

H.1 LEGAL REQUIREMENTS FOR FLORA DEALERS

118. The Wildlife Conservation Act provides for the issue of licences to take or sell protected flora and also allows for terms and conditions to be placed on each licence as discussed in paragraphs 25 to 29 above. Dealers are not licensed, however, under the legislation they may not purchase flora unless they do so from another person legally entitled to sell the flora. In addition, dealers must keep legible records of the quantity and class or description of flora purchased, the date of the purchase and the name and address of the person from whom the flora was purchased. These records must be retained for not less than 12 months and produced on demand to a Wildlife Officer.

H.2 ROLE OF WILDLIFE OFFICERS

119. CALM field officers have a responsibility to monitor picking operations and to report any possible breach of licence conditions or legislation relating to flora harvesting. The enforcement of these provisions is the whole or part-time responsibility of 31 Wildlife Officers (as at 30 June 1995) throughout Western Australia. Any activity suspected of breaching the Wildlife Conservation Act or Regulations or licence conditions is referred to a Wildlife Officer for investigation. Illegal, non-sustainable or otherwise noteworthy flora industry activities that occur are reported by the District office to Head Office for use in defining management and research needs for the industry.
120. District and Regional officers, on completion of a course in law enforcement, as described below, may be issued with a wildlife officer authority. These officers support the functions of the appointed Wildlife Officers.

H.2.1 Law enforcement training and operations procedures

121. All CALM personnel involved in the management of the commercial flora industry are required to know the relevant parts of the Conservation and Land Management Act, the Wildlife Conservation Act and their associated Regulations. Training on this legislation, general features of the law, gathering and presentation of evidence, and court attendance is provided to all CALM field staff by the Wildlife Protection Section. Wildlife Officers receive more detailed and extensive training in knowledge of the Wildlife Conservation Act and legal procedures.
122. Wildlife Officers have accumulated a substantial amount of flora industry data from field surveys and patrols, licensing information and findings of research officers. Essential information is also acquired through liaison with flora dealers and pickers. Knowledge of picker activities, market conditions, seasonal development of commercially exploited taxa and factors such as fire and regeneration provide Wildlife Officers with information on when and where particular taxa are likely to be harvested. Effort is directed seasonally and shifts accordingly.
123. Field operations may be active or reactive. Wildlife Officers regularly liaise with flora industry representatives and inspect dealers' premises, checking flora on hand and the dealers' records, which may result in subsequent investigations. Having determined the need for a patrol based on seasonal factors and locations known to be targeted by pickers, Wildlife Officers develop patrol plans as necessary. Alternatively, patrols may be planned in response to specific complaints or information about an alleged illegal activity. Wildlife Officers may check for unlicensed pickers, check pickers for compliance with licence conditions, check prohibited picking areas, or investigate the sale of flora to flora dealers at their premises.
124. At the conclusion of such field work, a patrol report and any breach reports are submitted to the officer's supervisor for processing.

I. RESEARCH

125. There are various programs designed to provide specialised scientific information which support CALM's management of commercial flora harvesting. The main areas which are being addressed are:
- investigation and documentation of Western Australia's flora, ecological processes and biological resources;
 - conservation of threatened taxa and ecological communities by minimising adverse impacts; and,
 - sustainable use of land and biological resources.
126. Research programs will also be initiated into specific issues relating to the sustainable harvesting of flora as identified through the monitoring and assessment of the industry. Investigations will include the assessment of the sustainability of harvesting specific taxa, and in specific communities, as well as into the development of specific harvest prescriptions for taxa. Recommendations from research will be presented to WAFIAC, and management recommendations implemented as required.

J. REPORTS

127. Reports take several different forms. The following summarise the various reports on the flora harvesting industry within Western Australia.

J.1 CALM REPORTS

128. Commercial flora harvesters are required as a condition of licence to submit returns covering flora taken each month on a quarterly basis. Data required include taxa, quantity, part, unit measure, the land tenure and grid location where picked, and to whom the flora was supplied.
129. Monitoring reports are prepared to cover flora taken in each six month period (January to June; July to December). These data are used as part of the monitoring process described above. The reports will be compiled and forwarded to ANCA, upon completion.
130. A proforma report for harvested flora taxa and populations may be completed by Region/District staff and Wildlife Officers and a copy forwarded to Head Office whenever a commercially harvested taxon is located in the field during the course of work. The report includes habitat and population details, the status of the population, the degree of harvesting noted and any recommendations (if required). These reports are used in conjunction with other monitoring methods to regulate picking activities.
131. Wildlife Officers conduct inspections of dealers' premises to ensure that legislative requirements are being met. These inspection reports are used to assist in making recommendations to ANCA on whether or not to renew an export authority. Breach reports are prepared for evaluation by a Wildlife Officer following the detection of an offence. These reports are used as a basis for the preparation of a case to prosecute or take other action, as appropriate.
132. One month prior to the expiry of licence, a report is generated which assesses the status of a picker's returns. If returns are satisfactory a letter reminding the picker of the expiry of her/his licence is sent. If returns are incomplete, the picker is informed that the licence can not be renewed until returns have been received. A report is also generated showing those licences which have incomplete returns. This report is circulated to relevant Regions, Districts, Wildlife Officers and licensing staff.
133. District/Regional flora industry officers submit an annual report to CALM's Head Office (Wildlife Branch), covering harvesting activity, enforcement issues, administrative issues, and recommendations for research and management. These annual reports are compiled and a summary is distributed to Regions/District and used by Head Office (Wildlife Branch) staff to improve management of the industry.

J.2 REPORTS TO THE AUSTRALIAN NATURE CONSERVATION AGENCY

134. Reports on the implementation of the WA flora management program will be provided to the authority designated under the Wildlife Protection (Regulation of Exports and Imports) Act (the Chief Executive Officer of the Australian Nature Conservation Agency) on a regular basis as detailed under sections J.2.1 and J.2.2.

J.2.1 Reports sent to ANCA

135. Special reports will be provided to ANCA as changes occur, detailing:
- documentary support for any proposed amendments to the Export Flora List, or the list of flora approved for trial exports (additions, deletions or changes in the category of listing; and,
 - any amendments to the list of Declared Rare Flora, as published in the Government Gazette; and,
 - variations in standard licence conditions.
136. Copies of data summaries from the analysis of flora returns detailed in paragraph 128, above will be provided to ANCA on a half yearly basis.

137. Annual reports will be provided to ANCA detailing:

- harvest quotas and the information considered in setting quotas for individual taxa;
- statistics which show the number and category of flora offences, and the recommended action and results;
- statistics on the amount of land reserved for national parks, conservation parks, nature reserves and other reserves with a conservation purpose; and,
- a compilation of the results of research carried out in the previous twelve month period which is relevant to the commercial flora industry.

J.3 REPORTS FROM THE AUSTRALIAN NATURE CONSERVATION AGENCY

138. ANCA will provide to CALM on an annual or otherwise basis, as agreed between ANCA and CALM, a list of international exporters of Western Australian sourced flora.

K. REFERENCES

Anon. (1984). A National Conservation Strategy for Australia, AGPS, Canberra.

Beard, J.S. (1979). Phytogeographic Regions. In *Western Landscapes*, ed. J. Gentilli. University of Western Australia Press.

CALM, (1992). A Draft Nature Conservation Strategy, CALM, Perth.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

POLICY STATEMENT NO. 13

COMMERCIAL FLORA HARVESTING
NOVEMBER 1993

1. BACKGROUND

Flora harvesting is a significant and expanding multi-million dollar industry. Prior to 1980, the Forests Department was responsible for flora management under the Native Flora Protection Act 1935. During this time all flora was considered to be forest produce under the Forests Act and commercial pickers were required to be licensed to pick on State forest, timber reserves and certain other Crown lands.

In 1980, the Acts repealing the Native Flora Protection Act and providing for flora conservation by amending the Wildlife Conservation Act 1950 were proclaimed. The responsibility for control of flora harvesting, including seed, was transferred to the Department of Fisheries and Wildlife, with its management applying to all lands, rather than only some Crown land.

Under the Conservation and Land Management Act 1984, CALM is responsible for the conservation and management of flora throughout Western Australia, and for administration of the Wildlife Conservation Act 1950. CALM thus has the authority to exert controls on the commercial harvesting of protected flora in Western Australia on all lands.

A survey of the flora industry undertaken in 1980/81 showed that:

- exploitation of Western Australian native plants for cut flowers, seed and nurseries was worth \$1.5 million, \$0.7 million and at least \$3.0 million respectively at the wholesale level;
- 50% of all cut flowers and 80% of all seed were taken from Crown land;
- 588 species were used by the industry;
- *Boronia megastigma* was the most heavily exploited species and was the only species for which there were any data on the impact of picking;
- exploitation of the genera *Verticordia*, *Stirlingia*, *Agonis*, *Banksia* and *Dryandra* accounted for 52% of all cut flowers harvested while the genera *Acacia*, *Kennedia*, *Eucalyptus* and *Helipterum* accounted for 61% of the total weight of seed collected;
- most picking activity was concentrated around Perth and Mount Barker;
- almost all heavily exploited species have widespread distributions, but a few are geographically restricted and may require intensive research and management.

The estimated value of exports of cut wildflowers (both bush-picked and cultivated) and proteas in 1991 was about \$15.5 million (source: Australian Bureau of Statistics). No data are available on the value of seed. Western Australia is largely unique (only South Africa being at all comparable) in having a multi-million dollar industry based on harvesting of indigenous flora from the wild. The most recent estimate is that bush picking comprises approximately 35% of the total wildflower and protea market, reflecting an export value of about \$5.5 million. The wildflower sector of the industry has a large export component, while seed is used mainly for revegetation projects within Western Australia.

Export of native flora is covered by the Commonwealth Wildlife Protection (Regulation of Exports and Imports) Act 1982 administered by the Australian Nature Conservation Agency. In accordance with the requirements of that Act in relation to the export of native flora taken from the wild, CALM produces a management program for the commercial taking of WA flora. The Commonwealth Act requires that the harvesting of native flora for export be undertaken under a management program approved by the Commonwealth Minister, and in a manner that is not detrimental to, or contributes to trade which is detrimental to, the survival of the species. This applies equally to Crown and private lands.

It was estimated in 1988 that the number of species being exploited had increased to about 1,500. There was also considerable growth in the number of Commercial Purposes Licences issued for the taking of flora for commercial purposes from Crown land, from 454 in 1980/81 to 1,333 in 1988/89. Following the twenty-fold increase in licence fees in June 1990 to \$100.00 for Commercial Purposes Licences, the number of these licences decreased to 576 in 1990/91 and 661 in 1991/92. The number of Commercial Producer's/ Nurseryman's Licences, for the sale of protected flora taken from private land, declined from 199 in 1980/81 to 87 in 1988/89, before increasing to 284 in 1990/91 and 259 in 1991/92, despite the five-fold licence fee increase to \$25 in June 1990. This, along with export data, reflects a shift in emphasis from Crown land to private property in the industry.

Although the level of production from commercial plantings has increased dramatically, there are still many wildflower species (e.g. rushes) which are collected almost exclusively from Crown land, including CALM-managed lands. It is likely that this need will continue until economic propagation and cultivation techniques are developed. The pressure to develop techniques for commercial propagation of wildflowers is increasing while areas available for bush picking are reduced due to changes in vesting and purpose, and clearing.

Similarly, the majority of seed is collected from wild populations, although there has been a recent increase in planting of and production from seed orchards. In the case of seed collected for revegetation, the demand for seed will not be satisfied in the short term from seed orchards.

The Department's mission in relation to flora is one of conservation. There is nothing in legislation which specifically gives the Department the function of promoting, encouraging or developing the flora industry. Nevertheless, the Wildlife Conservation Act provides for flora to be commercially utilised.

CALM controls approved commercial harvesting of native flora in order that this resource is managed to ensure its long term conservation; a fair and equitable return is received by the State; wherever possible the operation is commercially viable; and the resource is managed to minimise waste.

Management problems have arisen as a result of inadequacies in the Wildlife Conservation Act 1950. Amendments are proposed to allow, for example, for the licensing of dealers and wholesalers, and the testing of licence applicants, and will improve CALM's management capability.

There is a need for further research on commercial flora harvesting in Western Australia, with emphasis on monitoring (i.e. distribution, abundance, recruitment, population structure) and management of the flora populations and their interaction with the activities of pickers (particularly harvesting practices, fire regimes, dieback). Such research will lead to the development of management strategies, and specific Wildlife Management Programs for individual species or groups of species.

Because of strong public awareness of indigenous flora and its harvesting, and the potential for adverse impacts to occur if the flora industry is not adequately managed, an active campaign to improve industry awareness and education is necessary.

This policy statement does not address issues relating to the Western Australian Government's sovereignty over the State's indigenous flora, derivatives from flora and intellectual property pertaining to flora and its derivatives, nor does it address the extension of sovereignty to flora taken from the wild which is subsequently further developed for uses such as horticulture (including patenting of varieties developed from wild flora) or the extraction of genetic material or compounds for pharmaceutical and other applications. Flowing from the State's sovereignty and property rights is the right of the State to share in and benefit from any natural product of flora or a product structurally based on any natural product of flora. These matters are the subject of policy and legislative consideration and will be reflected in Departmental policy statements in due course.

2. OBJECTIVE

To manage the commercial harvesting of protected flora on Crown land and private property to ensure that harvesting is undertaken in a manner that does not jeopardise the conservation of the species being harvested, nor, in the case of Crown land, the conservation values of the land.

3. POLICY

The Department will:

- 3.1 Provide for the development and operation of a flora industry in Western Australia in accordance with Government policy and the Wildlife Conservation Act.
- 3.2 Permit picking and seed collection under licence on State forest and Crown land other than nature reserves, national parks and conservation parks, subject to land use priorities, conservation needs and management conditions;
- 3.3 License the sale of protected flora derived from commercial picking and seed collection on private property;
- 3.4 Ensure that the taking of protected flora is in accordance with a management program approved under the Commonwealth Wildlife Protection (Regulation of Exports and Imports) Act 1982;
- 3.5 Maintain an effective administrative, licensing and monitoring system;
- 3.6 Ensure that the State receives a return for the flora resource which provides the capacity for undertaking the necessary research and management in relation to flora harvesting;
- 3.7 Implement management practices to conserve exploited protected flora and its habitat and to ensure its sustainable harvest;
- 3.8 Liaise with industry and related groups over the management of the flora industry;
- 3.9 Carry out, cause to be carried out, or promote research on exploited protected flora as necessary.

4. STRATEGIES

To accomplish the Department's objective and policy, the Department will implement the following strategies:

- 4.1 License operators in the industry as appropriate, to pick and sell protected flora, and subject to proposed amendments to the Wildlife Conservation Act 1950, license processing and trade;
- 4.2 Prepare and implement a management program for the sustainable harvest of protected flora taken for export in consultation with the Australian Nature Conservation Agency;
- 4.3 Ensure that licensed operators are familiar with the species, conditions and endorsements applicable to their licences;
- 4.4 Subject licensed operators to appropriate controls including the keeping of records, provision of returns and compliance with conditions such as may be required by the Department;
- 4.5 Develop and maintain a computer system for the maintenance and retrieval of data and statistics on the flora industry;
- 4.6 Collect data on the distribution and commercial utilization of species in commercial demand;
- 4.7 Train and maintain staff where protected flora is harvested to implement Departmental policy and strategies and enforce legislative requirements;
- 4.8 Maintain an active, ongoing program of industry education and awareness relating to flora conservation, using:
 - literature (e.g. brochures, posters, booklets, newsletters), videos and slide kits;
 - formal education and testing of licence applicants;
 - literature and signs at appropriate outlets (e.g. CALM offices, Shire and Police offices, information bays);
 - talks to industry groups (e.g. Wildflower Pickers and Producers Association, Flora Export Council of Australia);
 - displays at town and agricultural shows;
- 4.9 Develop and implement a system of licence fees, royalties or other mechanisms to ensure that there is a return to the State from flora taken from Crown land, and to ensure that the industry meets the costs of satisfying State and Commonwealth requirements (e.g. for ongoing monitoring and management);
- 4.10 Review licence fees and royalties annually;
- 4.11 Encourage commercial flora production on private property and the establishment and maintenance of private commercial seed orchards and nurseries, especially for species that are of limited supply or are difficult to harvest on a sustainable basis from Crown land;
- 4.12 Seek to ensure that access to sufficient seed is available to meet future revegetation needs, within conservation and management constraints.

- 4.13 Monitor distribution, levels of harvesting and impacts of exploitation on protected flora;
- 4.14 Ensure that a system of conservation reserves exists that adequately protects representative areas and species of exploited flora (the commercial harvesting of flora from areas formally approved by Government as future conservation reserves would normally not be permitted);
- 4.15 Undertake research on the distribution, reproductive biology, ecology and protection of exploited flora, and recommend the discontinuation of picking of species or populations in the wild where their conservation is under threat;
- 4.16 Develop Wildlife Management Programs and Interim Wildlife Management Guidelines for exploited plant taxa and appoint management teams for their implementation;
- 4.17 Endorse picking on CALM-managed lands, and lands over which CALM has management agreements in place, within sustainable levels for specific species and the maintenance of the conservation values of the area;
- 4.18 Implement *Phytophthora* dieback management procedures in accordance with the WA Commercial Flora Harvesting Management Program, CALM Policy Statement No. 3 and the various standards and practices developed by the Department as appropriate to the flora industry.
- 4.19 Liaise with Commonwealth and State authorities, local government and other relevant authorities and groups on appropriate matters including research and monitoring, commercial utilisation, enforcement and joint strategies for public and industry information and education;
- 4.20 Maintain the WA Flora Industry Advisory Committee to liaise with and receive advice from representatives of the flora industry and other relevant interests.



Syd Shea
EXECUTIVE DIRECTOR

5 November 1993

WA FLORA MANAGEMENT PROGRAM

EXPORT FLORA LIST

Page No 1

Taxa for which specific conditions, in addition to standard licence conditions, apply for harvest from Crown land, through a special endorsement on the picking licence

<i>Boronia megastigma</i>	Brown boronia, boronia
<i>Dryandra formosa</i>	Formosa, Albany dryandra
<i>Leptocarpus scariosus</i>	Velvet or seeded rush

Taxa subject to standard licence conditions

<i>Acacia merinthophora</i>	Twisted or zigzag wattle
<i>Acacia pentadenia</i>	Karri wattle
<i>Actinodium cunninghamii</i>	Albany daisy, Swamp daisy
<i>Adansonia gregorii</i>	Baobab, Boab
<i>Adenanthos cuneatus</i>	Templetonia, Native temp
<i>Adenanthos cygnorum</i>	Woolly bush
<i>Adenanthos drummondii</i>	
<i>Adenanthos obovatus</i>	Basket flower
<i>Agonis flexuosa</i>	Peppermint
<i>Agonis juniperina</i>	Coarse ti-tree
<i>Agonis linearifolia</i>	Rosa ti-tree
<i>Agonis parviceps</i>	Fine ti-tree
<i>Allocasuarina decussata</i>	
<i>Allocasuarina humilis</i>	
<i>Andersonia caerulea</i>	Purple heath, Foxtails
<i>Andersonia involucrata</i>	
<i>Anigozanthos flavidus</i>	Kangaroo paw
<i>Anigozanthos humilis</i>	Cats paw
<i>Anigozanthos manglesii</i>	Red & green kangaroo paw
<i>Anigozanthos pulcherrimus</i>	Yellow kangaroo paw
<i>Anigozanthos rufus</i>	Rufous/red kangaroo paw
<i>Baeckea camphorosmae</i>	

EXPORT FLORA LIST

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<i>Baeckea grandiflora</i>	
<i>Banksia ashbyi</i>	Ashby's banksia
<i>Banksia attenuata</i>	Coast banksia
<i>Banksia blechnifolia</i>	Skeleton leaves
<i>Banksia burdettii</i>	Burdett's banksia
<i>Banksia candolleana</i>	Candolleana
<i>Banksia gardneri</i>	Ground leaves
<i>Banksia grandis</i>	Bull banksia
<i>Banksia hookeriana</i>	Hookerana, hookers
<i>Banksia ilicifolia</i>	
<i>Banksia littoralis</i>	Swamp banksia
<i>Banksia menziesii</i>	Menzies banksia, Firewood banksia
<i>Banksia occidentalis</i> subsp. <i>occidentalis</i>	Water banksia
<i>Banksia petiolaris</i>	Ground leaves
<i>Banksia prionotes</i>	Acorn banksia
<i>Banksia repens</i>	Ground leaves
<i>Banksia sceptrum</i>	Sceptre banksia
<i>Banksia speciosa</i>	Showy banksia
<i>Beaufortia decussata</i>	Decussata
<i>Beaufortia sparsa</i>	Sparsa, Swamp bottlebrush
<i>Beaufortia squarrosa</i>	Sand bottlebrush
<i>Boronia cymosa</i>	
<i>Boronia molloyae</i>	
<i>Boronia nematophylla</i>	
<i>Boronia purdieana</i>	Lemon-scented boronia
<i>Boronia scabra</i>	
<i>Bossiaea aquifolium</i>	Miniature holly
<i>Bracteantha bracteata</i>	Bushy everlasting
<i>Callistemon glaucus</i>	Callis greens, Albany bottlebrush
<i>Calothamnus chrysantherus</i>	
<i>Calothamnus quadrifidus</i>	
<i>Calytrix flavescens</i>	

EXPORT FLORA LIST

Page No 3

<i>Calytrix fraseri</i>	
<i>Caustis dioica</i>	Chinese puzzle
<i>Cephalopterum drummondii</i>	
<i>Conospermum amoenum</i>	Blue smokebush
<i>Conospermum crassinervium</i>	Tassel smokebush
<i>Conospermum diffusum</i>	
<i>Conospermum incurvum</i>	Plume smokebush
<i>Conospermum stoechadis</i>	Common smokebush
<i>Conospermum triplinervium</i>	Tree smokebush
<i>Crowea angustifolia</i>	Crowea
<i>Dasypogon bromeliifolius</i>	Drumsticks
<i>Daviesia cordata</i>	Bookleaf
<i>Daviesia incrassata</i>	
<i>Daviesia oppositifolia</i>	Low hops
<i>Dryandra obtusa</i>	
<i>Dryandra pteridifolia</i>	Skeleton leaves
<i>Dryandra quercifolia</i>	
<i>Eriostemon spicatus</i>	
<i>Eucalyptus buprestium</i>	
<i>Eucalyptus calophylla</i>	Red gumnuts, Honky nuts, Marri
<i>Eucalyptus forrestiana</i>	Fuschia mallee
<i>Eucalyptus gomphocephala</i>	Tuart
<i>Eucalyptus lehmannii</i>	Bushy yate
<i>Eucalyptus marginata</i>	Jarrah
<i>Eucalyptus patens</i>	
<i>Eucalyptus preissiana</i>	Bell-fruited mallee
<i>Eucalyptus pyriformis</i>	
<i>Eucalyptus rudis</i>	Flooded gum
<i>Eucalyptus tetragona</i>	Blue mallee
<i>Evandra aristata</i>	Fisherman's rod, kangaroo grass
<i>Geleznovia verrucosa</i>	Yellow bells
<i>Grevillea diversifolia</i>	

EXPORT FLORA LIST

Page No 4

<i>Grevillea endlicheriana</i>	
<i>Grevillea synaphae</i>	
<i>Grevillea triloba</i>	
<i>Hakea cucullata</i>	Cup-leaf hakea, Scallops
<i>Hakea cyclocarpa</i>	
<i>Hakea lasiantha</i>	Crowsfoot
<i>Hakea laurina</i>	
<i>Hakea pandanicarpa</i>	Corked hakea
<i>Hakea petiolaris</i>	
<i>Hakea platysperma</i>	Cricket ball hakea, Native Peach
<i>Hovea trisperma</i>	
<i>Hybanthus floribundus</i> subsp. <i>adpressum</i>	Native violet
<i>Hypocalymma angustifolium</i>	White myrtle
<i>Hypocalymma myrtifolium</i>	
<i>Hypocalymma robustum</i>	Swan River myrtle
<i>Johnsônia lupulina</i>	Hooded lily
<i>Juncus articulatus</i>	
<i>Juncus caespiticius</i>	
<i>Juncus holoschoenus</i>	Fern rush
<i>Juncus pallidus</i>	Coarse rush
<i>Kingia australis</i>	Grass girls, Djingarra
<i>Kunzea ericifolia</i>	
<i>Lachnostachys eriobotrya</i>	Sago conspermum
<i>Lachnostachys verbascifolia</i>	Lambstail and ears
<i>Lawrencia helmsii</i>	Long fingers, Plagianthus
<i>Lechenaultia biloba</i>	
<i>Lepidosperma effusum</i>	
<i>Lepidosperma gladiatum</i>	
<i>Leptocarpus aristatus</i>	
<i>Leptocarpus canus</i>	
<i>Leptocarpus tenax</i>	
<i>Leucopogon parviflorus</i>	

EXPORT FLORA LIST

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<i>Leucopogon polymorphus</i>	Baeckea
<i>Leucopogon pulchellus</i>	
<i>Leucopogon verticillatus</i>	Native bamboo
<i>Lomandra hastilis</i>	Kojaneerup rush
<i>Lysinema ciliatum</i>	Curry and rice
<i>Macrozamia riedlei</i>	Zamia palm
<i>Melaleuca glaberrima</i>	
<i>Melaleuca megacephala</i>	
<i>Melaleuca nesophila</i>	
<i>Melaleuca raphiophylla</i>	
<i>Olearia axillaris</i>	
<i>Ozothamnus cordatus</i>	Seacrest
<i>Pericalymma ellipticum</i>	Swamp ti-tree
<i>Persoonia longifolia</i>	Snottygobble, cherry bush
<i>Physopsis spicata</i>	Hill River lambstail
<i>Pimelea suaveolens</i>	
<i>Podocarpus drouynianus</i>	Emu bush
<i>Pteridium esculentum</i>	Bracken fern
<i>Ptilotus calostachys</i>	
<i>Ptilotus exaltatus</i>	Tall mulla mulla
<i>Ptilotus manglesii</i>	
<i>Ptilotus obovatus</i>	
<i>Ptilotus rotundifolius</i>	
<i>Rhodanthe chlorocephala</i> subsp. <i>rosea</i>	Roseum everlasting
<i>Rhodanthe chlorocephala</i> subsp. <i>splendida</i>	
<i>Rhodanthe floribunda</i>	
<i>Rhodanthe forrestii</i>	
<i>Rhodanthe manglesii</i>	
<i>Scholtzia capitata</i>	
<i>Scholtzia involucrata</i>	
<i>Scholtzia oligandra</i>	
<i>Sphenotoma dracophylloides</i>	
<i>Stirlingia latifolia</i>	Blueboy, Stirlingia

EXPORT FLORA LIST

Page No 6

<i>Triptilodiscus pygmaeus</i>	
<i>Trymalium floribundum</i>	Karri hazel
<i>Typha domingensis</i>	Bullrush
<i>Verrauxia reinwardtii</i>	
<i>Verticordia acerosa</i>	
<i>Verticordia densiflora</i>	Densaflora
<i>Verticordia drummondii</i>	
<i>Verticordia nitens</i>	Yellow morrison, Christmas morrison
<i>Verticordia picta</i>	
<i>Verticordia plumosa</i>	
<i>Verticordia serrata</i> var. <i>ciliata</i>	
<i>Verticordia serrata</i> var. <i>serrata</i>	
<i>Waitzia acuminata</i>	
<i>Waitzia suaveolens</i>	
<i>Xanthorrhoea gracilis</i>	Slender blackboy, Wallaby tails
<i>Xanthorrhoea preissii</i>	Blackboy, kangaroo tails
<i>Xanthorrhoea thorntonii</i>	
<i>Xylomelum angustifolium</i>	Woody or sandplain pear
<i>Xylomelum occidentale</i>	Holly oak

Taxa which may only be harvested from private property

<i>Banksia baueri</i>	
<i>Banksia baxteri</i>	Baxteri
<i>Banksia coccinea</i>	Albany banksia
<i>Banksia laricina</i>	Rose cones
<i>Banksia victoriae</i>	Woolly orange banksia
<i>Boronia heterophylla</i>	Red boronia
<i>Chamelaucium megalopetalum</i>	Large waxflower
<i>Chamelaucium uncinatum</i>	Geraldton wax
<i>Conospermum teretifolium</i>	
<i>Dryandra hewardiana</i>	
<i>Dryandra nobilis</i>	Golden dryandra

EXPORT FLORA LIST

Page No 7

Hakea victoria

Regelia velutina

Verticordia eriocephala

Verticordia grandis

Verticordia monadelpha var. *monadelpha*

Verticordia nobilis

Verticordia roei

Royal hakea

Barren's regelia

Cauliflower bush, brownii

CONSERVATION AND LAND MANAGEMENT

CM301

WILDLIFE CONSERVATION ACT 1950 WILDLIFE CONSERVATION (RARE FLORA) NOTICE 1995

Made by the Minister under section 23F.

Citation

1. This notice may be cited as the *Wildlife Conservation (Rare Flora) Notice 1995*.

Interpretation

2. In this notice —

“extant”, in relation to taxa, means still existing in their original state;

“protected flora” means any flora belonging to the classes of flora declared by the Minister under section 6 (6) of the Act to be protected flora by notice published in the *Gazette* of 9 October 1987, at p. 3855;

“rare flora” has the meaning given by section 23F (1) of the Act;

“taxon” includes any taxon that is described by a genus name and any other name or description.

[*Note.* The plural form of “taxon” is “taxa”.]

Rare flora

3. Subject to clause 4, all taxa of protected flora specified in Parts 1 and 2 of Schedule 1 are declared to be rare flora throughout the whole of the State.

Certain protected flora excluded

4. Clause 3 does not apply to those plants of a taxon of protected flora specified in Schedule 1 that are growing in a domesticated or cultivated state.

Revocation

5. The *Wildlife Conservation (Rare Flora) Notice 1994** is revoked.

[* Published in *Gazette* of 12 August 1994 at pp. 4024-7.]

SCHEDULE 1

[Clause 3]

Protected flora declared as rare flora

PART 1 — TAXA KNOWN TO BE EXTANT

- Acacia anomala*
Acacia aphylla
Acacia awestoniana
Acacia denticulosa
Acacia depressa
Acacia forrestiana
Acacia lanuginophylla
Acacia leptalea ms
Acacia lobulata
Acacia pharangites
Acacia pygmaea
Acacia sciophanes
Acacia semicircinalis
Acacia vassalii
Acacia sp. Dandaragan
 (S. van Leeuwen 269)
Adenanthos cunninghamii
Adenanthos dobagii
Adenanthos ellipticus
Adenanthos eyrei
Adenanthos ileticos
Adenanthos pungens
Adenanthos velutinus
Allocasuarina fibrosa
Allocasuarina tortiramula
Andersonia sp. Two Peoples Bay
 (G. Keighery 8229)
Anigozanthos bicolor subsp. *minor*
Anigozanthos humilis subsp.
chrysanthus
Anigozanthos viridis subsp.
terraspectans
Anthocercis gracilis
Apium prostratum subsp.
phillipii ms
Aponogeton hexatepalus
Asplenium obtusatum
Asterolasia drummondii
Asterolasia grandiflora
Asterolasia nivea
Baeckea arbuscula
Banksia brownii
Banksia cuneata
Banksia goodii
Banksia oligantha
Banksia sphaerocarpa var.
dolichostyla
Banksia tricuspis
Banksia verticillata
Bentleya spinescens
Billardiera mollis
Boronia adamsiana
Boronia revoluta
Brachysema modestum ms
Brachysema papilio ms
Caladenia bryceana
Caladenia busselliana ms
Caladenia caesarea subsp.
maritima ms
Caladenia christineae ms
Caladenia dorrienii
Caladenia elegans ms
Caladenia excelsa ms
Caladenia exstans ms
Caladenia harringtoniae ms
Caladenia hoffmanii ms
Caladenia huegelii
Caladenia viridescens ms
Caladenia voigtii ms
Caladenia wanosa
Caladenia winfieldii ms
Calectasia arnoldii ms
Calytrix breviseta subsp. *breviseta*
Centrolepis caespitosa
Chamelaucium erythrochlorum ms
Chamelaucium griffinii ms
Chamelaucium roycei ms
Chorizema varium
Conospermum toddii
Conostylis drummondii
Conostylis lepidospermoides
Conostylis micrantha
Conostylis misera
Conostylis rogeri
Conostylis seorsiflora subsp.
trichophylla
Conostylis setigera subsp. *dasys*
Conostylis wonganensis
Cooperhooikia georgei
Corybas limpidus
Darwinia acerosa
Darwinia apiculata
Darwinia carnea
Darwinia collina
Darwinia ferricola ms
Darwinia macrostegia
Darwinia masonii
Darwinia meeboldii
Darwinia oxylepis
Darwinia squarrosa
Darwinia wittwerorum
Darwinia sp. Stirling Range (G.J.
 Keighery 5732)
Daviesia bursarioides ms
Daviesia euphorbioides
Daviesia megacalyx ms
Daviesia microcarpa ms
Daviesia pseudaphylla ms
Daviesia speciosa ms
Daviesia spiralis
Diuris drummondii
Diuris micrantha
Diuris purdiei
Drakaea concolor ms
Drakaea confluens ms
Drakaea elastica
Drakaea isolata ms
Drakaea micrantha ms
Drakonorchis barbarella ms
Drakonorchis drakeoides ms
Drosera fimbriata
Drummondita ericoides
Drummondita hassellii var.
longifolia
Dryandra ionthocarpa ms
Dryandra mimica
Dryandra montana ms

- Dryandra serratuloides* subsp.
serratuloides ms
Dryandra serratuloides subsp.
perissa ms
Epiblema grandiflorum var.
cyanea ms
Eremophila caerulea subsp.
merrallii ms
Eremophila denticulata
Eremophila inflata
Eremophila microtheca
Eremophila nivea
Eremophila racemosa
Eremophila resinosa
Eremophila subteretifolia ms
Eremophila ternifolia
Eremophila veneta ms
Eremophila verticillata
Eremophila virens
Eremophila viscida
Eriostemon wonganensis
Eucalyptus absita
Eucalyptus argutifolia
Eucalyptus articulata
Eucalyptus balanites
Eucalyptus beardiana
Eucalyptus bennettiae
Eucalyptus blaxellii
Eucalyptus brevipes
Eucalyptus burdettiana
Eucalyptus ceracea
Eucalyptus cerasiformis
Eucalyptus coronata
Eucalyptus crispata
Eucalyptus crucis subsp. *crucis*
Eucalyptus crucis subsp. *praecipua*
Eucalyptus cuprea
Eucalyptus dolorosa
Eucalyptus goniantha subsp.
goniantha
Eucalyptus graniticola ms
Eucalyptus impensa
Eucalyptus insularis
Eucalyptus johnsoniana
Eucalyptus lateritica
Eucalyptus leprophloia
Eucalyptus merrickiae
Eucalyptus mooreana
Eucalyptus olivacea ms
Eucalyptus phylacis
Eucalyptus platydisca ms
Eucalyptus pruiniramis
Eucalyptus rhodantha
Eucalyptus steedmanii
Eucalyptus suberea
Eucalyptus synandra
Gastrolobium appressum
Gastrolobium glaucum
Gastrolobium graniticum
Gastrolobium hamulosum
Grevillea batrachioides
Grevillea calliantha
Grevillea christineae
Grevillea dryandroides
Grevillea flexuosa
Grevillea inconspicua
Grevillea infundibularis
Grevillea involucrata
Grevillea maxwellii
Grevillea mccutcheonii ms
Grevillea pythara
Grevillea scapigera
Hakea aculeata
Hakea megalosperma
Halosarcia bulbosa
Hemiandra gardneri
Hemiandra rutilans
Hemiandra sp. Watheroo
(S. Hancock 4)
Hemigenia viscida
Hensmania chapmanii
Hibbertia sp. Porongurups (R.D.
Hoogland 12186)
Hydrocotyle lemnoides
Hypocalymma longifolium
Isopogon uncinatus
Kennedia beckxiana
Kennedia glabrata
Kennedia macrophylla
Kunzea pauciflora
Lambertia echinata subsp.
echinata ms
Lambertia fairallii
Lambertia orbifolia
Laxmannia jamesii
Lechenaultia chlorantha
Lechenaultia laricina
Lechenaultia pulvinaris
Lepidium catapycnon
Leucopogon obtectus
Melaleuca sciostostyla
Meziella trifida
Microcorys eremophiloides
Microtis globula
Myoporum cordifolium
Myoporum turbinatum
Myriophyllum lapidicola
Myriophyllum petraeum
Pandanus spiralis var. *flammeus*
Paracaleana dixonii ms
Petrophile latericola ms
Pimelea rara
Pittosporum moluccanum
Pityrodia augustensis
Pityrodia scabra
Plectrachne bromoides
Pleurophascum occidentale
Prostanthera carrickiana
Pterostylis sp. Northampton
(S. D. Hopper 3349)
Ptychosema pusillum
Pultenaea pauciflora
Restio abortivus
Restio chaunocoleus
Rhagodia acicularis
Rhizanthella gardneri
Ricinocarpos trichophorus
Roycea pycnophylloides
Rulingia sp. Trigwell Bridge
(R. Smith s.n. 20.6.89)
Schoenus natans
Spirogardnera rubescens
Stawellia dimorphantha
Stylidium coroniforme
Stylidium galioides
Stylidium merrallii
Stylidium scabridum
Tetraria australiensis
Tetratheca aphylla
Tetratheca deltoidea
Tetratheca harperi
Tetratheca paynterae ms
Thelymitra dedmaniarum
Thelymitra psammophila
Thelymitra stellata
Thomasia glabripetala
Thomasia montana
Thryptomene wittweri
Tribonanthes purpurea
Verreauxia verreauxii

Verticordia albida
Verticordia carinata
Verticordia crebra
Verticordia fimbriolepis
Verticordia harveyi
Verticordia helichrysantha
Verticordia hughanii
Verticordia pityrhops
Verticordia plumosa var.
ananeotes

Verticordia spicata subsp.
squamosa
Verticordia staminosa
Villarsia calthifolia
Wurmbea calcicola
Wurmbea tubulosa
Xyris sp. Stirling Range
 (G.J. Keighery 7951)

PART 2 — TAXA PRESUMED TO BE EXTINCT

Acacia kingiana
Acacia prismifolia
Acacia volubilis
Beyeria lepidopetala
Calothamnus accedens
Coleanthera virgata
Deyeuxia drummondii
Dicrastylis morrisonii
Eremophila vernicosa ms
Eriostemon falcatus
Frankenia conferta
Frankenia decurrens
Frankenia parvula
Glyceria drummondii
Gyrostemon reticulatus
Haloragis platycarpa
Hemigenia exilis
Hemigenia obtusa
Hydatella leptogyne
Lasiopetalum rotundifolium

Lepidium aschersonii
Lepidium drummondii
Leptomeria dielsiana
Leptomeria laxa
Leucopogon cryptanthus
Leucopogon marginatus
Menkea draboides
Nemcia lehmannii
Opercularia acolytantha
Phlegmatospermum drummondii
Platysace dissecta
Pseudanthus nematophorus
Ptilotus fasciculatus
Ptilotus pyramidatus
Scaevola macrophylla
Taraxacum cygnorum
Tetralthea elliptica
Tetralthea fasciculata
Thomasia gardneri

PETER FOSS, Minister for the Environment.

The above notice was previously published on pages 2530-2533 in Government Gazette No. 81 dated 27 June 1995. Although it was published in full, the Schedule did not run in alphabetical order. To avoid confusion, the notice is repeated in the correct order.

DEPARTMENT OF CONSERVATION & LAND MANAGEMENT

POLICY STATEMENT NO. 3

PHYTOPHTHORA DIEBACK

Revised: January 1991

1. OBJECTIVE

To prevent the introduction, spread or intensification of the plant diseases caused by Phytophthora species throughout the state, with particular emphasis on the South-West (see Figure 1), and to monitor for Phytophthora activity in the remainder of the State, especially in tropical areas.

2. BACKGROUND

Fungi belonging to the genus Phytophthora are exotic to the Western Australian environment. Several species affect the native flora of Western Australia - *P. cinnamomi*, *P. citricola*, *P. cryptogea*, *P. megasperma var sojae*, *P. megasperma var megasperma*, *P. nicotianae var parasitica*, *P. drechsleri*.

These fungi are known to have a wide host range. There are at least 1,000 species of many different plant families that are susceptible to Phytophthora species. The Proteaceae (eg. Grevillia, Banksia), Myrtaceae (eg. Eucalyptus, bottlebrush, myrtles) and Epacridaceae (the heaths) in particular, are highly susceptible.

The impact of Phytophthora disease on the environment is extremely serious. It has the potential to damage rapidly entire ecosystems. Operations on or near all public lands must be planned and carried out to ensure that the introduction, spread and intensification of disease caused by Phytophthora species does not occur.

Phytophthora is also a threat to natural vegetation or susceptible crop species (such as avocados and wildflowers) on privately owned land.

Also, the economic impact of the disease on industries using forest resources (water, timber, wildflowers, honey etc) can be substantial as it has the potential to kill part of the resource base and make it extremely difficult or costly to access the remainder or to rehabilitate affected areas.

Since the promulgation of the CALM Act in 1984, dieback protection plans, interim guidelines, area management plans and regional management plans have been produced for land entrusted to CALM. These documents, in conjunction with other procedural manuals and checklists (such as the Dieback Hygiene Manual, Code of Logging Practice, Manual of Logging Specifications, Fire Control Checklists, Guidelines to the 7-Way Test) guide officers of the Department to plan and implement operations.

Legislation:

Control on lands vested in the National Parks and Nature Conservation Authority and the Lands and Forest Commission is possible through Part VII (Sections 79-86) of the CALM Act. Regulations under Section 129 allow for road closure to occur.

Part VII of the Act can also be applied to any other Crown land with the permission of the vested authority.

There are also powers in other Acts such as the Mining Act and the Metropolitan Water Supply Act that provide for the control of access.

3. POLICY

The Department will:

(1) Evaluate the following factors before any operation proceeds which is likely to introduce, spread or intensify the impact of Phytophthora species on land entrusted to CALM:

1. Whether the proposed activity needs to take place.
2. The vegetation/landform type.
3. The land uses for which the area is being managed.
4. The disease hazard.
5. The risk of introduction, spread, intensification of disease.
6. The consequences of infection.
7. The hygiene measures required.

This procedure is referred to as "the 7 Way Test". All operations are to be evaluated according to these criteria.

A decision to accept, reject or modify a proposed activity will be made only after an evaluation of all seven factors.

- (2) Determine hygiene requirements before granting access to land entrusted to CALM. The degree of control exercised will relate to the risk of introducing Phytophthora species, the chance of any introduction surviving and the magnitude of the consequences.
- (3) Minimise the construction of roads on lands entrusted to CALM. Where new roads are necessary they must be located and constructed so as to minimise the risk of introduction, spread or intensification of disease caused by Phytophthora species. All non-essential roads will be closed.

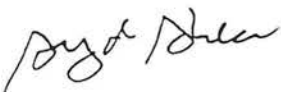
- (4) Control the use of roads on lands entrusted to CALM to minimise the risk of introduction of Phytophthora species.
- (5) Monitor representative areas and operations across the lands entrusted to CALM to:
 - determine the risk of introducing Phytophthora species;
 - determine rates of spread;
 - determine the effectiveness of hygiene measures used to prevent introduction and spread.
- (6) Review the boundaries of Disease Risk Areas periodically.
- (7) Give a high priority to determining the location and extent of Phytophthora species on public land. The highest priority will be given to those areas in which both hazard and the risk of introduction or spread by either natural or artificial means is the greatest.
- (8) Undertake research into the diagnosis of the disease, the assessment of damage caused by the disease, disease dynamics, disease management and disease control. The research findings will be published and promoted.
- (9) Give a high priority to collating and disseminating research and other data. These data are to be used for developing management prescriptions, training Departmental officers and promoting Phytophthora awareness in other land management organisations, land users and the public at large.
- (10) Provide continuing training in disease biology and control to Departmental staff who carry out activities which have the potential to introduce, spread or intensify the impact of disease caused by Phytophthora species.

4. STRATEGIES

To accomplish the Department objective and policies, staff will:

- (1) Use the 7-Way Test to evaluate all operations likely to introduce, spread or intensify the impact of Phytophthora species.
- (2) Conform to the objectives and strategies contained in Dieback Protection Plans, Regional Management plans, Area Management plans and Interim Guidelines.
- (3) Conform to standards and practices laid down in Departmental manuals and codes of practice. Eg: Hygiene manual, fire control checklists, guidelines to the 7-Way Test, Manual of Logging Specifications, Code of logging practice.
- (4) Include disease management specifications in contract documents and job prescriptions.
- (5) Incorporate sufficient lead time in planning operations to allow disease location, hazard and risk mapping.
- (6) Plan to execute operations in time and space so that the risk of disease introduction and spread are minimised.
- (7) Plan and implement a minimum strategic roading network.
- (8) Control access and operations so as to protect secure areas which are Phytophthora free.
- (9) Encourage self-policing of Phytophthora hygiene by Government, local authority, industry and other user bodies.
- (10) Continue to develop practical systems for monitoring the effectiveness of hygiene in operations.

- (11) Continue research into site vegetation and Phytophthora impacts and apply new information appropriately.
- (12) Implement the primary objectives of Research Division's plant diseases research programme (Appendix 1) by providing appropriate resources.
- (13) Prepare and implement a communications plan to increase public awareness and understanding of the Phytophthora problem in Western Australia and to create public support and cooperation for initiatives to control and combat the problem.
- (14) Continue to develop Phytophthora management expertise and awareness in CALM staff and in staff of other land management authorities and industry.
- (15) Make available CALM policies, strategies and guidelines on disease control to other Government Departments, industry, local authorities, community groups, individuals and organisations dealing with management and use of natural lands.
- (16) Assist other organisations with training.
- (17) Encourage Government, local authority and industry bodies to make a formal commitment to Phytophthora management.
- (18) Refer enforcement matters concerning Part VII of the CALM Act and associated regulations to the Branch Manager of Environmental Protection Branch for consideration and prosecution where appropriate.



S. SHEA
EXECUTIVE DIRECTOR

DIST. LIST: A, B, D, E, L.

APPENDIX 1

PRIMARY OBJECTIVES OF 5 YEAR RESEARCH PLAN

Diagnosis:

To recognize and assess the effects of disease in any situation of concern. To diagnose the causes of disease or damage in native communities, plantations and nurseries whether they are caused by abiotic factors or infectious agents. To identify pathogens.

Assessment of Damage:

To survey and assess the economic and conservation importance of diseases.

Disease Dynamics:

To understand the effect of environment on host, survival, increase and dispersal of pathogens, the infection of plants and expression of host resistance. To develop risk-rating systems where appropriate.

Disease Management:

To determine the effect of management practices, climate, site, and host susceptibility on consequence of diseases in plant communities, plantations and nurseries. To develop hazard-rating systems where appropriate.

Control:

To develop cost-effective and scientifically sound methods of controlling disease of woody plants. To advise as to how areas are to be best managed to maintain stable and healthy communities that are not predisposed to disease in the short and long term.

Communication:

To communicate the results of research in the form of educational literature, committee representation, training courses and seminars and to liaise and co-operate with the public, staff of other organizations and CALM personnel.

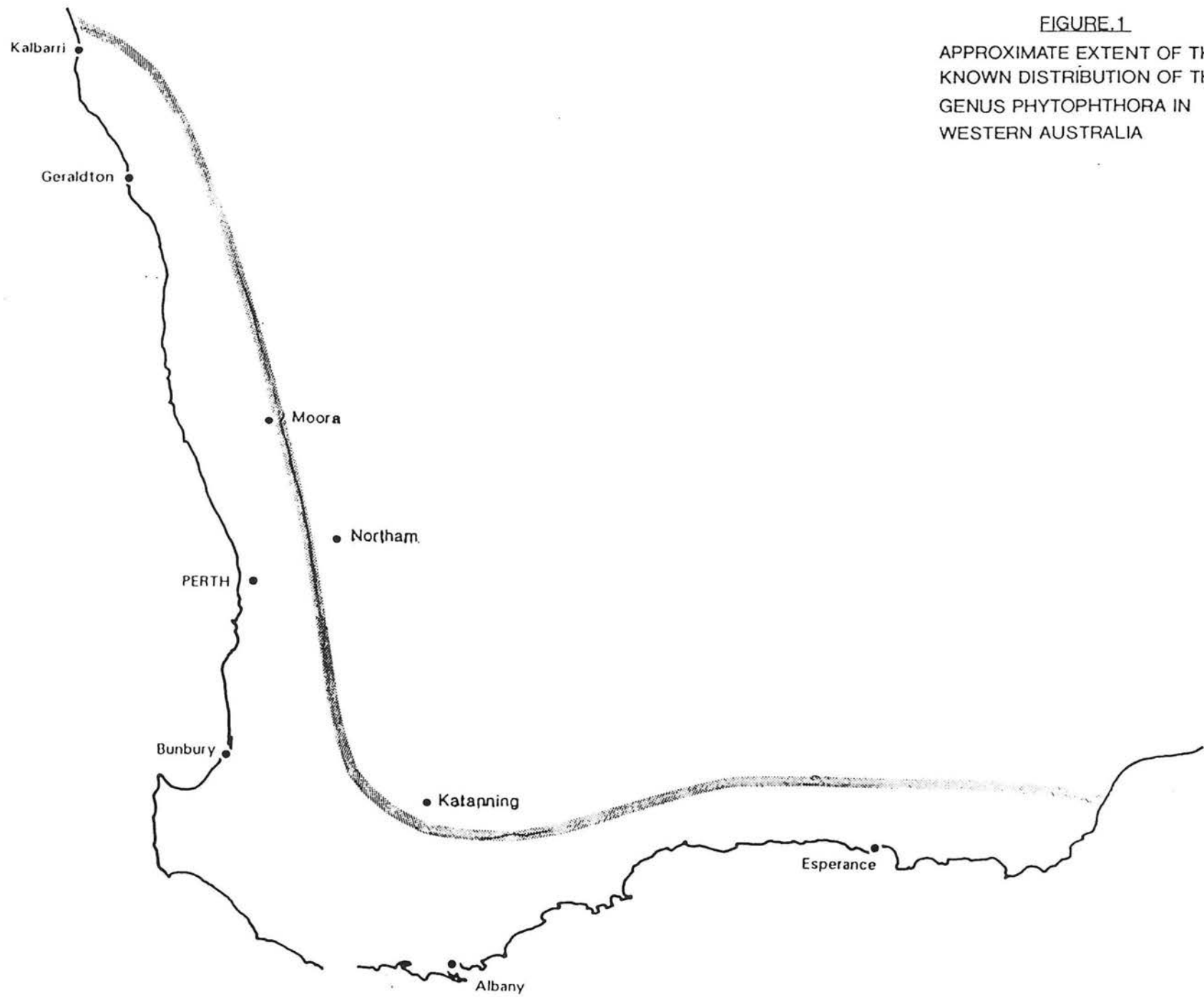


FIGURE.1
APPROXIMATE EXTENT OF THE
KNOWN DISTRIBUTION OF THE
GENUS PHYTOPHTHORA IN
WESTERN AUSTRALIA