

Creating an environmental weed strategy

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What are environmental weeds?

Environmental weeds are plants that invade native ecosystems and adversely affect the survival of indigenous flora and fauna. Environmental weed invasion is among the most serious conservation and land management problems in Victoria.¹

Environmental weeds can compete with indigenous plants for resources such as nutrients, moisture and light. They can prevent natural regeneration, reduce wildlife habitat, alter water flows, increase soil erosion, introduce poisons into the soil or poison animals, change fire behaviour and may introduce foreign genes into local plant populations. As a consequence, environmental weeds can have a large effect on the health and survival of indigenous plants and animals.

This Note is very detailed, catering for those who have time and resources to undertake a comprehensive strategy. For those who have less resources, use it as a general guide to some of the issues and potential actions. Time spent planning should be rewarded by a greater amount of time being spent on action.

Prevention is better than the cure

Environmental weeds should be treated as a symptom of a problem, not just the cause. By continually inspecting your property (and even your neighbour's) and being alert to new weeds you can avoid expensive controls of established infestations. Preventing new invasions of weeds is very important and is cheaper and more successful than eradicating weeds once established. Prevent the invasion of weeds by *minimising disturbance of soil; avoiding importation of foreign soil; disposing of garden clippings via council services or by incineration; keeping tools, equipment, footwear and vehicles clean of weed seeds or fragments; excluding stock and stock feed from bushland; avoiding fertiliser use in or near your bushland; planting only local native species and avoiding potential environmental weeds, including in your garden.* Educating others about the threat of weeds to your property, and the need to communicate about weed problems, is another important step in preventing the spread of weeds.

Why create a weed strategy?

The outcomes of environmental weed management on private land can be substantially improved by approaching the task in a planned way. Time and can also be saved.

To be effective, environmental weed management should



be integrated in your management ap-

proach and ecological consequences should be considered.

A strategy can help the landholder make day-to-day and long term decisions and to allocate limited resources to achieve set tasks efficiently and effectively.

Steps in developing a strategy

Step 1 Recognition of the problem.

Step 2 Determining the situation.

Step 3 Consultation.

Step 4 Goals and objectives.

Step 5 Management planning and priorities.

Step 6 Obtaining funding and resources.

Step 7 Action - on the ground.

Step 8 Monitoring and recording.

Step 9 Review.

Step 10 .. Sharing information.

Step 11 .. Ongoing commitment.

Step 1: Recognition of the problem.

The most important step in dealing with environmental weeds is to realise that there is a problem, and that something should be done. Monitor the changes you observe on your property and after some time you will become aware of any problems with weeds. If you need further assistance, refer to the organisations and contacts and the list of references at the end of this Note.

Step 2: Determining the situation - collecting information.

Collect as much detail you have time for and can use effectively. You may wish to just put information on a sketch map (see Figure 1, over), or prepare a simple written report, or both.

2a) Define the planning area. Identify the geographic area of concern and map it. At this stage, you should decide whether you should look at the area within your fenceline, at a Landcare group level or at a catchment area. Decide if you would like to draw your own base map, use an existing topographic map or consider overlaying information over aerial photographs.

2b) Who is responsible? - if you are looking beyond your fenceline, identify who owns and manages the land/water and all the people who use that area.

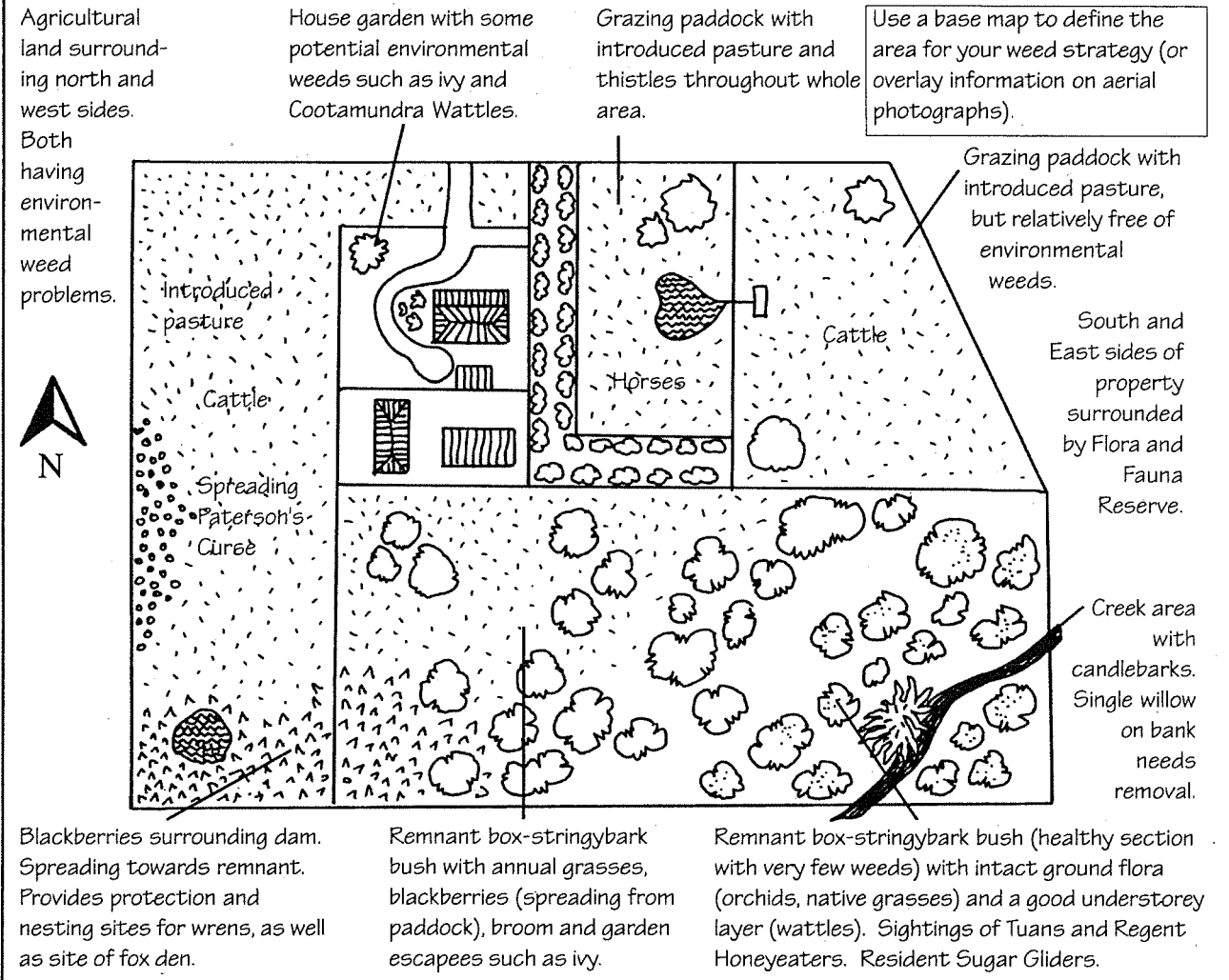
2c) Environmental information.

Environmental weeds - list all weeds found on the site and collate information about each species. If you are not sure about the identification of weeds, consult texts



Bird Observers
Club of Australia

Figure 1: Example of a simple sketch map that can be used in preparing an environmental weed strategy.



then seek advice from others (e.g. Department of Natural Resources and Environment (NRE) staff, local naturalists or send specimens to the Herbarium at the Royal Botanic Gardens - see 'Contacts').

The following points should be noted:

- current weed distribution and abundance (map if possible).
Plant lists, including weeds, may be available from your local municipal environmental officer, or the Flora Information System, NRE (see 'Contacts').
- is it declared noxious? - legal requirements.
- ecological and biological information such as life history, tolerance to light, response to fire, habitat preferences, rate of spread and mechanisms for dispersal. For example, being aware of the life history of thistles, Ragwort or Paterson's Curse will allow you to direct your energies towards removing these plants at the rosette stage, rather than the upright stage (easier, cheaper and far less herbicide, if any, is used). Contact NRE & local council for weed brochures.
- impact on the ecosystem such as changes to structure and composition of invaded communities, changes to hydrological, light and fire regimes, plant interactions, competition and recruitment, and plant and animal interactions including pest animals (e.g. the use of blackberries by foxes, as well as wrens).
- known management options such as prevention methods, treatment techniques, best time for control, best integrated management strategy, follow up and replacement indigenous plants.

Pest animals - list all pest animals and their population

levels. Foxes spread blackberry seeds in their droppings, while rabbits create disturbed areas suitable for weed invasion.

Fire history - record (map if possible) the fire frequency, location and intensity of all types of fires, whether wild-fire or management fires. Fire is a disturbance that can encourage weeds or be used to control them.

Indigenous flora and fauna - list the flora and fauna and map communities if possible.

Significant species and communities - list any important species and communities, with conservation ratings (e.g. rare) and map if possible.

Surrounding land / water use - think about what happens on the land and water bodies around or in your site and what problems could occur. Map these.

Built structures and modified sites - map these since these are all prime weed sites (e.g. roads, drains, stockyards, water troughs, gates). Is there adequate access to the sites?

Other values or features - map waterways, wetlands, geological features, etc.

2d) Financial situation. Take a preliminary look at your current budget and opportunities for external funding or sponsorship. A detailed budget is prepared at Step 6.

2e) Human resource situation. Consider who can help you; no-one, your family, the community, volunteers (Australian Trust for Conservation Volunteers, Volunteers in Conservation), government staff, contractors, consultants and employment schemes (Green Corps, Correc-

tional service schemes, etc.). It is important to consider whether you are healthy enough to do the job yourself.

2f) Physical resources. List tools and equipment, herbicides in store (check 'use by' dates), mulch sources and supply of indigenous plants (to replace weeds).

Step 3: Consultation.

Consult widely. The more people you talk to, the more information and ideas you will have. You may wish to talk to neighbours, community groups, interest groups, government officers (federal, state and local), neighbouring land managers (e.g. Parks Victoria), agencies, organisations and utilities (Regional Catchment and Land Protection Boards, water boards, companies supplying gas, electricity or telephones, etc.), Country Fire Authority and schools.

Step 4: Goals and objectives.

Setting goals will help you determine why and how you are going to tackle an environmental weed problem. You may like to set 5 or 10 year goals (e.g. to control all weeds in my forest patch in 10 years time). Objectives outline how you are going to reach this goal (e.g. to stop stock grazing in forest, to control weeds around the edge of the forest).

Step 5: Management planning and priorities (planning what you want to do).

5a) Determine the management approach.

The next step is to decide which management approach you wish to take. Most weed management in the past, has been treatment based, usually in the form of treating individual weeds or infected areas with herbicide or manual removal or both, without carrying out follow-up works or rehabilitation. This approach usually gives a short-term solution and is based on treating the symptom and not the cause.

The preferred management approach is a strategic and integrated one which takes into consideration the dynamics of the ecosystem you are working with. Look at the 'big picture' and consider all issues related to its management. Integrate other management programs with your approach, such as pest animals, fire and recreation and utilise as many treatment methods as possible. Consider the ecological effects of your management and how removing weeds will affect wildlife. For example, it may be better to drill and fill with herbicide weeds such as boxthorn, rather than cut them down, so that the structure can remain as wildlife habitat. Think about why this weed is growing here and how the natural balance of the ecosystem has been affected.

5b) What are you going to do first?

There are a number of things to consider when determining management priorities.

Consider:

- the background information you have gathered including maps, lists, observations
- which are the most threatening environmental weeds (i.e. those that are invasive, have a high impact on the environment, have a rapid rate of spread)?
- which are your highest priority sites (sites you may need to attend to first that have a high biological sig-

nificance)? Refer to *Land for Wildlife* Note No. 40 'How healthy is your bushland?'

To help you decide on your priorities, it is also important to:

- eliminate potentially threatening weeds before or as they expand.
- eliminate potentially threatening environmental weeds where action is likely to be successful.
- control environmental weeds in small infestations before they have produced seed or other propagules.
- control environmental weeds in areas of high conservation value.
- contain known environmental weeds by securing/protecting uninfested areas.

5c) Design appropriate actions.

The following principles, techniques and options will help you determine your plan of action.

Basic management principles:

- Prevention and early intervention will reduce considerable future costs.
- Identify the cause(s) of the problem. Weeds are usually a symptom of another problem such as burning practices, disturbance caused by livestock grazing or planting invasive species in gardens.
- Consider what the wildlife will use when you remove weeds. It is usually appropriate to remove the weeds and replace with appropriate indigenous plants at the same time.
- Are your actions benefiting the ecosystem? Using large amounts of herbicides may be harmful to some species, such as frogs. Your actions may be causing more harm than good, even though they make you feel better because you are doing something visible.
- Look beyond boundaries. Weeds don't distinguish between fences and other management boundaries.
- Start at the highest point of your best habitat/catchment to avoid reinfestation of lower areas through seed roll (gravity) and by being washed down slopes and watercourses.
- Hygiene is important. Remember to keep your tools, vehicles, boots and clothing clean of weed seeds, etc.
- Minimise site disturbance (particularly soil) which will reduce the opportunity for more weeds to establish at the site.
- Work from most intact habitat, since prevention of degradation is cheaper than eventual rehabilitation.

5d) Treatment options

Options for treatment will not be discussed in this Note. However, you can find out about this from various contacts and agencies such as:

- state government officers (such as NRE).
- local government environmental officers.
- chemical companies.
- books and brochures.

You can choose from a variety of techniques such as slashing, mowing, hand-pulling, grazing, chemical control, scalping, fire, heat, smothering, moisture and nutrient manipulation. A summary appears in *Land for Wildlife News* Vol. 1, No. 10. See references and contacts.

5f) Determine time lines.

How long are you going to take to reach your goals?

Develop a weed calendar which includes flowering times and times for best treatment. This will help you determine what to do each month and when attention should be given to the priority species. Relate this to flowering/seeding times of indigenous plants, to make decisions on timing for activities such as burning and slashing.

5g) Prepare your management plan.

Write down your plans of action, as simply as you like, and make sure everyone involved has access to this plan. Write down your goals and objectives, record priority actions, dates of action, results and follow up. Make sure you include actions such as rehabilitation and any maps and tables you have produced in your plan. Keep all the information that you researched together with your management plan or make sure it is filed away for future reference.

Step 6: Obtaining funding and resources.

Identify funding sources and, when making your application, use your management plan or strategy to support your case. Contact your local *Land for Wildlife* Extension Officer for more information. *Land for Wildlife* News 3:2 p 8-9 lists various incentives and grants.

Primary producers can make taxation claims for expenses relating to activities that contribute to the control of land degradation, including the control of weed pests (Section 75D of the Income Tax Assessment Act, seek advice from your tax agent).

Step 7: Action on the ground.

Implement treatments - There are various ways to implement the treatments; by yourself, with your family, your neighbours, your Landcare group, contractors such as herbicide applicators or volunteers. Volunteers are valuable allies in the fight against environmental weeds. Contact Australian Trust for Conservation Volunteers or the NRE's 'Volunteers in Conservation' program (see contact list).

Rehabilitate the site - There is the chance that, once you remove an environmental weed from natural vegetation, it may be replaced by the same or different species. By encouraging the site to rehabilitate naturally or revegetating with plants grown from local seed stock, this problem may be avoided. Rehabilitation can also replace habitat and food that the weeds provided for wildlife (e.g. Gang Gang Cockatoos eating Hawthorn berries). Replace blackberries, which can be protective habitat for wrens and other wildlife, with local equivalents such as prickly hakeas or wattles. Rehabilitation should be occurring continuously through implementation of your strategy and not just at the end.

Step 8: Monitoring and recording.

It is a good idea to monitor environmental weeds before, during and after your strategy has been carried out. This information will help you determine success and to plan future management actions and priorities. Use photo points, keep records and maps of work done, successes and failures. *Land for Wildlife* News Vol. 3, No. 3 has an article on how to monitor your property.

Step 9: Review.

Include any new information you have in your management plan. Learn from success and failures and incorporate new technology when appropriate. You may need to modify your plan over time. If you decide that you do not have enough background information, take the time to do further research, assessment and monitoring.

Step 10: Sharing information.

Now you have increased your knowledge of weed management in your area, you may like to share this information with other people. Use your Landcare group to network, write articles in its newsletter, conduct local field days or workshops. The more information we share, the less people will "reinvent the wheel".

Step 11: Ongoing commitment.

Environmental weeds will always be around and so it is important to maintain your interest and motivation. Approach your neighbours and explain the weed management strategy and that their interest and commitment can also help improve the health of the catchment.

Conclusion.

Once you have worked through this process you will understand the importance of a strategic approach to environmental weed management, where ecological considerations are also considered. Remember to treat the cause, not just the symptom.

Organisations and contacts that can help.

Australian Trust for Conservation Volunteers, ph (03) 96517115.

Department of Natural Resources and Environment, NRE, contact your closest Regional Office (White pages)
Flora Information System, contact nearest Regional Office of NRE.

Greening Australia Victoria, ph (03) 9457 3024.

Herbarium (Royal Botanic Gardens), Birdwood Ave., Sth Yarra, 3141. ph (03) 9252 2300.

Local Government environmental/conservation officers
National Trust, (03) 9654 4711.

Volunteers in Conservation, NRE, ph (03) 9412 4986.

Weed Science Society of Victoria, ph (03) 9576 2949.

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