

Chapter 3

Planning

At a glance

- **Planning helps you prioritise what actions are needed to manage and restore areas affected by invasive vines and scramblers.**
- **A weed management plan determines priority actions to prevent new weeds and manage the spread and impacts of existing weeds.**
- **This chapter describes a simple way to develop a weed management plan.**
- **The chapter also provides guidance on planning community-led and large (landscape-scale) weed management programs.**

This chapter refers to planning for cat's claw creeper and Madeira vine management; however, the planning principles and weed management cycle are broadly applicable to preparing weed management plans for all invasive vines and scramblers.

Some content in this chapter was adapted from the national asparagus weeds management manual (OEH, 2013), available at: environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/asparagus-weeds-management-manual-130486.pdf

Why plan?

Planning is one of the most important steps in weed management. While it is tempting to jump straight in, planning before undertaking management ensures the best possible outcome.

A well-thought-out plan can:

- make weed management tasks more achievable
- reduce off-target impacts of your control
- prevent reinvasion or the establishment of new weeds in the long term
- save time, effort and money now and into the future.

Managing cat's claw creeper and Madeira vine is a long-term endeavour, so it is critical to implement a strategic approach that sets achievable weed management goals. This will allow you to:

- prioritise the use of limited resources
- identify the best methods for and timing of control, increasing your chances of success
- coordinate activities with your neighbours
- meet your legal obligations (in states where applicable; see Chapter 6)
- incorporate critical tasks into general property planning
- undertake monitoring activities to gauge and increase the likelihood of long-term success.

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Planning principles

A good plan is one that provides a clear path to your management goals, allowing for flexibility and refinement along the way. It need not be lengthy or elaborate, but it must consider the long-term commitment needed to manage cat's claw creeper and Madeira vine. Being clear on the following questions will inform your overall goal:

- Why do you want to manage cat's claw creeper and/ or Madeira vine? For example, is it to protect threatened species, increase native biodiversity, prevent further spread into new areas, or another reason? Your plan will differ depending on your values.
- What are your management goals and how can you achieve them?
- What does success look like?
- How will your management activities integrate with day-to-day activities and other management objectives?
- Who needs to be involved?

Set up your plan for success

The best management approach and techniques will depend on your site and situation.

To set up your plan for success, ensure it considers important concepts such as:

- multiple treatments and adaptive management (see Chapter 4)
- integrated weed management (see Chapter 4)
- monitoring for regrowth and reinvasion (see Step 5 of this chapter).

The weed management planning cycle

Figure 3.1 summarises the main steps involved in general weed management planning. Initial assessment of the situation (**Step 1**) leads to the development of goals and priorities (**Step 2**). These form the basis of a plan (**Step 3**) that identifies and guides on-ground management (**Step 4**). Review of outcomes allows reassessment and refinement of the plan and the management approach (**Step 5**) to identify and undertake follow-up actions (**Step 6**) to ensure goals continue to be achieved in the long term. In some instances, you may also want to carry out restoration activities (**Step 7**).

The next section provides further detail for each step with a focus on developing a weed management plan for cat's claw creeper and/or Madeira vine.

Developing a management plan

Step 1. Assess the situation

The first step in creating an effective weed management plan is to understand the scale of the problem and what can realistically be done about it. To do this, a site assessment must be carried out to collect information about the infestation, the site and even the surrounding area.

The following actions will form the basis of your site assessment.

Identify and liaise with relevant land managers

Permission is required to undertake activities on other people's land and weed management across multiple tenures may be required. Partnerships and cooperation across areas to be managed are a foundational component of strategic weed management efforts. Refer to Box 3.1 to help you navigate this step.

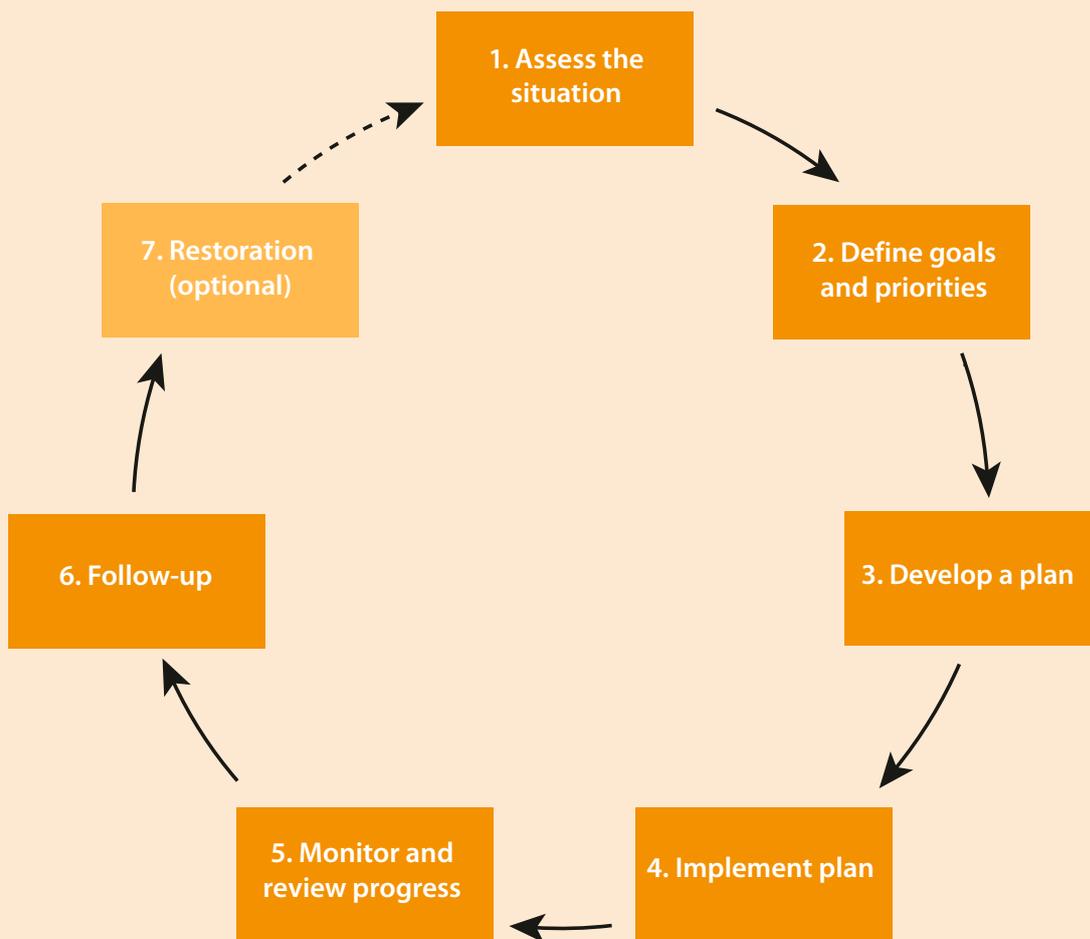


Figure 3.1 A flow chart showing the weed management planning cycle.

Box 3.1 Tips for engaging with the right people.

Situation	Considerations
Public land infestations	Contact the council or local parks office to discuss how to get involved. They may link you in with an existing group or advise on efforts already in place.
Private land infestations	Talk with other land managers or groups working on invasive vines and scramblers for advice and to complement existing programs.
Sites with existing weed control programs	Access any existing plans or, if there are none, discuss the need for a plan with the weed program leader.
Sites with threatened species	Contact the relevant threatened species officer in your state or territory. Please refer to Chapter 6 – Further information for contact details.

Identify and research the target species

First, compile a list of which major weeds are present. Research the impacts each species may have and prioritise which weeds you should include in your management plan. Where there are multiple invasive vine and scrambler species present, the complexity and cost of your management program may increase as a combination of controls may be required over several years. Depending on the growth cycle of each species, control may be carried out concurrently; conversely, you may have to wait until another time of year.

Cat’s claw creeper and Madeira vine are only two of many invasive vines and scramblers that may be present on your site. If you actively control these species, there may be others present ready to take over – which may end up having equivalent impacts. You should therefore think holistically during site

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Managing other weeds: a holistic approach

One of the main factors influencing the restoration of sites affected by cat's claw creeper and/or Madeira vine is the threat from co-existing or secondary weeds.

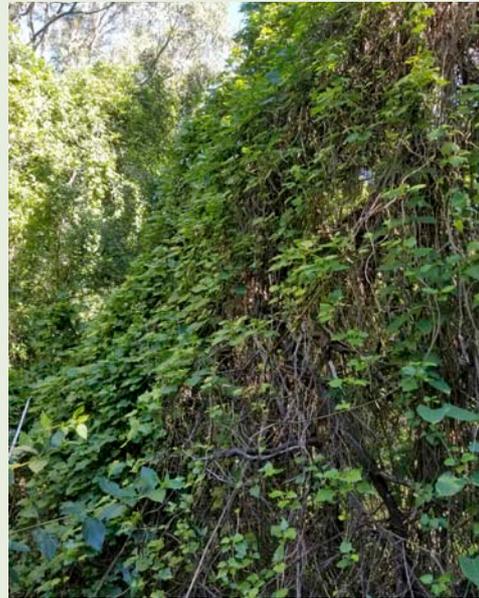
Co-existing weeds, such as other vines and scramblers – or even trees, shrubs, herbs and grasses – may also cause harm to your site.

Similarly, other weed species can invade or dominate a site once primary control of invasive vines and scramblers has occurred.

Decisions must be made whether to control all weed species at once or to prioritise species based on their threat.

Sometimes, disturbance from weed invasion can impair ecosystem function and result in a dominance of native vine and scrambler species.

Considering these factors during planning will help set realistic management objectives,



Adam Bernich

A dense exotic vine infestation along a rainforest edge where moth vine, cape ivy, lantana and Madeira vine can be seen.

contribute to management success and avoid burnout.

assessment to identify and understand all weed species—and their density—on your site.

It might be helpful to also list other major weeds present in the local area but not yet at your site. Talking to your local biosecurity officer, neighbours, NRM or Landcare officer or finding other sources of advice will help build your understanding of local and regional weed threats. Also consider weeds that may be brought to your site from a long distance, through pathways such as water, people or vehicles/ machinery.

Various online resources list and identify major weeds, including:

- NSW WeedWise – weeds.dpi.nsw.gov.au/
- Local Land Services – www.lls.nsw.gov.au/help-and-advice/pests,-weeds-and-diseases/weed-

control/weed-identification-and-management

- Qld Department of Agriculture and Fisheries – <https://www.daf.qld.gov.au/business-priorities/biosecurity/invasive-plants-animals/plants-weeds>
- Weeds Australia – <https://weeds.org.au>

Map infestations and key assets

Mapping the location of infestations and other important attributes forms the basis of your site assessment and planning of your control activities. Your map should show:

- location, extent and density of weed infestations
- site/property boundaries
- spread pathways such as water courses, roads and stock routes
- any safety hazards.

Delimitation

Delimitation surveys help you to understand the full extent of a weed infestation and whether the weed is at, or beyond, the early stage of invasion (Blood et al., 2019). This informs the most appropriate and realistic management objective for your site.

Mapping your site assets—for example, rare and threatened plants, animals or ecological communities, and cultural and heritage sites—will also help define your management goals. Their presence may mean affording higher priority to those sites but also that extra care must be taken when working around them to limit off-target damage.

A map need not be complex; the goal is to have a visual representation of the management area and infestation so everyone working on the site, now or in the future, can follow a logical and strategic management approach. A hand sketch or mud map can work for smaller sites, while a simple, computer-generated map may be better for larger

Free online mapping tools

There are many freely available online mapping tools, including for use on a smartphone. For example:

- the Atlas of Living Australia (www.ala.org.au) provides a free platform for interactive map making
- software such as Avenza Maps or Fulcrum enables you to create and save maps to a smartphone or tablet for use in the field.

Talk to your local weed officer or project leader for other recommendations.

National guidelines for weed mapping are provided in *A Field Manual for Surveying and Mapping Nationally Significant Weeds* (weeds.org.au/wp-content/uploads/2020/04/Weeds_Manual.pdf)

sites. Waypoints and tracks can be taken in the field using a GPS device or smartphone app (e.g. GPS Essentials App).

Consider weed density

Determining the density of weed species on your site will help in setting realistic objectives and priorities (Step 2) and allow you to judge in future years whether your control efforts have been successful (Step 5). Plant density can be classified in many ways, including as a specific percentage density class (e.g. 0–5%) or a simple description (such as ‘light’, ‘medium’ or ‘scattered individual plants’). Different assessment methods may be used to measure density, depending on the plant form:

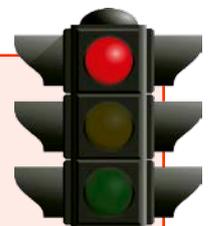
- for plants growing in the canopy (vines): density can be measured using crown projective cover and foliage projective cover methods
- for plants growing along the ground (scramblers): density can be measured using ground percentage cover methods.

Further information on assessment methods can be found at:

- dcceew.gov.au/sites/default/files/documents/vegetation-assessment-guide.pdf
- weeds.org.au/wp-content/uploads/2020/04/Weeds_Manual.pdf

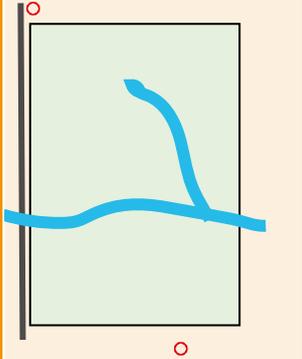
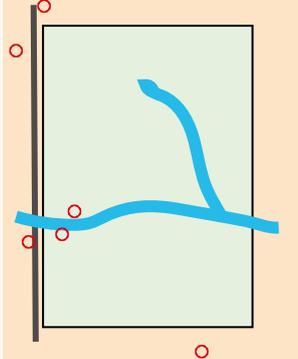
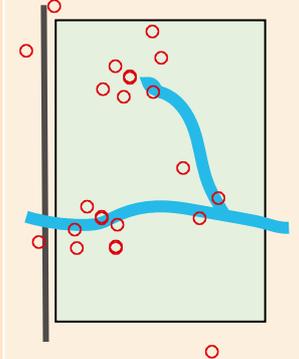
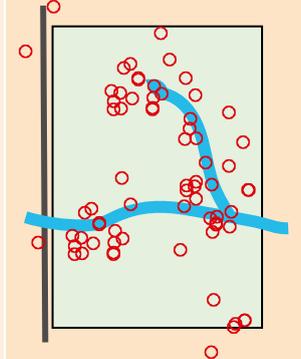
Simple categories for recording weed density are described in Table 3.1.

Much of the biomass of vines and scramblers is hidden underground in the form of tubers. In older infestations, the tuber bank may be significant and should be considered when setting a realistic management objective (Step 2).



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Table 3.1 Management objectives and associated activities for each stage of weed invasion.

				
Stage of invasion	<p>Absent</p> <ul style="list-style-type: none"> Not known to be present on the site (but may be present in the local area) 	<p>Early stages of invasion</p> <ul style="list-style-type: none"> Rare (<1%) Isolated individuals, limited distribution Low risk of reinfestation from neighbouring areas 	<p>Scattered to frequent</p> <ul style="list-style-type: none"> Light (1–10%): scattered patches and isolated plants <p>OR</p> <ul style="list-style-type: none"> Medium (11–50%): frequent patches with isolated plants commonly interspersed 	<p>Widespread and dense</p> <ul style="list-style-type: none"> Large, dense (>50%) infestations Large areas affected across the site
Management objectives	<p>PREVENT</p> <ul style="list-style-type: none"> Prevent new weeds arriving 	<p>ERADICATE</p> <ul style="list-style-type: none"> Eliminate all plants, propagules and seeds (including seed banks and tubers) 	<p>CONTAIN</p> <ul style="list-style-type: none"> Prevent further spread Eliminate outlying infestations and work back towards core infestation/s 	<p>PROTECT ASSETS</p> <ul style="list-style-type: none"> Reduce adverse effects on highly valued assets Reduce weed density Reduce seed production and propagule spread
Management activities	<p>Surveillance:</p> <ul style="list-style-type: none"> Monitor for vine introduction along high-risk pathways <p>Spread prevention:</p> <ul style="list-style-type: none"> Implement hygiene protocols and other measures <p>Control:</p> <ul style="list-style-type: none"> Conduct a coordinated control program across infested site, where weed is new to the area 	<p>Delimitation:</p> <ul style="list-style-type: none"> Conduct regular surveillance to map all known infestations <p>Spread prevention:</p> <ul style="list-style-type: none"> Implement hygiene protocols and other measures <p>Control:</p> <ul style="list-style-type: none"> Search for and remove all plants prior to reproduction 	<p>Spread prevention:</p> <ul style="list-style-type: none"> Implement hygiene protocols and other measures <p>Control:</p> <ul style="list-style-type: none"> Conduct an ongoing integrated control program to reduce weed density in areas where firmly established Search for and remove all plants prior to reproduction for outlying infestations Allow for regeneration of native vegetation surrounding core infestation to reinforce containment lines 	<p>Spread prevention:</p> <ul style="list-style-type: none"> Implement hygiene and spread prevention activities <p>Control:</p> <ul style="list-style-type: none"> Conduct an ongoing integrated control program to reduce density to keep impacts at an acceptable level Protect high-value assets at risk from weed impact
	<p>Follow-up</p> <ul style="list-style-type: none"> Resprouting from tubers will continue for many years, even in small infestations Continue surveillance activities downstream and in dominant wind directions (for cat's claw creeper only) 			

Establish a baseline

The weed distribution and density information you collect at the planning stage establishes an important reference point – or ‘baseline’ – for your site *before* you commence your management program. As you move into the monitoring stages of your program, this baseline will enable you to compare and assess the effectiveness of your management outcomes over time.

For example, in five years’ time, you could re-calculate and map the density using the same technique and compare the results to your ‘baseline’ map. This will help you visually determine if the control program has resulted in a change to both weed distribution and density over time.

Step 5 details other information you can start collecting before implementing your plan that will help measure your management success over time.

Prepare a site risk assessment

During planning, conduct a risk assessment identifying any health and safety risks to prevent potential injuries on site, and include ways to mitigate or minimise these. Consider how you will manage:

- site access and movement across sites (e.g. remote sites, long drives, steep or uneven terrain, water courses)
- hazards such as dumped material, barbed wire and snakes
- weather conditions and the need to carry water, food and protective equipment (e.g. sunscreen, hat, insect repellent)
- working in flood zones and near water
- toxicity and/or allergenic properties of weeds
- first aid (e.g. snake bite kits)
- morale and mental health of the stakeholders involved – long-term weed control can come at the expense of other work or leisure activities and can lead to worry, stress and burnout

- handling herbicides and operating machinery
- working with volunteers.

Safety regulations, training and resources

All weed control activities involve risk, so personal safety must be prioritised. Regulations regarding the safe use of herbicides and machinery must be followed and personal protective equipment such as gloves, respiratory equipment and eye and ear protection worn as appropriate.

Training may also be required for handling herbicides and operating machinery (see Chapter 6). Work health and safety laws (including acts of parliament, regulations and codes of practice) vary – check with your state or territory for the latest information. Guidance, information and fact sheets for working with volunteers are available from Safe Work Australia, Volunteering Australia and relevant authority websites in each state.

A risk management tool called *Running the Risk?* is available from Volunteering Australia at volunteeringaustralia.org/wp-content/files_mf/1377053059VAManagersrunningtherisk.pdf



Other details to note

Other details to note during your site assessment may include:

- areas of disturbance, such as clearing, recent fires or floods
- your site’s management history.

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Step 2. Define management objectives and priorities

Using your site assessment, and your map showing the infestation extent and density (Step 1), you can now start to set some clear, realistic goals.

Set your objectives

There are four overarching objectives for weed management, which relate to the weed's invasion stage: prevention, eradication, containment and asset-based protection. Table 3.1 uses descriptions of infestation size and density to:

- determine the most appropriate management objective
- identify the recommended management activities you would undertake to achieve those objectives.

Eradication – is it feasible?

Note that eradication is a term often used for weeds but rarely achieved in practice. Successful eradication requires the elimination of every individual plant and propagules (both seeds and vegetative plant parts) in a defined area, plus no further reintroduction from outside the area. This is extremely difficult to achieve. Generally, eradication is only possible where the weed is new to an area or property.

Factors required for successful weed eradication on a site include:

- weed distribution is limited and density is low across the site
- all infested areas are known
- the chance of reinvasion from surrounding areas is low
- newly emerged plants are easily detected before they set seed (or vegetative propagules, for some types of weeds)
- individual plants are easy to kill, including those that regenerate vegetatively.

Prioritise areas for control

The number and extent of weeds on a site often means it is too much to tackle all at once. In general, it is best to prioritise new, small or outlying infestations, then areas with high risk of spread, then protection of high-value assets (Table 3.2).

Table 3.2 General order of priority for where to control weeds.

PRIORITY 1	New, small or outlying infestations These should be eradicated where feasible to stop seed and tuber banks from developing and reduce the likelihood of a large infestation forming. Undertake strategic surveillance of potential vine sources or pathways.
PRIORITY 2	Areas with high risk of spread Areas such as roadsides, riverbanks, waterways and floodplains should be targeted as a priority to limit further spread and reduce the chance of new infestations developing. Target point sources of infestations, such as old homesteads and dumping sites.
PRIORITY 3	High-value assets For established infestations, the priority is to reduce their impact on important assets. This may include areas where there are threatened species or communities, or areas of community or cultural importance.

Priorities can be further assessed by examining the following:

- infestation age (and approximate extent of the seed/tuber bank)
- proximity to other infestations
- site access
- resources available.

Seek advice and input from weed management experts and neighbours to ensure that your priority setting is sound and will be supported by those around you.

Working smarter

Align your weed management actions with your other site management plans and objectives. There may be opportunities to combine activities or plan around busy periods, ensuring important weed work is not forgotten.

What are others doing to manage cat's claw creeper and Madeira vine in your area? Try to integrate or complement work occurring at the local, catchment and regional levels and seek guidance and feedback from neighbours, nearby landholders and local groups when necessary.

See 'Better together' (page 42) for more ideas on how to leverage communities to work together on coordinated landscape weed management programs.

Step 3. Develop a plan

With your objectives clearly defined, you can now create your plan. A weed management plan can be broken down into who, what, when, where and why, plus details on costs and resources.

Who should be involved?

If your plan includes multiple stakeholders, it is important you agree on the objectives. Allocating responsibility for each action will reduce confusion and help you to monitor progress.

Consider whether you have the skills needed for all actions. You may need to seek help from a weed professional, your neighbour or your local weed management authority.

You may also be able to bring together various stakeholders in a coordinated, landscape-scale weed management program (see 'Better together' page 42).

What are you doing?

State the weed management objectives, and realistic timeframes for achieving them. What are you trying to protect? How does this complement existing plans or past works?

How are you doing it?

Identify the control techniques that best suit the species present and their density (refer to Chapter 4). Determine actions to address factors that might be causing or exacerbating the problem, such as inappropriate dumping of vegetation at your site that could introduce more cat's claw creeper or Madeira vine propagules. Also consider how your control techniques might cause disturbance or erosion, and identify ways to minimise this.

When are you doing it and for how long?

Consider the best times to carry out control treatments based on control efficacy and safety of personnel (e.g. cat's claw creeper control is most effective if carried out before seed set to minimise spread). See Chapter 4 and the 'Better together' section of this chapter (page 42) for further information on the best time to control cat's claw creeper and Madeira vine.

Ideally, the plan will cover at least three years and be reviewed annually to examine progress and make changes if necessary. Remember to include follow-up activities and monitoring: cat's claw creeper and Madeira vine infestations may require many years to control.

Be flexible with your timing to adapt to unforeseen circumstances such as drought, floods, fires or other extreme weather events. You may also have to alter timing of activities based on other factors, such as the regeneration of native vegetation following removal of weeds. If resources allow, incorporate the assessment and/or control of other invasive weeds at the same time.

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Keep track of planned management activities using a calendar that combines your weed management tasks with other jobs on the site. This will help identify conflicts and efficiencies in your overall site management.

Plan for any absences: ensure your plan is available to others and built into ongoing programs so that it is followed even if you are not around.

Where will you do it?

Based on your objectives and priorities (Step 2), clearly identify where the works will be carried out. If it is a multi-year plan, you might identify priorities that will be tackled at different times throughout the program. If you are taking an integrated approach, you may have several sites you are targeting at the same time but using different control techniques. If your site is a catchment area, undertake staged management, working from the top to the bottom of the catchment to reduce reinfestation of previously controlled areas. To communicate where you will be working:

- identify sites on your map
- clearly state your management objective for each site (e.g. prevention, eradication, containment, asset-based protection)
- link to the calendar for when management will occur at those sites.

What are your resources?

It is critical to assess whether you have access to the skilled personnel, funds and equipment needed to complete the work. Human resource considerations include:

- available skills sets
- workplace health and safety obligations
- insurance
- availability
- how to avoid burn out.

How much will it cost?

This is a frequently asked question with no clear answer. The cost of weed management can vary greatly depending on the size, density and location of the infestation, site accessibility, preferred control technique – the list goes on!

To help estimate weed management costs:

- consider total management expenses including running costs, labour, equipment purchases or hire and, in remote areas, any travel, accommodation and meal allowances
- determine short-term and long-term budgets based on each management phase
- factor in the (often underestimated) costs of follow-up and monitoring.

To reduce costs:

- borrow equipment from neighbours, local councils, Landcare groups or natural resources management organisations
- consider the cost implications of whether work is carried out in-house or by a contractor (the latter may still be more cost-effective)
- access any available financial incentives, grants, low-interest loans or labour programs
- carry through with your entire weed management plan to mitigate the cost implications of partial action or inaction.

Step 4. Implement the plan

Commence your management program. Use your plan to keep on track and stay motivated. Share your successes, setbacks and learnings along the way to encourage support from others.

Remember to prevent the spread of weed propagules and pathogens by disposing of weed refuse appropriately and creating hygiene protocols (see Chapter 4).

Step 5. Monitor and review progress

Monitoring is an essential component of your weed management program. Your approach should be set up during planning, commence at the start of your control efforts and continue during and after control efforts (Figure 3.2).

Why monitor?

Monitoring allows you to:

- measure the success of your management program's objectives and goals
- decide if you need to adjust your management program, particularly in the initial stages
- assess the rate of native regeneration
- identify new weed infestations or other issues that may affect your program success
- communicate progress to stakeholders
- identify which actions worked—and which didn't—for translation to future management plans.

Finally, if you document what you did and how, others can learn from your success and follow your example.

When to monitor?

To make more efficient use of time, monitoring can be incorporated into follow-up activities (see Step 6 and Chapter 4 for a discussion on follow-up).

Monitoring approaches

Monitoring approaches range from simple to complex and at a minimum should include:

- maps that document expansion/reduction of infestations relative to the maps prepared at the start of the program (baseline maps)
- photo monitoring (see Box 3.2 'Establishing photo monitoring points') to provide an easy 'visual' method of assessing change over time
- a log or diary of activities, dates and climatic and environmental factors to help determine why some methods may have worked one year but

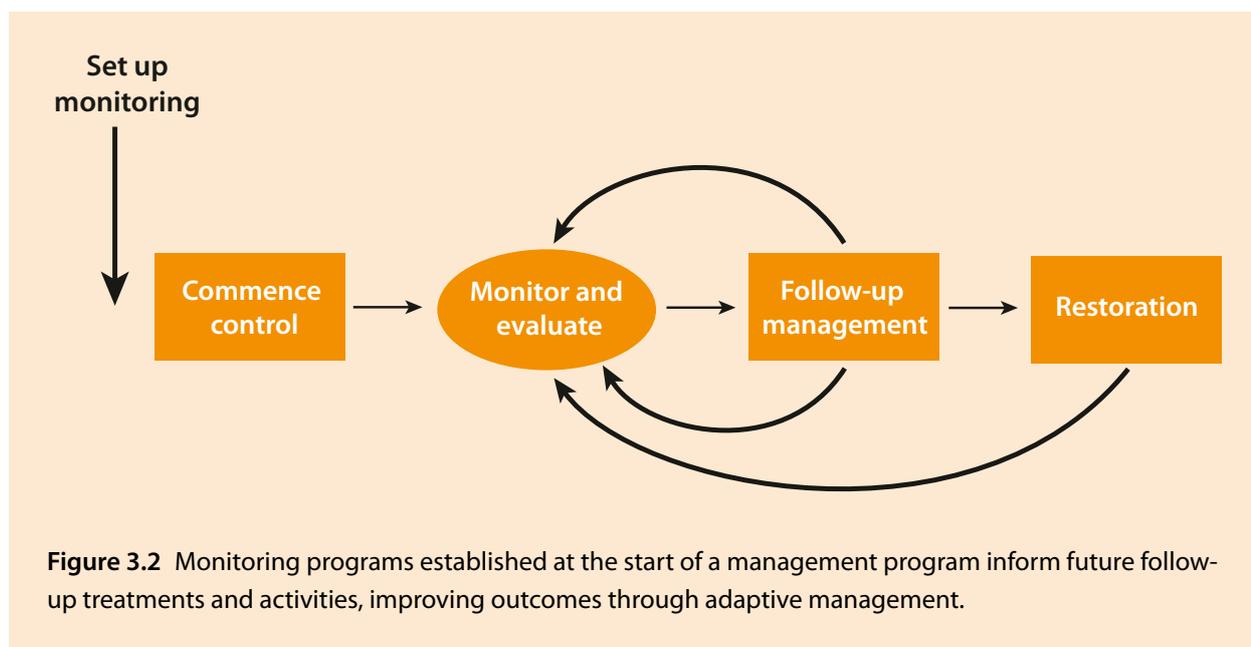


Figure 3.2 Monitoring programs established at the start of a management program inform future follow-up treatments and activities, improving outcomes through adaptive management.

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not in another (see Chapter 6, 'treatment record sheet')

- records and assessment of your program's expenditure
- records of herbicides used and their efficacy
- recording failures as well as successes to ensure ongoing improvement and development of management practices
- biocontrol agent release sites, population changes and impacts (see Chapter 4)
- quadrats or transects to quantify changes in weed densities or the response of native plants.

Reviewing progress

An annual review of your plan is recommended to inform what changes are needed for the following year. Examples of some review questions and monitoring techniques to address them are provided in Table 3.3. Draw on the information gathered in Step 1 to measure these questions against a baseline.

Given most weeds require multiple years of follow-up control, you may not be making major changes to your plan initially (unless a control method is clearly not working). When substantial gains have been made against target weeds, usually after at least several years, you can shift your focus to other weeds of lower priority.

Table 3.3 Examples of review questions.

Review questions	Related monitoring techniques
Has the extent (area) of the weed infestation increased or decreased?	Update the site map to record any changes in weed distribution or any new weeds.
Has the density of the weed increased or decreased?	Check against categories in Table 3.1.
Are native plants recovering?	Native species can also be assessed using the categories in Table 3.1. You can also use photo points or quadrats and transects.
Which control methods have been most successful?	Establish trials of different methods, compare results and record efficacy.
How much is control costing?	Calculate costs from your record keeping. This should include logistics, equipment, labour and chemicals.

Box 3.2 Establishing photo monitoring points

Set up correctly, photo monitoring can be one of the cheapest and most reliable records of change over time. It is quick, inexpensive, requires little technical skill and causes little to no site disturbance. To establish photo monitoring points:

- mark out the location at which the photo will be taken (e.g. with a star picket)
- record the location with GPS or using a camera that attaches geospatial data to the image
- align photos in a north–south direction to avoid excessive sun or shadow – if this is not possible, record a compass bearing of the direction the camera is pointing and try to have the sun behind you when taking photos
- avoid excess glare or downward shadows when taking photos. Try to do so on a slightly overcast day
- include distinct objects in the photo to provide a basis for comparison (e.g. a significant tree or piece of infrastructure)
- take photos as frequently as needed to show changes
- ensure geospatial data is turned on with the camera or recording device when taking photos and video so that the spatial data is attached to the image
- take photos at the same time of year using the same camera and settings for annual comparisons.

(a)



Rachel Hughes

(b)



Rachel Hughes

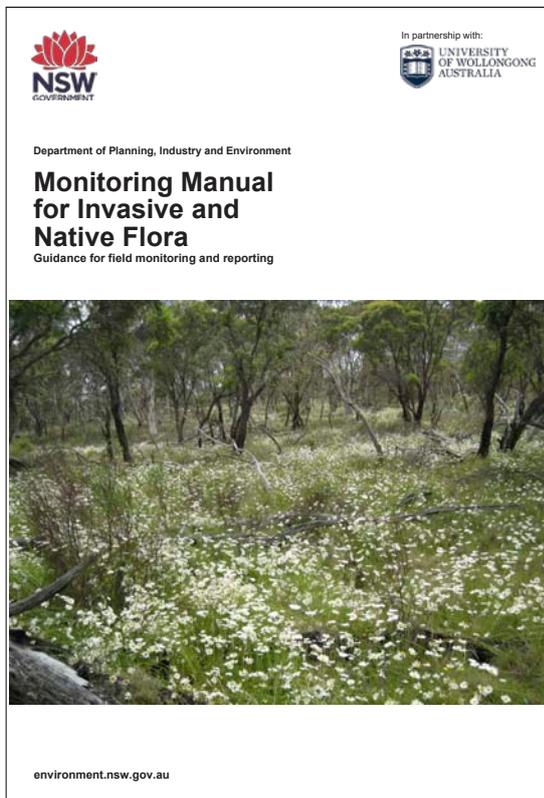
Photo point images showing an infestation of cat's claw creeper (a) before and (b) after control.

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Further information

The following publication provides in-depth information on the different methods of monitoring and reporting before, during and after weed control programs:

Monitoring Manual for Invasive and Native Flora (Watson et al., 2021). Available at: environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/monitoring-manual-for-invasive-and-native-flora-210638.pdf



Step 6. Follow-up

Successful management of cat's claw creeper and Madeira vine requires a commitment to a long-term program. It will take many years of follow-up to exhaust the tuber bank, or at least reduce it to levels at which impacts are low or negligible. Set out the timing of your follow-up activities during the planning stage so that this important activity is factored into budgets and work plans.

The main consideration in planning follow-up is to determine timing and frequency. The aim is to:

- prevent or minimise further seed set in cat's claw creeper
- prevent or minimise dispersal of aerial tubers in Madeira vine
- commence follow-up control of vines that resprout from tubers while small and before they re-establish in the canopy.

See Chapter 4 for more information.

Step 7. Restoration (optional)

Ecosystems vary in how they respond to intervention to improve ecosystem health and function. For many ecosystems, we do not know enough about them to understand how to restore them. For this reason, restoration is included here as an optional step. It is valuable at the planning stage to consider whether restoration will be part of your long-term plan.

Researching answers to the following questions can help you assess this:

- Is there any evidence of the ecological community under management benefiting from restoration?
- What interventions could be considered (e.g. planting, soil stabilisation)?
- What is the likely cost of restoration and how long will it take?

- How will restoration change, compromise or complement ongoing weed management?
- Who would need to be involved?

If you decide to include restoration, you may want to develop a separate restoration plan. More guidance is provided in Chapter 4.

Working together on weeds

Weeds do not respect property boundaries, and a coordinated approach with neighbours will result in effective control programs. Approaches can be implemented at different scales (local, landscape) and either informally or formally.

Local – informal

This is a grassroots approach in which a rural neighbourhood chooses to work together on a common weed problem. Such cooperation can be quite informal; for example:

- welcoming new landholder arrivals and providing them with information on local weed problems
- organising site walks to discuss control methods
- sharing weed control equipment
- agreeing to let each other know if you observe a weed outbreak on your neighbour's property
- having an in-principle agreement that neighbours may hand pull the occasional weed appearing just over the fence.

Local – formal

A more formal approach is to form a weed-focused community group. Recommendations on how to achieve this from the Australian Centre for Culture, Environment, Society and Space (ACCESS), University of Wollongong are detailed below. Key points are:

- establishing an agreed, common goal for the weed in the local area

- defining the boundaries within which the weed will be tackled
- creating an achievable workplan
- sharing the organisational and weed management load
- documenting and promoting what has been achieved.

Regional

The next level of collaboration is a district coordinated control program run by a biosecurity officer to tackle a regional priority weed. Understanding and developing social relationships is vital for planning and implementing such a program. Guidance to help establish the social context is provided by ACCESS and is presented below.

Key points are to:

- tap into existing networks to reach land managers
- understand community diversity, capacity and views concerning weed management
- build community support for viewing the control of the weed as a priority
- document where the weed is and where it could spread to – who is affected now and who is at risk?
- establish what has been successful regarding timing and methods of control
- draft a regional weed management plan that includes both social and technical considerations
- establish a steering committee to oversee the plan's implementation.

Chapter 3

Better together: building networks and shared objectives to achieve landscape scale control



Coordinated control of invasive vines and scramblers provides many benefits to land managers, from building neighbourly relationships and support networks, though to reducing the spread and impact of the weeds themselves. Making connections with others may provide motivation, knowledge and friendships and help ease the burden of weed control. Working together can be especially beneficial in breaking the back of established weed infestations.

This section provides tips for property managers, community groups and weed management professionals to leverage and coordinate communities to achieve landscape control.

Tips for property managers and community groups

There are many examples across Australia of property managers, including community groups, successfully working together across properties to reduce their shared weed burden. These tips come from observing community groups working with a diverse range of weeds.

1. Identify a group of people concerned about the target weed and passionate about working together. Locate them through a community meeting, social barbeque, Facebook group or other opportunity.

- 2. Develop a common goal;** for example, prevent the weed from going to seed, reduce local spread or local eradication.
- 3. Define a clearly bounded area** to work together on weed control; for example, a river corridor, small valley, several adjoining properties or a rural residential estate. Define an area consistent with the amount of time and resources you have to invest in weed management; too large an area can mean results take too long to see and motivation wanes.
- 4. Develop a plan to prioritise your efforts** within the clearly bounded area. This may involve focusing on the lightest infestations and the outliers, and then working in towards the densest infestation. Include:
 - the activities the group will use to address the weed; for example, working bees, individuals looking after specific sections, employing a contractor to reach difficult-to-access areas or to manage particularly dense infestations
 - the frequency (e.g. weekly, monthly) and timing (e.g. Tuesdays) of any group work
 - whether there are any native animals or plants currently benefiting from the weed – this ensures your management activities are undertaken sensitively.

Ensure you have landowner(s) permission (and ideally involvement) before commencing planning and work.

5. Ensure a social component to activities – keep motivation going through social activities (e.g. sharing afternoon tea at the end of a working bee). This enables groups to reflect on what they have achieved together, beyond what they could have achieved alone, determine their plan's effectiveness and whether the clearly bounded area is too big or small.

6. Share the load – organising working bees, contractors and other weed control activities can become an administrative burden that undermines the group's longevity. Assign group roles based on experience, expertise and interest in key areas such as:

- communications – for sharing information about group activities on social media or via email
- recruitment – for inviting and welcoming new people to the group
- grant writing – to apply for funding to support group activities
- plant identification – to teach members to identify the target weed(s) and other plants.

Also share the weed control load. Groups of neighbours might rotate work on each other's properties, finishing each rotation with a barbecue or other social activity.

7. Document your journey – for example, photos or brief written accounts of weed management impacts – to showcase your successes, develop a collective sense of achievement and attract new recruits. Recording lessons learned may also be useful for other groups.

8. Connect with others – make connections with groups addressing the same, or similar, weeds in neighbouring areas or further afield. Share your knowledge and resources and the activities and decisions that have (and haven't) worked. Link with local, state government and non-government organisations for potential funding and grants, resources and support.

Tips for weed professionals

The following points guide professional weed control officers in understanding and working with their local communities to develop coordinated weed management programs for priority regional weeds.

1. Know who – identify, understand and encourage social relationships

Identify existing land manager networks

Networks, including those that are not weed specific, may be leveraged for communicating weed-related messages and events; for example:

- farming networks – producer groups, sustainable farming, restorative agriculture
- volunteer networks – Landcare groups, community associations, Rural Fire Services
- agronomist and other advisor networks
- local government
- regional NRM bodies (e.g. Local Land Services), regional managers of reserves (e.g. conservation, water) and existing cross-agency bodies (e.g. roadside environment committees).

Understand the local community

Understanding the composition, capacities and perspectives of the community will help to determine weed control priorities, preferred control methods, underlying issues related to

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weeds and weed control, and where tensions are likely to emerge. Consider:

- the proportion of land managers that are Indigenous land managers, production farmers, hobby farmers/life-stylers, government or corporate (e.g. forestry)
- how these proportions have changed over time
- which land managers and weed management experts people currently turn to for advice
- who may be most interested in building their capacity to manage weeds.

Build trust

Encourage formation of positive relationships among land managers and other stakeholders. Consider:

- bringing together land managers who may not know one another early on
- prioritising weed management along private and public boundaries to demonstrate commitment to being a good neighbour
- developing relationships with other relevant stakeholders with land management aspirations – for example, Indigenous organisations and community groups – to broaden the weed management knowledge base and practice.

2. Know what and know why – prioritise your target weed relative to other weeds and land management issues

Establish the community's priority weeds

Where does your target weed fit in relation to the list of weeds that are declared for control? What are the other key weeds of community concern? These may be different from locally

declared weeds or other formal priorities.

Are some segments of the community more concerned about your target weed than others?

Establish your target weed's community impacts

What are the motivating factors that drive people in the community to control the weed? Are they to do with protecting livestock? Being a good neighbour? Caring for nature? Having a tidy-looking property?

Identify the benefits of controlling your target weed

This includes not only reduced weed density and spread but also environmental, economic and social benefits resulting from working together on weeds.

3. Know where – where is your target weed located and most likely to spread?

Map the weed extent

Establish where the core and outlying infestations are. The weed may be widespread in some areas, but emerging in others. Knowing its extent and density will be important in developing a plan for where to prioritise on-ground works, how to allocate resources and to identify stakeholders in adjoining areas who could benefit from joining the initiative.

Consider any boundaries the weed crosses

Any land tenure boundaries the target weed crosses will have management implications that need to be considered.

- Does the target weed spread across private land or public land?
- Does it spread along corridors, such as rivers, roadsides, travelling stock routes or irrigation channels?

- Do opportunities exist to coordinate the timing of management along corridors or across boundaries for more effective control?
- Are there stakeholders whose jurisdiction spans similar boundaries to the weed who could facilitate coordinated responses?

4. Know how – what approaches have been used to control your target weed locally?

Identifying and examining stories of previous target weed control success, failure and experimentation provides for collective learning and insights into the time and approaches needed to achieve success. Were there any weaknesses inherent in unsuccessful past efforts where land managers had given up? How long did any successful effort take to achieve?

- 5. Know when – identify the most effective time to control your target weed.** Timing is critical to successful weed control. Consider how the optimum weed control time fits with other community commitments such as sowing, harvesting and summer holidays. Will

land managers have the capacity to control the target weed at certain times of year or during periods of seasonal difficulty such as floods and drought?

- 6. Bringing it all together – develop a weed management plan.** Develop a landscape-scale weed management plan that brings together your understanding of both the weed and the local community. This is fundamental to leading an effective weed management program. Consider establishing a steering committee to help develop the plan, engage with diverse stakeholders and oversee its implementation. Follow the seven steps at the beginning of this chapter.

Acknowledgements: This section was prepared by the Australian Centre for Culture, Environment, Society & Space (University of Wollongong) with contributions by A/Prof Nicholas Gill, A/Prof Jenny Atchison, A/Prof Sonia Graham, Dr Gina Hawkes, Dr Kaitlyn Height, Dr Rebecca Campbell, Crystal Arnold, Diana Dawson, Jennifer Smart, Janine Bailey, Laura Butler.

Management Plan Checklist

Step	Further information
1. Assess the situation	
<input checked="" type="checkbox"/> Identify and liaise with relevant land managers	
<input checked="" type="checkbox"/> Identify and research the target species (both weeds and native)	Chapters 1, 2, 4 and 6 of this manual Local field guides Council and government websites
<input checked="" type="checkbox"/> Map infestation and key assets	A Field Manual for Surveying and Mapping Nationally Significant Weeds
<input checked="" type="checkbox"/> Consider weed density	Chapter 3 – Planning Vegetation assessment guides
<input checked="" type="checkbox"/> Establish a baseline for future reference	
<input checked="" type="checkbox"/> Identify site risks to safety and welfare	
2. Define objectives and priorities	
<input checked="" type="checkbox"/> Set your objectives (prevention, eradication, containment or asset protection)	Early Invader Manual: Managing Early Invader Environmental Weeds in Victoria (environment.vic.gov.au/invasive-plants-and-animals/early-invaders)
<input checked="" type="checkbox"/> Prioritise areas for control	
<input checked="" type="checkbox"/> Consider other requirements	
3. Develop a plan	
<input checked="" type="checkbox"/> Who will be involved?	Introductory Weed Management Manual
<input checked="" type="checkbox"/> Describe what you are aiming for and why	
<input checked="" type="checkbox"/> Describe management methods	Chapter 4 – Management
<input checked="" type="checkbox"/> Establish a calendar of actions	
<input checked="" type="checkbox"/> Link what you are doing to your site map	
<input checked="" type="checkbox"/> Identify resources and management costs	
<input checked="" type="checkbox"/> Find out what else is being done – can you coordinate for wider-scale control?	Contact your local weed authority Chapter 6 – Further information
4. Implement your plan	
<input checked="" type="checkbox"/> Get started	
5. Monitor and review progress	
<input checked="" type="checkbox"/> Establish a monitoring program that outlines what and how you will monitor	Chapter 3 – Planning Monitoring Manual for Invasive and Native Flora Weeds and Pests on Public Land – Weed Monitoring Protocol
<input checked="" type="checkbox"/> Is management adhering to your priorities and goals?	
6. Follow-up	
<input checked="" type="checkbox"/> Have you allowed for adequate follow-up?	Chapter 4 – Management
Restoration (optional)	
<input checked="" type="checkbox"/> Will restoration form part of your long-term management plan?	Chapter 4 – Management