SOUTH COAST REGION

DIEBACK PROTECTION PLAN

1986-1988

Department of Conservation and Land Management

State Operations Headquarters
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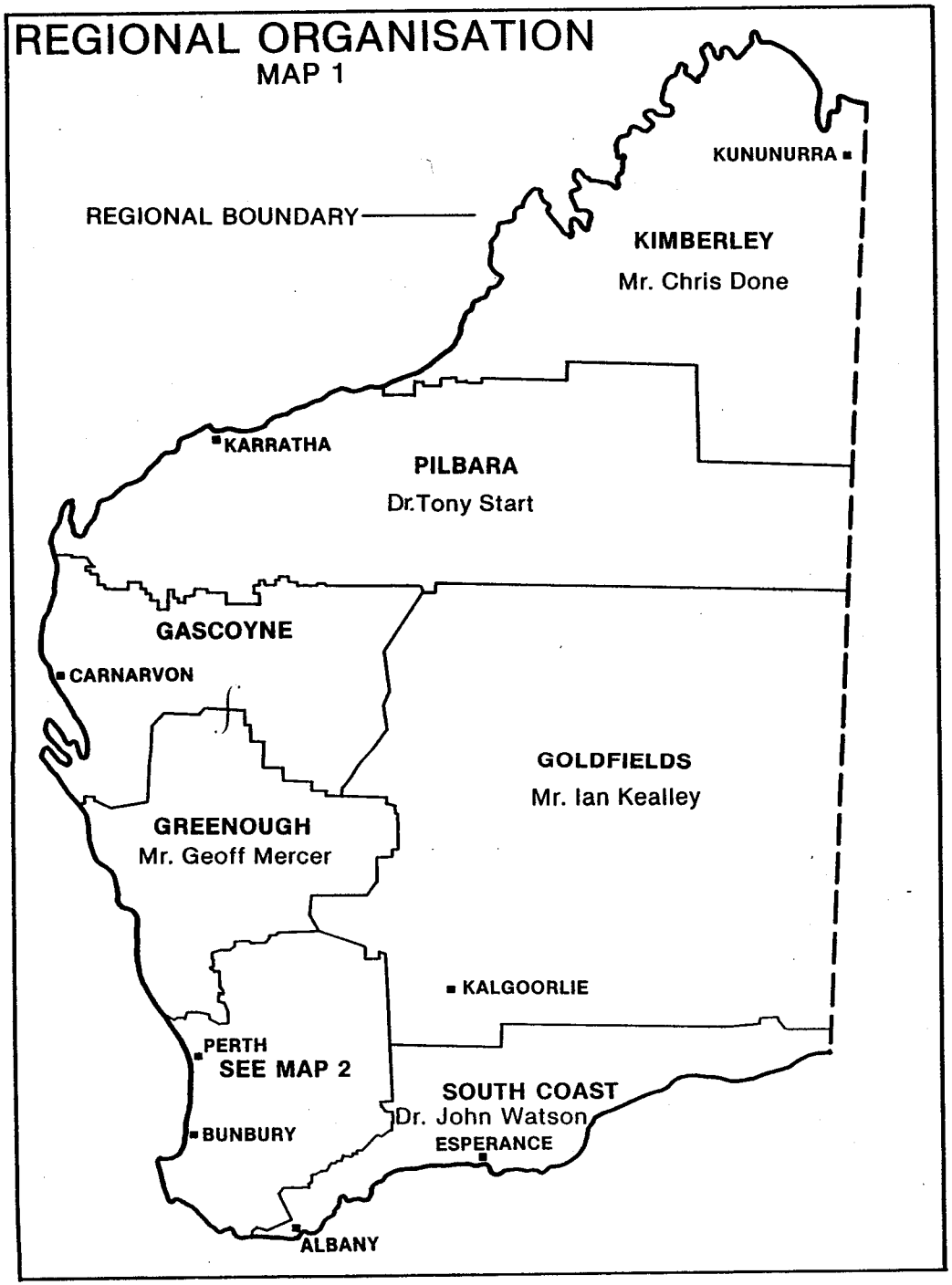
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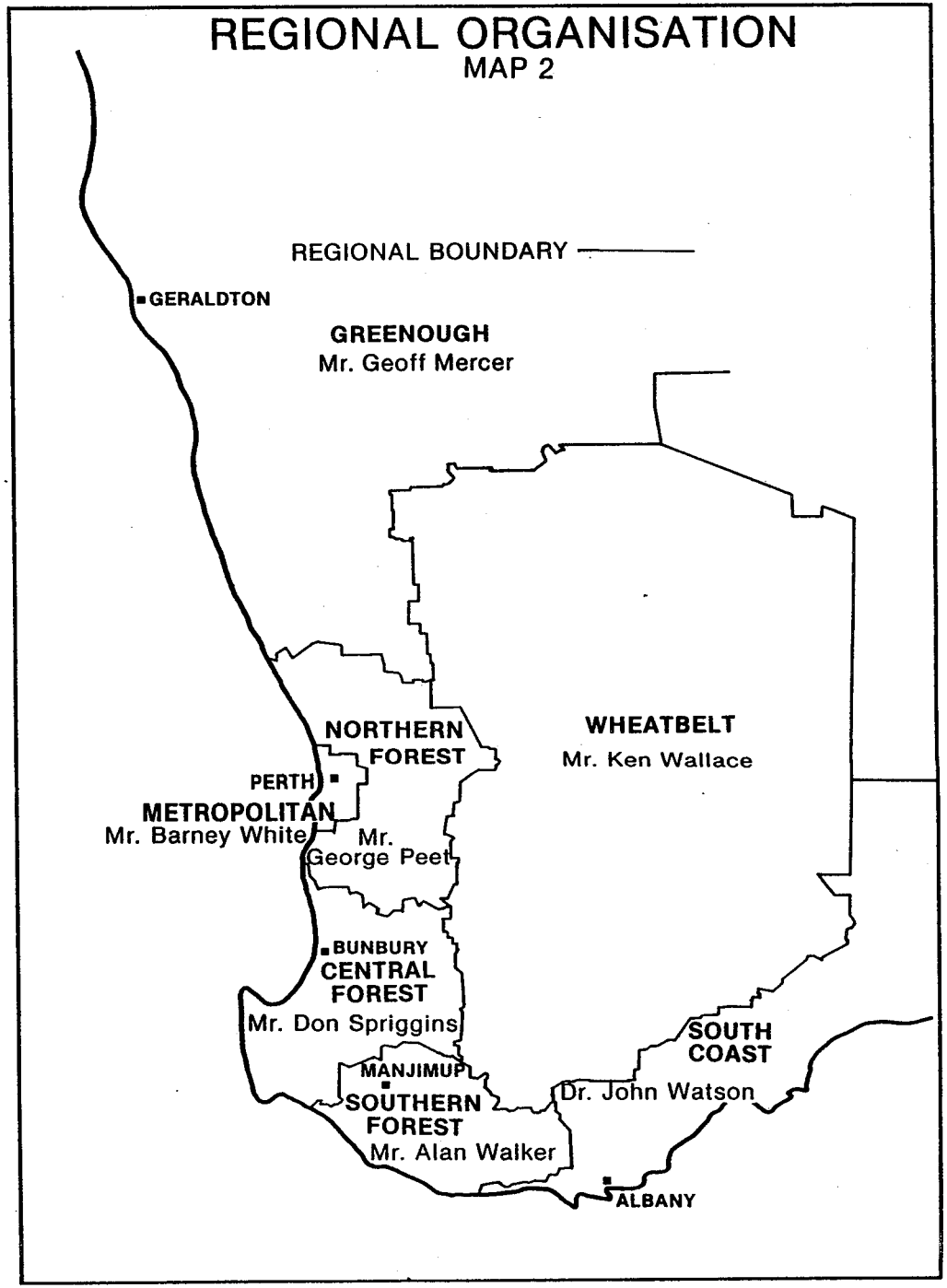
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PREFACE

This dieback protection plan describes:

the dieback situation in the South Coast Region of the Western Australian Department of Conservation and Land Management (CALM);

general Departmental policies regarding protection of natural ecosystems from dieback disease; and

strategies for dieback protection, including the determination of priority areas for management.

This dieback protection plan has been written for the guidance of Departmental officers, and to meet the requirements of Sections 33(3) and 56(1) of the Conservation and Land Management Act (1984) which provide for 'necessary operations (to be) undertaken ... to restore the natural environment, and to protect ... the ... indigenous flora and fauna'. This plan will be made freely available to other government departments and Shire Councils; and to community groups, tertiary institutions and the general public on request.

The plan is operational until the 31st December 1988, or until a Regional Management Plan is prepared. The plan is based on the current "state of the art", and will be reviewed and updated if new findings are made during this period.

The information contained in this dieback protection plan will be reviewed and included in a South Coast Regional Management Plan to be commenced in 1986. As defined by Section 58 of the Conservation and Land Management Act (1984), the Regional Management Plan will be made available to the public for comment for at least two months. This will give the public an opportunity to comment on all management proposals for Departmental lands in the South Coast Region. These lands are predominantly national parks and nature reserves.

If the Regional Plan has not been completed by December 1988 a written review assessing the dieback protection plan's effectivenesss will be prepared, and a revised protection plan prepared, for a period not exceeding two years.

THE DIEBACK PROBLEM IN THE SOUTH COAST REGION

The South Coast Region

This is one of the 11 administrative regions of the Western Australian Department of Conservation and Land Management. The South Coast Region stretches from the Irwin Inlet in the west, to Eucla on the Western Australian/ South Australian border in the east (Fig. 1). The Region encompasses 13 national parks, 139 nature reserves and seven timber reserves. The South Coast Regional Office is in Albany, there is a District Office in Esperance and Rangers are stationed in the major National Parks.

What is dieback?

Dieback is the common name given to the disease caused by the microscopic soil-borne fungus *Phytophthora cinnamomi* (the cinnamon fungus). The fungus produces small motile spores which are spread in water, and large spores which will survive in soil and plant material. The spores infect plant roots and as the fungus establishes it rots the roots. Plants such as banksias die rapidly after infection, but trees such as jarrah often die gradually, hence the common name for the disease - "dieback".

Why is dieback a threat in the South Coast Region?

Firstly, the fungus can attack a wide range of plant species. It is known to attack at least 900 plant species in many different families. The Proteaceae (eg. *Grevillea*, *Banksia*), Myrtaceae (eg. *Eucalyptus*, bottlebrush, myrtles) and Epacridaceae (the heaths), which together dominate many of the plant communities in the South Coast Region, are highly susceptible. Numerous members of these families are endemic to the South Coast Region (that is, they are found nowhere else).

Secondly, parts of this Region have a warm, moist climate which favours the production of fungal spores, particularly after summer rains. Poorly drained soils which typify some of the Region also favour the production of spores and spread of the fungus. Clay and laterite, which are significant component of many of the soils in the South Coast Region, act as impeding layers causing subsurface ponding necessary for the production of spores, and the water tends to drain laterally spreading the fungus further. Soils developed from limestone appear to be less susceptible to the disease.

Thirdly, eradication is impossible once the fungus is well established. Therefore, every effort must be made to protect the flora in the very substantial areas still free of the disease. The most effective protection is to ensure that the fungus is not introduced to uninfected areas.

In the light of these three factors, dieback is the most important problem in the South Coast Region.

POLICIES FOR DIEBACK PROTECTION

The Department has seven policies regarding dieback protection for nature reserves, timber reserves and national parks in the South Coast Region. The aims of the policies are to:

a. prevent the introduction of dieback into disease-free areas; and
b. minimise spread in the areas where the disease already occcurs.

These policies are:

1. A system of essential roads and firebreaks which are to be retained will be defined, based wherever possible on existing roads and firebreaks. Other roads and firebreaks will be closed.

2. Construction of new roads and firebreaks will take place only where essential. Where new roads and firebreaks are necessary, they will be located and constructed so as to minimise the risk of disease introduction or the impact of additional spread.

3. Offroad vehicular access on Departmental lands will be prohibited. Offroad access for management purposes (e.g., fire control) will also be strictly controlled and will be based on a consideration of hygiene requirements.

4. Before any operations are permitted the following factors will be evaluated:

   i. the need for the work proposed
   ii. hygiene measures required
   iii. risk of introducing the dieback fungus
   iv. landform
   v. vegetation
   vi. likely impact
   vii. consequences of impact on land use

   Evaluation will be based on a Seven Way Test which incorporates the above seven factors. A decision to accept, reject or modify the proposed activity will be made only after the relevant factors have been evaluated, using the Seven Way Test.

5. If a decision to proceed is made, existing hygiene practices, as specified in the Dieback Hygiene Manual, will be used. If necessary, new procedures will be developed.

6. Road and firebreak maintenance will be carried out in accordance with the guidelines given in the Dieback Hygiene Manual and such specific prescriptions as are required in special circumstances.

7. Undertake research, as far as practicable, on dieback spread, control, susceptibility of plant communities and risk of infection.

STRATEGIES FOR DIEBACK PROTECTION

The Department will adopt the following strategies for dieback protection on nature reserves, timber reserves and national parks in the South Coast Region:

1. Priority areas for protection from dieback will be identified;
2. Dieback protection plans for the areas of highest priority will be prepared;
3. Departmental policy will be implemented on CALM lands;
4. Staff and training will be provided;
5. Community awareness of the disease will be increased;
6. Dieback mapping techniques will be introduced;
7. Dieback research will be fostered;
8. Monitoring of diseased areas will continue; and
9. Implementation will be carried out.

Each of these points is elaborated below.

1. Identification of Priority Areas

The following priorities were determined:

Fitzgerald River National Park
Stirling Range National Park
Cape Arid National Park
Cape Le Grand National Park
West Cape Howe National Park
Two Peoples Bay Nature Reserve

Five criteria were used to identify priority areas.

1.1 Age of Infection

The management strategies advocated in this plan have been directed towards areas currently free of dieback, or where outbreaks are recent. Active management in these areas is most likely to succeed.

1.2 Endemism and Susceptibility of Flora

Many endemic species are highly susceptible to dieback. Some are declared rare under the Wildlife Conservation Act. Therefore it is important to protect those areas of national parks, nature reserves and timber reserves which have a large number of endemic species or plant communities which are rare, highly susceptible, or both.

1.3 **Public Use**

Where use is high there is a greater risk of introduction of the fungus, primarily in soil clinging to vehicles.

1.4 **Roads**

Secondary roads little used by the public and not required for management may be closed. In several areas completion of existing road upgrading programs and construction of new roads will reduce risks of further dieback introductions.

1.5 **Management Capability**

Dieback management is likely to be more effective in areas where Departmental field staff are close at hand to carry out the necessary works and implement this protection plan.

Effective dieback management will then be progressively applied to all 160 parcels of land in the South Coast Region which are managed by CALM.

2. Preparation of Dieback Protection Plans

Dieback protection plans for the areas of highest priority are being prepared. These will be freely made available to interested parties.

The protection plans for individual Parks and Reserves will address the following aspects.

* The description of each area and its key features.

* The current dieback status, extent and impact.

* Proposed management actions to prevent introduction and spread of dieback.

In developing these plans recreational access and fire protection needs will be considered and integrated with the need for dieback protection.

3. Implementation of Departmental Policies

The policies will initially be implemented in current works programs and on the areas of highest priority, then progressively implemented on all CALM land in the South Coast Region, as staff and resources become available.

4. Provision of Staff and Training

Some additional staff and resources have already been provided. This assistance will continue and will be increased, as available resources permit.

Departmental staff will be trained in:

a. recognition of dieback - affected plants in the field and sampling procedures;
b. use of the Seven Way Test Guidelines;
c. use of the Dieback Hygiene Manual;
d. general dissemination of information to the public.

5. Increasing Community Awareness

A program will be organised to ensure that the community is informed about the seriousness of the impact of dieback on the south coast flora and fauna.

Avenues of communication will include:

- brochures/leaflets
- talks, seminars and workshops
- video and slide shows
- use of radio, TV and local news media
- provision of information and displays at visitor centres in parks and reserves.

6. Dieback Mapping

Dieback mapping will be important in monitoring disease behaviour, in addition to its role in planning hygiene and protection strategies.

The dieback mapping techniques developed for forest areas may require modification to suit the conditions on the south coast. Whilst some of the larger species found in forests (blackboys, zamias, banksias) also occur on the south coast, it will be necessary to develop other indicators. This will involve observation of the response of plant species to the disease, and detailed analysis of sampling results to establish the reliability of likely species as indicator plants. It may therefore take some time before this research is completed.

Photographs will be taken of key 'test' areas. These areas will be selected on the basis of history of use, topography and vegetation type. Photography over these areas will also serve as a reference datum.

7. Research

There is a need to study:

7.1 The range and distribution of susceptible species

Departmental staff will sample a wide range of plant species to determine useful indicators of the disease.

In the longer term a research project will be designed to determine the susceptibility of declared rare species or species not previously sampled.

7.2 The susceptibility of plant communities and their risk of infection

A list of criteria will be developed for coastal plant communities so that an estimate can be given as to the risk of different areas or sites being infected. Information such as distance to confirmed dieback areas, position in the landscape, local landform and soil profile characteristics, are required.

7.3 Mechanisms and rate of spread in different areas

Basic information on the pattern of the disease in different communities is needed. Impact may be correlated with rainfall and drainage patterns.

7.4 Control measures

Further research is required into the large scale use of control measures such as fungicides, soil sterilants and physical barriers to the movement of the fungus.

7.5 Rehabilitation

Rehabilitation may be necessary in areas prone to erosion. Research is also required to identify local species resistant to the fungus.

7.6 Historical research

Research into past land use and records of the disease is essential. Such work could prove invaluable in assessing possible vectors of the fungus. These may include native and feral animals, as well as man.

8. Monitoring

Monitoring is necessary to determine the rate of spread of the fungus and the success of control measures. The following techniques will be used:

8.1 Pegging infection boundaries

The boundary of most dieback infections can generally be marked along the "green line" between infected and uninfected vegetation.

8.2 Ground photography

A series of photographs, taken from a constant datum point, provides evidence of the rate of spread. It also documents the species composition of the vegetation prior to infection.

8.3 Aerial photography

Aerial photographs record disease location at a point in time, and a series illustrates the pattern of disease spread.

Whilst aerial photography is a specialist area, the other forms of monitoring can be carried out by Departmental Ranger staff who are in closest contact with the situation. In addition these personnel are in a position, through constant observation and documentation, to further improve the understanding of dieback disease behaviour.

8.4 Map updates

It will be essential to regularly update existing dieback-free maps.

9. Implementation

All of these strategies will be converted to Departmental instructions. These will deal with the day to day procedures for implementing the strategies. These procedures will identify the task to be done, who will be responsible, operational guidelines and control systems.