ENVIRONMENTAL WEED STRATEGY FOR WESTERN AUSTRALIA

DEPARTMENT OF CONSERVATION
AND LAND MANAGEMENT

ENVIRONMENTAL WEED STRATEGY FOR WESTERN AUSTRALIA

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Environmental Weed Strategy for Western Australia

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EXECUTIVE SUMMARY

Management of environmental weeds in Western Australia is one of the major management issues requiring action if we are to protect our natural environments for future generations. Competition from weeds is a major process affecting threatened flora and threatened ecological communities. Many critically endangered plants have populations restricted to small , disturbed areas (e.g. remnant vegetation on private property and road verges). These are particularly vulnerable to invasion by environmental weeds and will receive priority for weed control, particularly through the implementation of recovery plans developed by the Department of Conservation and Land Management.

Environmental weeds are plants that establish themselves in natural ecosystems and proceed to modify natural processes, usually adversely, resulting in the decline of the communities they invade. Many environmental weeds are successfully invading Western Australian ecosystems. Some of these weed species are having a significant impact on biological diversity at genetic, species and community levels. More work is needed to understand the reasons for recent explosion of many weeds and the impacts weeds have at the ecosystem level. Research is vital to increase understanding in these areas to enable strategic management approaches.

CALM received funding through a Natural Heritage Trust (NHT) grant to prepare the Environmental Weed Strategy for Western Australia (EWSWA). The Strategy has been prepared by consultants and a Steering Committee comprised of various government agencies (CALM, Agriculture WA and the Water and Rivers Commission) and community groups concerned with environmental weed management.

The Environmental Weed Strategy for Western Australia and the associated environmental weed database provide both the direction and an approach to tackling this large problem. The Environmental Weed Strategy will ultimately contribute to the State Weed Strategy which will address both agricultural and environmental weeds.

In developing the Environmental Weed Strategy for Western Australia, criteria for the assessment and ranking of weeds in terms of their environmental impact on biodiversity were formulated. Three criteria were selected to rate weeds. These were:

- invasiveness,
- distribution, and
- environmental impacts.

A list of 1350 weeds were rated as either high, moderate, mild or low against these criteria. Thirty four (34) weed species were rated as high.

An integrated approach to environmental weed management has been developed by this Strategy. It involves the planned use of the following control options:

- weed led control
- site led control
- resource led control
- threatened species and communities led control, and
- cause led control.

The Strategy addresses adverse environmental impacts of weed management and advocates revegetation strategies to be undertaken alongside weed removal.

Control options for environmental weeds include:

- controlling ecosystem degradation processes
- herbicides
- biological control
- manual control, and
- fire management.

For many ecosystem/weed combinations in WA the best control options are not known and further research is required.

Monitoring programs covering the physical locations of weeds, rates of spread, success of control containment operations and the success of community effort are proposed. The Strategy recommends that monitoring efforts should be undertaken at patch, local, regional and State levels.

To successfully coordinate and integrate environmental weed management, the EWSWA advocates the establishment of the State Environmental Weed Group supported by CALM to bring together expertise for particular purposes.

The lack of specific legislation for environmental weed management is a major concern which can be corrected through revision of existing legislation to ensure clarity in defining roles and responsibilities

Environmental weed management in Western Australia will require significant resources to be successful. Resources include people resources, information resources and funding. Weed management requires long term action. Resources need to be applied in the long term if the Environmental Weed Strategy is to be successful.

The Strategy recognises that the community is now playing a significant beneficial role in environmental weed management and awareness raising in Western Australia. Constraints have been identified to greater involvement by the community in achieving best practice and in maximising outcomes. The Strategy suggests means to overcome these constraints so as to mobilise the community not only in actual weed control but also in awareness raising, training, research and monitoring of environmental weeds in WA.

ACKNOWLEDGEMENTS

Funding assistance provided by Environment Australia through the National Weeds Program of the Natural Heritage Trust is gratefully acknowledged.

The Environmental Weed Strategy for Western Australia has been prepared with the input of a number of people drawn from the field of weed sciences and management and community groups.

A Steering Committee consisting of the following people oversaw the preparation of the Strategy:

Mr Frank Batini	Chairperson CALM
Mr John Asher	Project Manager CALM
Mr Roger Armstrong	CALM
Mr Greg Keighery	CALMScience
Mr Patrick Pigott	CALMScience (Herbarium)
Mr Bevan Uren	Agriculture WA
Mr Rod Randall	Agriculture WA
Ms Verity Klemm	Water and Rivers Commission
Ms Marion Blackwell	National Parks and Nature Conservation Authority
Mr Tom Alford	Wildflower Society
Ms Joanna Seabrook	Environmental Weeds Action Network
Ms Judy Fisher	Environmental Weed Action Network

A workshop was undertaken as part of the preparation of the Strategy. Those who participated were:

Mr Rod Randall	Agriculture WA
Dr John Dodd	CSIRO
Dr John Scott	CSIRO
Mr Bob Dixon	Kings Park and Botanic Garden
Ms Penny Hussey	CALM
Ms Sandy Lloyd	Agriculture WA
and Steering Committee Members	

Mr John Thorp, Project Manager, National Weed Strategy Executive Committee provided valuable advice on ranking weeds.
Mr Greg Keighery, CALMScience contributed a large personal effort to rating the environmental weeds.
Messrs Neville Marchant, Paul Gioia, Alex Chapman and Nicholas Lander from the WA Herbarium provided technical information, support and guidance.

The Plant Protection Society allowed use of information from their recently published *Western Weeds, A guide to the weeds of Western Australia*, (Hussey et al., 1997).

The consultant team acknowledges and is deeply appreciative of the support and enthusiasm given by the above people in the formulation of the Strategy.

SUMMARY OF RECOMMENDATIONS

Chapter 3

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R3.1	Produce guidelines for integrated weed management and case studies to illustrate the guidelines. Adjacent landowners should receive encouragement to control weeds on their land, where integrated programmes are planned.	Agencies, with assistance in coordination from SEWG where required.
R3.2	The sale of plant species with high weed potential for either domestic use, revegetation or commercial use should be discouraged, by voluntary adoption of best practice by the relevant industries.	SEWG to promote via member organisations.
R3.3	Review current regulatory mechanisms and best practice concerning the sale and distribution of potential weed species or materials potentially containing weed species and recommend changes.	CALM, AgWA.
R3.4	Establish a mechanism to monitor the presence of new weed populations and the proliferation of existing "sleeper" weeds to ensure rapid action is undertaken if a weed is inadvertently or deliberately introduced or begins to spread rapidly.	Agencies, with assistance of SEWG as required.

Chapter 4

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R4.1	Facilitate research by the Federal Government into the biological control of weeds impacting on biodiversity in Western Australia.	Agencies with assistance of SEWG as required.
R4.2	Facilitate research into appropriate fire regimes for Western Australian ecosystems in terms of fire intervals, intensities and patchiness, and their relationship to environmental weeds.	Agencies managing natural areas, assisted by SEWG.
R4.3	Certify additional herbicides for environmental weed control to increase the range of treatments available.	Pesticide companies encouraged by SEWG.

Chapter 5

RECOMMENDATION		
Number	**Action**	**Responsibility**
R5.1	Monitor and evaluate weed control programs at patch, local, regional and State levels. Develop adequate training and pro formas for those undertaking these tasks.	Agencies, with assistance from SEWG as required.

Chapter 6

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R6.1	The coordinating group to consist of members from local government organisations, State government agencies, private landowners, industry, research institutions and community organisations. It is proposed that this group be called the **State Environmental Weed Group** and that members be appointed by the Minister for the Environment.	State Government

R6.2	Provide the State Environmental Weed Group with executive and secretarial support.	CALM

Chapter 7

RECOMMENDATION		
Number	**Action**	**Responsibility**
R7.1	The lack of a specific legislative base for environmental weed control should be corrected through revision of existing legislation.	CALM

Chapter 8

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R8.1	Identify Government, industry and community resources and skills available for weed control. Identify deficiencies and recommend options for resolution.	Agencies, industry and community groups with assistance from SEWG.
R8.2	Identify sources of and promote funding for control of environmental weeds.	Agencies and community groups with assistance from SEWG.

Chapter 9

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R9.1	Increase public awareness of the importance of and threats posed by environmental weeds.	Agencies and community groups with assistance from SEWG.
R9.2	Encourage and support community participation in all aspects of weed management and control.	Agencies supported by SEWG where required.
R9.3	Support existing training programs for weed control and bush regeneration. Encourage establishment of new training programs.	Agencies, educational institutes, community groups supported by SEWG where required.

1. INTRODUCTION

In recent centuries the world's flora has undergone a vast, human-mediated dispersal. The process accelerated in the nineteenth and twentieth centuries as the volume and speed of intercontinental traffic increased. In some countries human-mediated changes to the indigenous flora have occurred over such a long time period that the concept of conserving and protecting the original ecosystems has little practical meaning. However, in Western Australia, the relatively recent introduction of new plants into the landscape means that we are currently occupying a region whose flora and vegetation are in a state of flux. Representative examples of most ecosystems exist that are free or relatively free of introduced plants. As a community we have enough scientific knowledge to identify and value our vegetation communities and structures, as well as their biota. We are faced with the dilemma of a flora in flux, knowledge of our role in the introduction and spread of exotic species and the understanding that we must do something to conserve and manage what we have.

The natural process of plant dispersal, particularly over intercontinental barriers, is slow and selective. Human-mediated plant dispersal can occur as rapidly as human transport systems operate. The volume and range of materials now transported globally, and the growth of the horticultural industry, increase the opportunity both for purposeful and accidental introductions. The role of illegal inshore discharge of ship's ballast water in introducing both macroalgae and microalgae has resulted in the introduction of Japanese Kelp, *Undaria pinnatifida*, to the waters off southern Australia where it has the potential to alter the structure and composition of continental shelf ecosystems (Anon, 1997).

Environmental weeds are plants that establish themselves in natural ecosystems (marine, aquatic and terrestrial) and proceed to modify natural processes, usually adversely, resulting in the decline of the communities they invade. Impacts of environmental weeds on ecosystem function include:

- resource competition
- prevention of seedling recruitment
- alteration to geomorphological processes
- alteration of hydrological cycle
- changes to soil nutrient status
- alteration of fire regime
- changes to the abundance of indigenous fauna, and
- genetic changes

(Carr et al., 1992; Humphries et al., 1993, Csurhes and Edwards, 1998).

Environmental weeds require management to ensure the long term survival of our natural ecosystems. Management solutions for environmental weeds are complex and require technical commitment, research, long term monitoring programs, training in ecosystem restoration and a commitment to maintaining our natural environments. The management of the vast natural resources of the state needs the support of government, landowners and managers, private enterprise and community groups.

The management and control of environmental weeds should be seen in the context of the restoration of the environments they invade. The removal of a Blackberry (*Rubus spp*) infestation from a creekline without restoration of the disturbed area will usually result in re-infestations of Blackberry or other weeds. Revegetating and restoring weeded areas with naturally occurring species is a critical component of the weed removal process. It is essential to increase the resilience of ecosystems through adaptive and best management practice to minimise the impacts from environmental weeds (McDonald, 1996).

Western Australia spans a wide range of climatic and geographic zones and contains 26 bioregions defined by the Interim Biogeographical Regionalisation for Australia or IBRA (Thackway and Cresswell, 1995), which represent approximately one third of the total number of bioregions in Australia (see Figure 1). Environmental weeds have impacts on a number of these bioregions, e.g.:

- Buffel Grass *(Cenchrus ciliaris)* is widely distributed and occurs in the Geraldton Sandplains, Carnarvon, Pilbara, Dampierland, Great Sandy Desert, Little Sandy Desert, Gascoyne, Murchison, Northern Kimberley, Central Kimberley, Ord-Victoria Plains IBRA regions.
- Bridal Creeper *(Asparagus asparagoides)* has widespread distribution and occurs in the Warren, Jarrah Forest, Swan Coastal Plain, Esperance, Avon Wheatbelt, Geraldton Sandplains and Mallee IBRA regions.
- Victorian Tea Tree *(Leptospermum laevigatum)* occurs in the Carnarvon, Yalgoo, Warren, Jarrah Forest, Swan Coastal Plain, Esperance, Avon Wheatbelt, Geraldton Sandplains and Mallee IBRA regions.
- Salvinia *(Salvinia molesta)* is a potential major threat to waterways and occurs in the Jarrah Forest, Pilbara and Swan Coastal Plain IBRA regions.

CALM received funds through a Natural Heritage Trust (NHT) grant to prepare an Environmental Weed Strategy for Western Australia. The development of the strategy has been carried out through a Steering Committee comprised of various government agencies (CALM, Agriculture WA and the Water and Rivers Commission) and community groups concerned with environmental weed management.

The Environmental Weed Strategy will contribute to a future State Weed Strategy which will address both agricultural and environmental weeds.

STRATEGY OBJECTIVES

- *To provide strategic direction for the management of environmental weeds in Western Australia involving an integrated and co-ordinated response.*
- *To develop a list of environmental weeds of actual and potential significance in Western Australia, including terrestrial, aquatic and marine weeds.*
- *To rate these species for their impacts on biodiversity according to predetermined criteria*
- *To develop a relational database of environmental weeds along with their biological characteristics such as life form, origin, means of reproduction, habit etc as well as methods of control. The database to be designed as a data catchment tool as well as an information base and analytical tool and be available for broadscale distribution.*

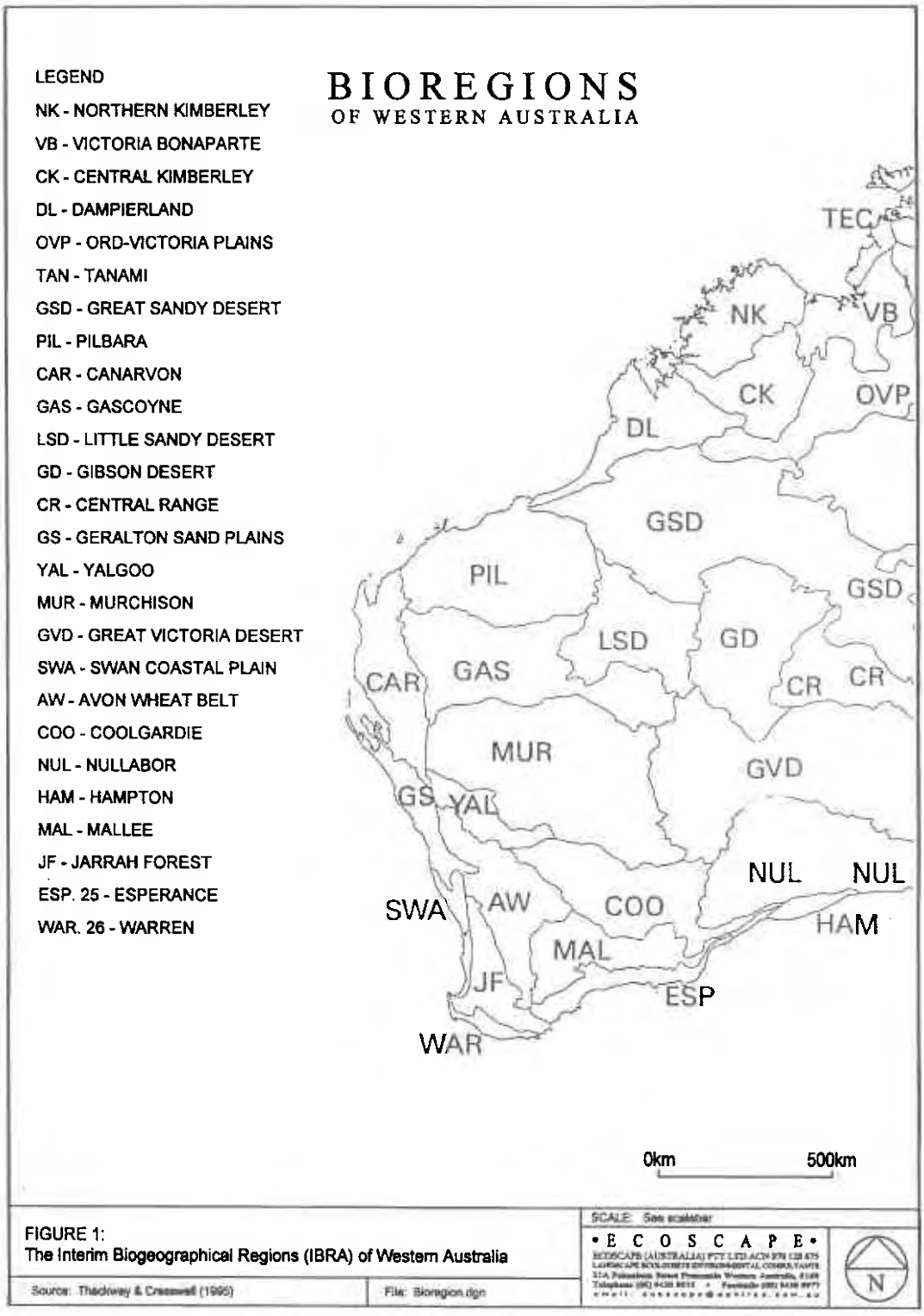


FIGURE 1:
The Interim Biogeographical Regions (IBRA) of Western Australia

Source: Thackway & Cresswell (1995) File: Bioregion.dgn

2. WEED INTRODUCTION, SPREAD AND EFFECTS ON BIODIVERSITY

2.1. Successful Plant Invasion

The key stages in successful plant invasions have been identified by Humphries (1995). These are:

- species introduction
- establishment, noting the role of both ecosystem vulnerability and species attributes
- survival
- production of numerous propagules, and
- widespread dispersal, requiring effective dispersal mechanisms and the ability (or opportunity) to cross regional barriers.

Disruption and failure of one or more of the first four stages effectively prevents widespread dispersal.

2.1.1. Species Introduction

Time is an important factor to consider. The time scale between establishment and widespread dispersal is variable. For many species, there has been a lag of years or decades between initial establishment and the awareness of the species as an environmental weed. *Mimosa pigra* was introduced to the Northern Territory in the late 19th Century. It was not until the 1970's that it suddenly began to spread in riverine systems and has the potential to replace riparian and wetland fringing vegetation through much of northern Australia. The time scale in which the effects of a weed or a suite of weed species may be observed may also vary between weed species. For example Rubber Vine *(Thunbergia grandiflora)* can smother tropical lowland rainforest canopies within months of initial establishment, whereas grassy weeds which compete with indigenous shrubs for recruitment opportunities may take decades for their effect to be visible.

Mechanisms for the spread of species from one location to another may include:

- transport corridors
- fragmentation (stem or root)
- dumping of garden rubbish
- faeces of grazers and seed-eating birds
- wind-borne spores or light weight seed
- grazing or pasture development
- clearing of native vegetation
- flowing water
- landscaping/gardening

2.1.2. Establishment

Establishment of an invading species in a new location is dependent on two groups of characteristics, the intrinsic characteristics of the weed species and the vulnerability or resilience of the community being invaded. Species with broad habitat requirements, rapid growth and the ability to reproduce vegetatively as well as sexually, are generally well adapted to establishment in new locations and communities. Hobbs and Humphries (1995) postulated that the characteristics, dynamics and history of a particular site are important factors in determining the resilience or vulnerability of an ecosystem.

Watercourses are an example of habitats that are vulnerable based on site characteristics. These areas have high moisture and nutrient availability, have a natural transport mechanism and are subject to a high degree of both natural and man-made disturbance factors (Humphries, 1995). Islands, due to their small area, are vulnerable to weed invasion. This is observable in the high proportion of introduced plants in island vegetation (e.g. Norfolk Island – 60%, Lord Howe Island – 48%, Tasmania – 31%) compared with mainland Australia – 15% (Humphries, 1995). Ecosystems in the main agricultural belts tend to have high levels of disturbance and clearing. Indigenous vegetation is often only present in small isolated remnants that are highly vulnerable to weed invasion (Panetta and Hopkins, 1991).

Most West Australian ecosystems are vulnerable to some extent to invasive plant species. Several authors have noted the relationship between degree of invasion and disturbance to the ecosystem, and see weed invasion as a symptom of disturbance and disruption, rather than as the primary cause of disruption (Adair and Groves, 1998; Hobbs and Saunders, 1995; Humphries et al., 1993). Humphries (1995) lists some resilient ecosystems. These include mangrove flats, alpine areas, red sandy deserts, intact upland rainforest and intact temperate forest. The key characteristics appears to be 'intactness' and, perhaps for some, the presence of climatic or nutrient extremes.

2.1.3. Survival

The third characteristic of successful invasion is 'survival'. In red sandy desert areas and mangrove flats, for example, extreme conditions may limit the survival of invading species (Humphries et al., 1993). Weed species with a high tolerance for environmental stressors such as flooding, drought, low nutrient levels and fire, and the ability to produce stress resistant propagules have a greater chance of maintaining themselves in the post-establishment phase.

2.1.4. Reproduction

Effective reproductive strategies are a distinguishing characteristic of highly aggressive invasive weed species. Either the capacity to produce large numbers of viable seed, such as Veldt Grass *(Erharta calycina)*, or the ability to reproduce vegetatively, such as Bridal Creeper, are a major contributing factor in their success in Australia.

2.1.5. Dispersal

Dispersal strategies include the establishment of small populations at a distance from the original establishment site. These populations then may also develop outlying populations. While initial populations of an environmental weed, referred to by Hobbs and Saunders (1995) as 'nascent foci', may be small in area and low in density, once conditions are right, they are able to rapidly increase their population size and density. The result is a sudden eruption of a widescale problem. Hobbs and Saunders (1995) note that at this stage, it is difficult to predict:

- which species will become problem species
- when they will become problems, and
- what role stochastic events, such as floods or fire, play in the sudden explosion of these species.

These observations are particularly troubling when it is recognised that on a national scale, most invasive species' populations are still expanding (Humphries et al., 1991), and that the rate of plant invasion, which was linear, now is probably exponential (Carr, 1993).

2.2. Effects on Biodiversity

Environmental weed species that are of the greatest concern are those which affect or have the potential to affect biodiversity (Adair, 1995). The National Weeds Strategy identifies three levels of biological diversity that may be affected by weed invasions (Adair and Groves, 1998). These are:

- genetic diversity
- species diversity, and
- ecosystem diversity

2.2.1. Genetic Diversity

At the genetic level, environmental weeds are one factor, amongst many often inter-related factors such as clearing and changing fire regimes, that can reduce genetic diversity by reducing the viability and robustness of populations of native species. The potential for reducing genetic diversity by environmental weed species has not been quantified (except for some species already verging on extinction). The National Weeds Strategy (Anon, 1997) though, notes that quantification is now technically possible, with the advent of DNA marker technology.

2.2.2. Species Diversity

Weeds have the potential to affect the species diversity of both the flora and fauna of a community (Adair, 1995). Highly invasive weeds may change the composition of a community through competitive recruitment or through changing fire regimes. The most common outcome is a simplification of the species assemblage. The fire-weed cycle in many

woodland areas in Western Australia has lead to the progressive replacement of the original shrub layer with a perennial and annual grass understorey (Bridgewater and Backshall, 1981).

Incidental outcomes include the loss of fallen logs and standing dead timber. Shrub dependent species of birds, mammals and invertebrates may be lost from the location, notably those that rely on shrub species for nectar, seed and shelter, as well as those that require hollows for shelter and nesting. The National Weeds Strategy lists four plant species where environmental weeds have been a major factor in their extinction (Adair and Groves, 1998). The National Strategy also lists 20 other studies in Australia that have documented or quantified the impacts of environmental weeds on species richness and biodiversity.

Environmental weeds may affect ecosystem diversity by changing:

- the structure of a community by addition or removal of strata
- the fire regime which then results in the loss of species and structural components that are not directly subject to competition with environmental weeds, and
- geomorphological processes.

2.2.3. Ecosystem Diversity

The impacts of environmental weeds at the ecosystem level can be major and long lasting. Humphries (1995) notes that the Athel pine, *Tamarix aphylla*, has the potential to displace native flora, lower the water table, increase soil salinity and change river flow and sedimentation regimes.

Environmental weeds that impact on ecosystem diversity, and species diversity, have the greatest range of effects directly and indirectly on the Australian environment. Species that impact upon ecosystems with a limited distribution, or which are highly vulnerable due to fragmentation or inherent vulnerability are of particular concern. The National Weeds Strategy (Anon, 1997) notes that there is a lack of research that directly documents the impacts of invasive weeds at the ecosystem level, concluding that the effects are often so visible and dramatic that funding resources have generally been focussed on control and management research and implementation. There is a need to identify threshold levels for precipitating declines in biodiversity at all levels, as well as to identify and address land management practices that affect ecosystem vulnerability and resilience to environmental weeds.

SUMMARY

Many environmental weeds are successfully invading Western Australian ecosystems. Some of these weed species are having a significant impact on diversity at genetic, species and community levels. More work is needed to understand the reasons for recent explosion of many weeds and of the impacts weeds have at the ecosystem level. Research is vital to increase understanding in these areas to enable strategic management approaches.

3. INTEGRATED ENVIRONMENTAL WEED MANAGEMENT

3.1. Strategic Weed Management

Integrated weed management is the combination of social, economic and technical approaches that leads to successful weed management at all scales. It is the consideration and activation of the full range of weed control approaches in developing a weed control strategy that can be adopted and resourced by the Federal, State and Local Governments, private landowners and by the community.

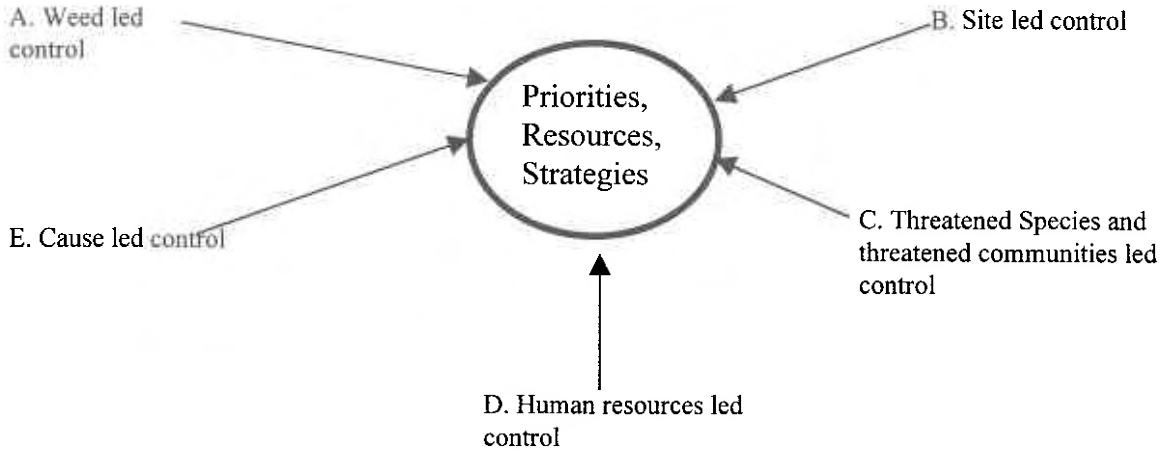
There are limited resources for environmental weed control in Western Australia and it is important that these resources are applied most effectively to achieve strategic weed management. Strategic weed management will only be achieved if there is integration of purpose and action between all the players at national, State, regional, local and patch scales. The purpose of this section is to provide a pathway towards a successful integrated weed management program for Western Australia.

Integrated weed management involves the planned use of all control options to achieve effective environmental weed management. The approaches to environmental weed management (Figure 2) include:

- weed led control
- site led control
- resources led control
- threatened species and communities led control, and
- cause led control

Figure 3 provides a flow diagram of how each approach is considered to create a strategic approach to environmental weed control.

FIGURE 2. ENVIRONMENTAL WEED MANAGEMENT APPROACHES



The challenge for environmental weed management is to look at weed control from a number of angles, to fully consider the range of possible approaches and then to decide the combination of approaches which will maximise nature conservation outcomes.

A strategic approach and agreement regarding priorities across all government agencies, private landowners and the community is required. The strategy must be agreed at all levels and resources channelled towards implementing that strategy. For example if a regional goal is to eradicate Arum Lily (*Zantedeschia aethiopica*), with the first priority being its eradication in selected nature reserves, then all government departments and local communities need to be working towards that goal. CALM could concentrate on nature reserves, possibly with the assistance of community. Local government could concentrate on sources of infestation into the reserves from roadsides and local government vested reserves, and private adjacent landowners should receive encouragement and incentives to control the weed on their land.

3.2. Priorities and Planning

Integrated weed management will provide a mechanism to maximise conservation outcomes while minimising adverse environmental impacts. The mechanism will provide the framework to allow decisions for weed control priorities to be transparent and thus able to be adopted by and resourced by all State and Local Governments, private landowners and the community. Planning for weed control at a State scale should consider the following priorities:

1. Recognise weed potential.

   Early detection and eradication of new weeds is the highest priority. Weeds must be assessed for their potential to become serious environmental weeds and targeted according to this priority. This study has developed a database of environmental weeds which incorporates a rating for each weed. The methodology for rating the weeds is explained in Appendix 1 and the design of the database in Appendix 2.

2. Maintain significant areas of all ecosystems that have vegetation in good condition (see Kaesehagen, 1995 and Keighery, 1993 for vegetation condition scales).

   Management of all ecosystems largely free of weeds, should be the next priority. While areas reserved for conservation purposes (e.g. national parks, nature reserves and conservation parks) are important, private and other lands often contain plant communities not represented in conservation reserves and maintenance of these areas in good condition is a high priority. Off-reserve conservation has been recognised as being vital to nature conservation needs (Hale and Lamb, 1997).

3. Control weeds impacting on threatened species and communities.

   Management of weeds impacting on threatened native species and communities is very important to ensure the survival of nationally significant species.

At regional, local and patch scales it is rare that a single one of the approaches described above would be used alone and normally a combination of approaches is employed. What is important is that each approach is fully explored so that a strategy, which utilises the best elements of each pathway, is developed. The decision as to the best combination of approaches will be a judgement-based consideration of effectiveness of methods, urgency for control, the anticipated conservation outcomes and the resources available.

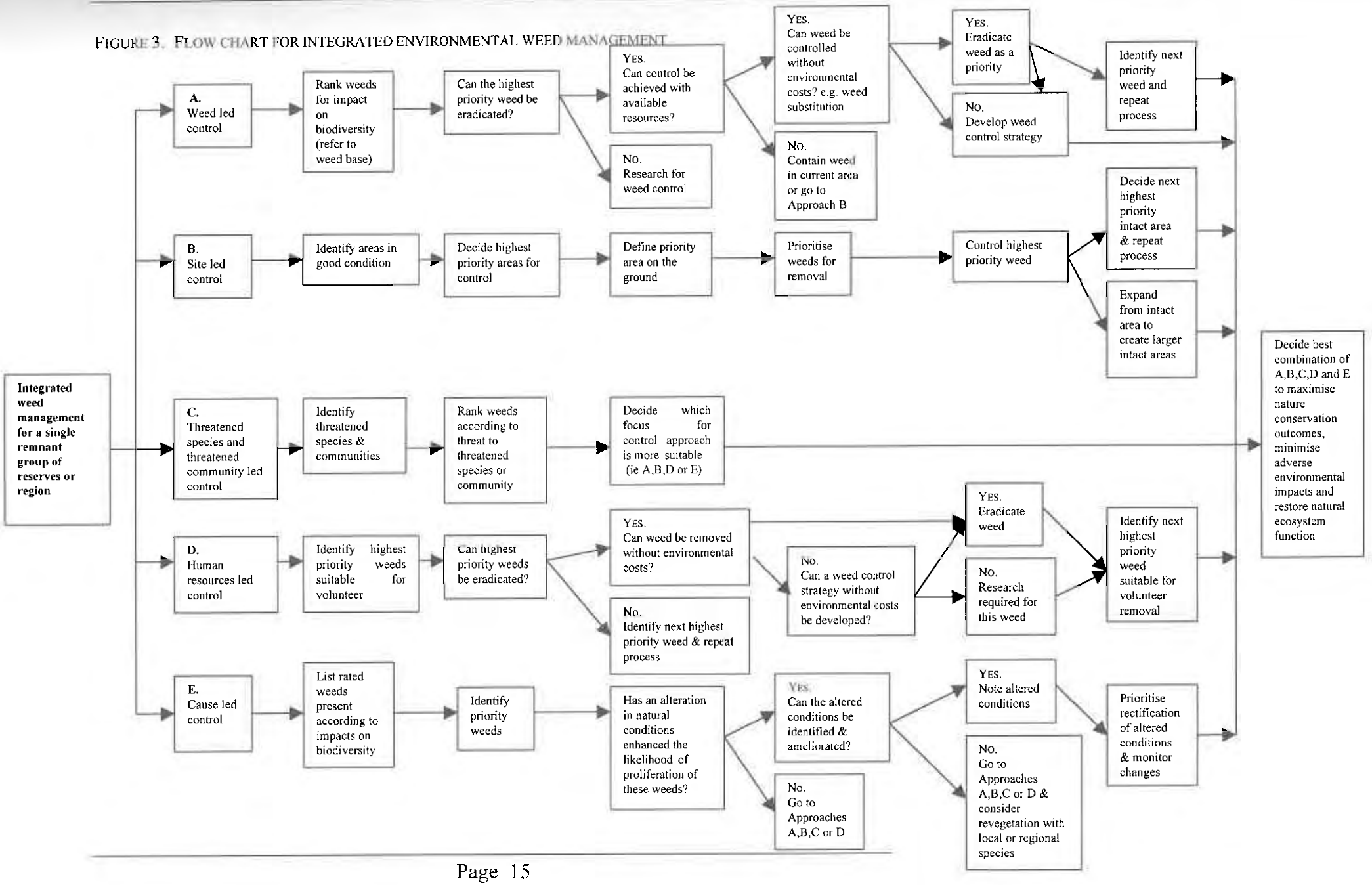
A key consideration is possible adverse impacts of weed management. Examples of adverse environmental impacts include:

- loss of faunal habitat, e.g. Blackberry (*Rubus sp.*) may provide habitat for wrens or protection for small mammals from predation by foxes and cats.
- weed substitution – a weed is removed only to be replaced by a weed which is more difficult to remove, e.g. Lupins (*Lupinus sp.*) substituted by Rose Pelargonium (*Pelargonium capitatum*) on the Swan Coastal Plain when Lupins are removed.
- chemical effects of fauna, e.g. impact on frogs by chemical sprays used for weed control.

Many potential adverse impacts of weed management can be prevented by revegetation with appropriate local species at the same time as weeds are removed. This approach maintains habitat values and reduces the risk of weed substitution.

Guidelines to determine which approach or which combination of approaches is most effective in particular circumstances would assist weed managers. It is important that such guidelines be produced. A case study approach will be most effective in communicating the complexities of weed control.

FIGURE 3. FLOW CHART FOR INTEGRATED ENVIRONMENTAL WEED MANAGEMENT



3.3. Weed Led Control

Controlling potentially significant new environmental weed species is essential if control is to be effective in the long term. Weed led control is a proactive strategy to prevent introduction, establishment, survival, reproduction and dispersal of an emerging environmental weed before it becomes a major problem either at a patch, local, regional, State or national level. Prevention and eradication is a powerful tool for weed managers in their efforts to control the expanding number of weeds. A species that is widespread can only be controlled as part of a site led program not a weed led one.

3.3.1. Preventing Weed Introductions

Prevention of weed introductions is significant at all scales:

- On a national and state level quarantine and assessment processes need to be at a sufficient level to prevent the introduction of new weeds to the nation or State. Education is vital to help the community understand the risks from weed introductions; and

- At regional and local scales prevention of new weed introductions is important.

Weeds are transported by both natural and human sourced mechanisms. We have the ability to control human vectors. The essence is good hygiene, whether it be education to prevent garden waste disposal into sensitive areas at a local scale, regulations to require the covering of transported hay at regional and State scales or regulations to ensure that new farm crops such as Tagasaste *(Chamaecytisus palmensis)* have a wide buffer between remnant vegetation and roadsides.

Sales of plant species with high weed potential for domestic use, for revegetation or commercial use, also requires attention, with such plants not being offered for sale either through voluntary adoption of best practice by the relevant industries or by regulation.

An investigation and development of best practice guidelines, and where appropriate regulations to ensure hygiene, for the sale and distribution of potential weed species or materials potentially containing weed species is required.

Monitoring for the presence of new weed populations and for the proliferation of existing "sleeper" weeds is essential to ensure rapid action if a weed is inadvertently or deliberately introduced or begins to spread rapidly. Community education towards notification and an action plan for eradication of new weeds is required at all scales.

3.3.2. Early Detection and Early Eradication

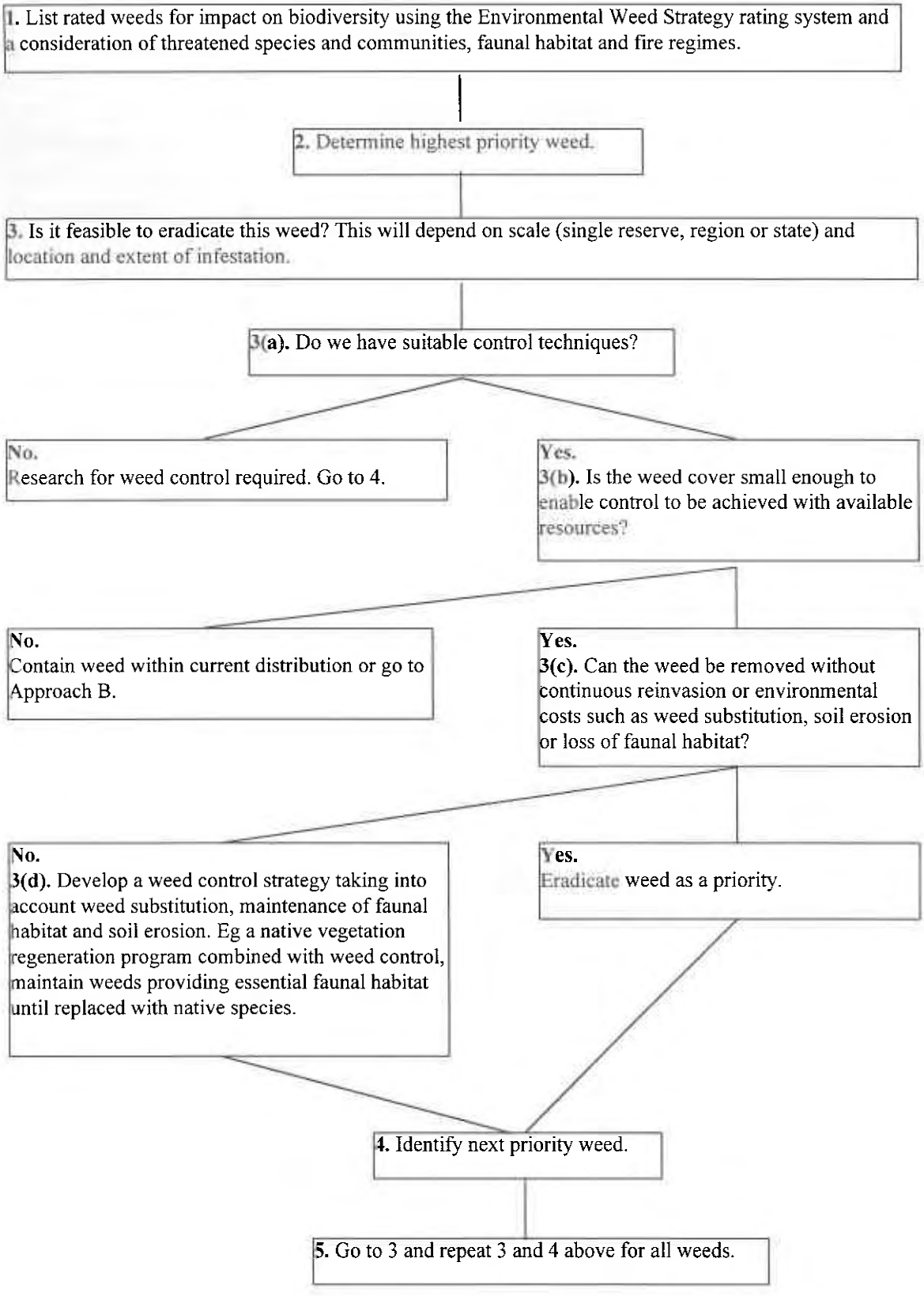
It may be possible to eradicate localised populations of weeds at all scales in some circumstances. A small effort early in the invasion process can save considerable effort or

loss of ability to control in the long run. For example early control of a small population of *Briza maxima* in an isolated wheatbelt reserve could prevent the weed invading the whole reserve. The key is identification of the effort required, both in amount and duration, to ensure that control is possible, that the resources are sourced and the effort sustained for sufficient time to achieve the goal. Eradication campaigns generally fail if one or more of the following criteria are not met:

- the population of the target species must be highly localised and the boundaries of the population assessed beforehand
- an effective control method needs to be available, and
- the infested area must not be continuously infested from soil seed reserves from surrounding areas or from nearby cultivated specimens (Csurhes and Edwards, 1998).

A strategic approach to the removal of new localised populations of individual weed species or small numbers of weed species is outlined in Figure 4.

FIGURE 4. WEED LED CONTROL – STRATEGIES FOR THE REMOVAL OF INDIVIDUAL WEED SPECIES OR SMALL NUMBER OF WEED SPECIES

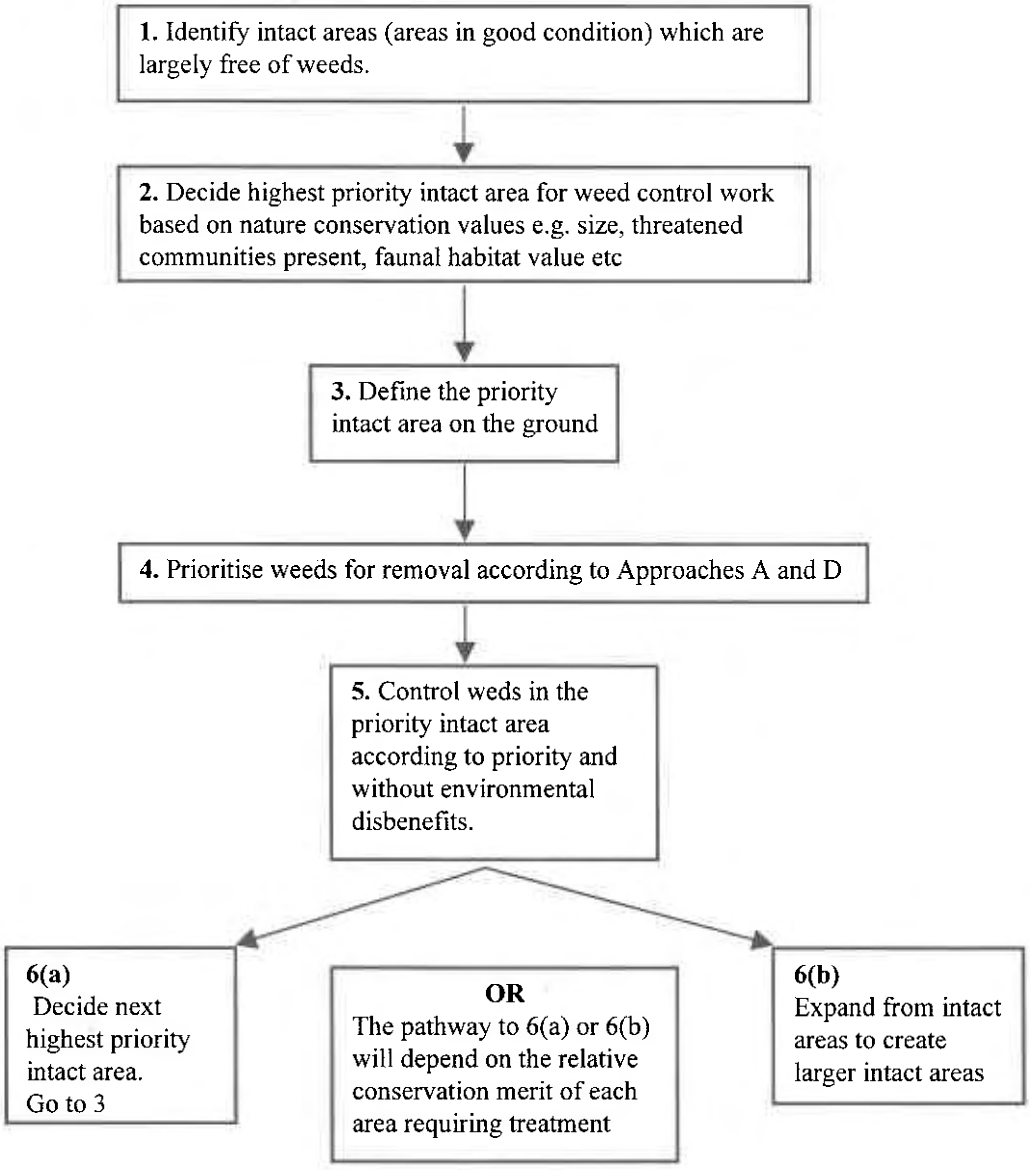


3.4. Site Control

Site led control focuses on identifying areas that require weed control to maintain their ecological values and sites which are currently in good condition and can maintain or improve that condition with planned effort. In some cases it is possible to expand control from areas in good condition to gain larger intact areas. The priority ranking of a proposed site led program is based on the biodiversity value of the core management unit and the urgency of control.

A strategic approach to identifying priorities for site led control is provided in Figure 5.

FIGURE 5 SITE LED CONTROL – STRATEGIES FOR PROTECTION OF HABITATS CURRENTLY LARGELY FREE OF WEEDS



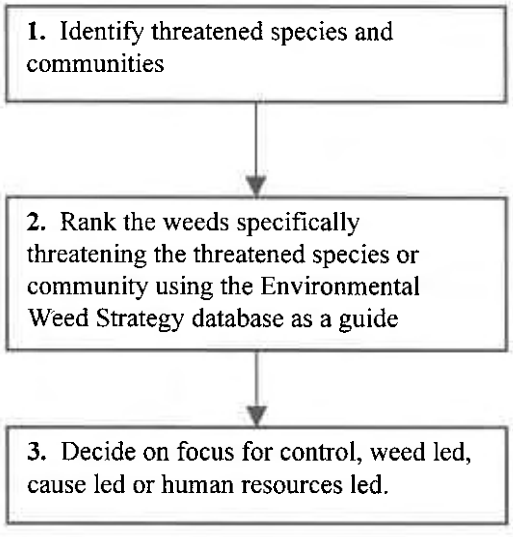
3.5. Threatened Species and Threatened Communities Led Control

This approach places the protection of threatened species and threatened communities on public and private land as the highest priority for weed control and is incorporated into species and ecological community recovery plans developed by CALM. This is a subset of site led control where the site is identified by the presence of a threatened species or community.

While the protection of threatened species and communities is a very high priority to prevent extinctions, it only focuses on points in the landscape and so needs to consider also the broader environment which may provide a continuing source of weeds.

A strategic approach for threatened species and threatened communities led control is provided in Figure 6.

FIGURE 6. THREATENED SPECIES AND THREATENED COMMUNITIES LED CONTROL FOR PROTECTION OF THREATENED SPECIES AND COMMUNITIES AS THE HIGHEST PRIORITY



3.6. Human Resources Led Control

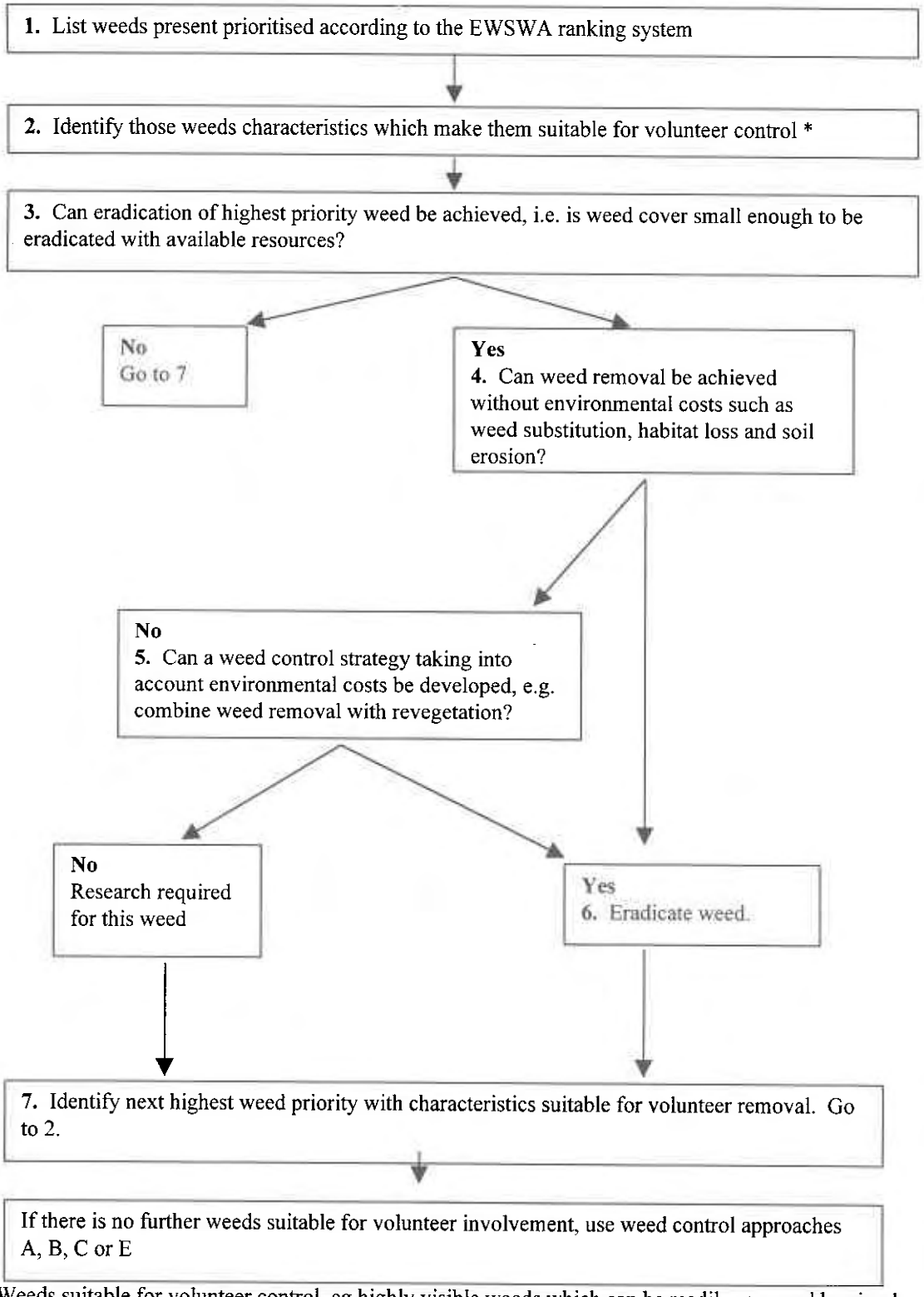
People and communities are becoming motivated to manage natural areas as evidenced by the steady growth of "friends groups", the landcare movement and considerable effort by volunteers. Many of these groups are concentrating on bush regeneration and making significant contribution to weed control in natural areas. There is also an increase in professional weed control contractors and some municipalities are employing staff with expertise in environmental weed control.

Establishing priorities for weed management can be difficult and in some cases lack of understanding of ecological processes leads to weed replacement and continuous reinvasion. In these circumstances volunteers and professionals can lose motivation.

A human resources approach will identify weeds and particular circumstances best suited to volunteer control and those which are better managed by professionals. It may be best for volunteers to target small populations of highly visible weeds which are readily removed by simple manual or chemical methods and are ideal for essential follow up and monitoring. Professionals may be best used where spraying or machinery is required or where a concentrated effort is required. Making the best use of the capabilities of both volunteers and professionals will often lead to best long term outcomes.

A strategy for human resources led control - recognising control strategies for volunteers and professionals is provided in Figure 7.

FIGURE 7. HUMAN RESOURCES LED CONTROL – RECOGNISING DIFFERENT WEED CONTROL STRATEGIES FOR VOLUNTEERS AND PROFESSIONALS



❖ Weeds suitable for volunteer control, eg highly visible weeds which can be readily removed by simple manual or chemical methods.

3.7. Cause Led Control

Many environmental weeds are proliferating because they are able to take advantage of disturbances such as:

- a change in soil conditions either by altered water regimes or increased nutrients;
- unnatural soil disturbances such as earthworks;
- by changed fire regimes which alter ecosystem processes; and
- by constant reinfestation from external sources.

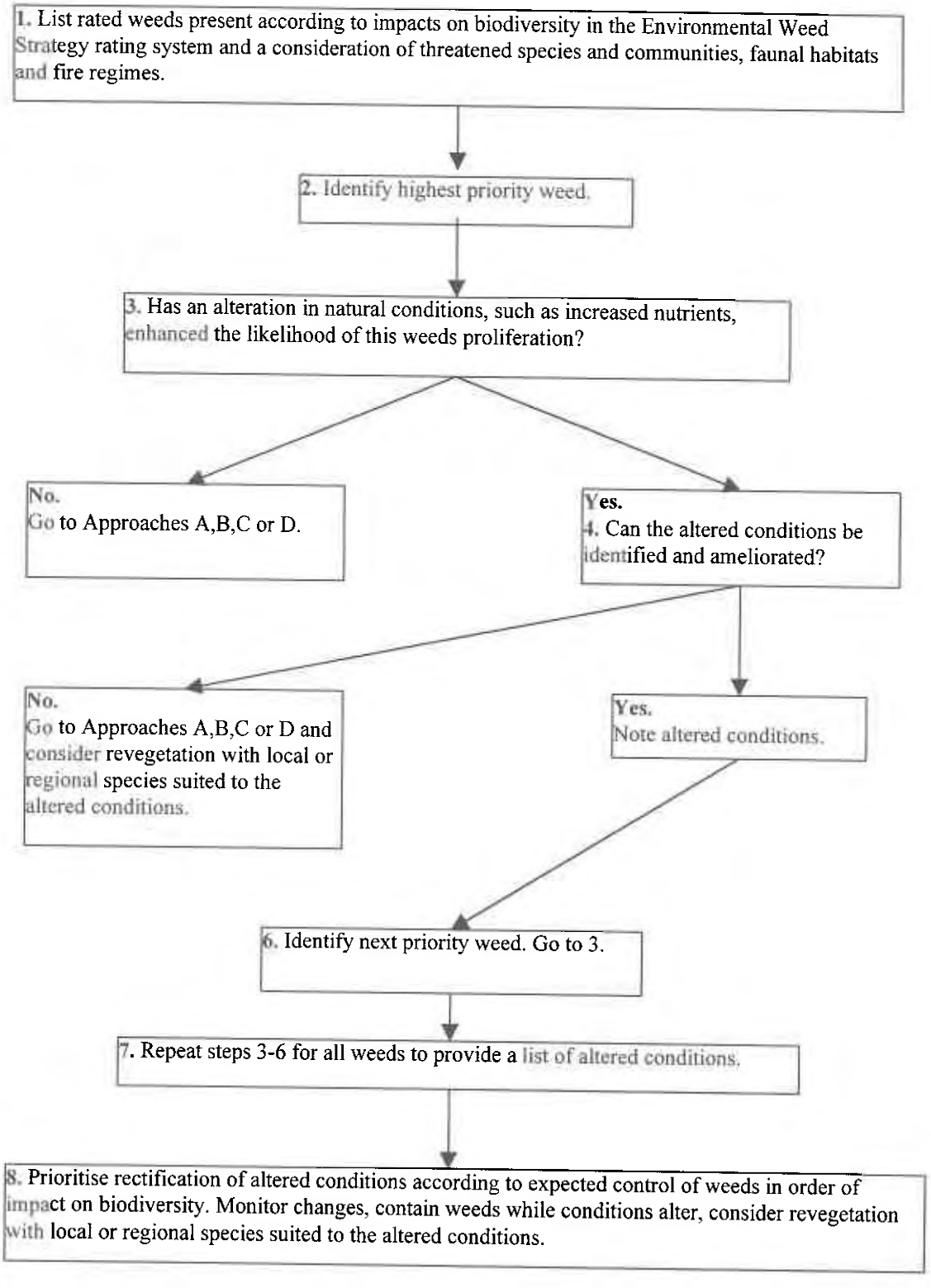
This approach to weed control focuses on controlling, reducing or eliminating disturbance factors that increase ecosystem vulnerability. Examples of this approach may include:

- control of access through bushland areas and rehabilitation of superfluous tracks;
- control of grazing in bushland areas and riparian vegetation through fencing of remnants;
- control and management of sources of nutrients entering waterways through planning controls and improved land management practices; and
- control of ballast water exchange e.g. Japanese Kelp *(Undaria pinnatifida)*.

Cause led control can be seen as preventative in terms of ensuring that vegetation in good condition is protected from disturbances through planning controls and effective management strategies. Once environmental weeds are established, then control of disturbance factors is an important adjunct to other control methods in order to ensure effective control of environmental weeds and protection of environmental values.

A strategy for a cause led approach is provided in Figure 8.

FIGURE 8. CAUSE LED CONTROL – RECOGNISING THAT THE REASONS FOR A WEEDS PRESENCE MAY BE DUE TO ALTERED CONDITIONS WHICH NEED TO BE ADDRESSED FOR THE WEED TO BE CONTROLLED



SUMMARY

An integrated approach to environmental weed management is developed in this chapter. An integrated approach involves the planned use of the following control options:

- *weed led control*
- *site led control*
- *resource led control*
- *threatened species and communities led control, and*
- *cause led control*

Strategic planning will consider:

- *weed potential according to the criteria developed in this study*
- *maintaining significant areas of all natural ecosystems in good condition, and*
- *control of weeds impacting on threatened species and communities*

Adverse environmental impacts of weed management must be addressed and revegetation strategies need to be alongside weed removal.

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R3.1	Produce guidelines for integrated weed management and case studies to illustrate the guidelines. Adjacent landowners should receive encouragement to control weeds on their land, where integrated programmes are planned.	Agencies, with assistance in coordination from SEWG where required.
R3.2	The sale of plant species with high weed potential for either domestic use, revegetation or commercial use should be discouraged, by voluntary adoption of best practice by the relevant industries.	SEWG to promote via member organisations.
R3.3	Review current regulatory mechanisms and best practice concerning the sale and distribution of potential weed species or materials potentially containing weed species and recommend changes.	CALM, AgWA.
R3.4	Establish a mechanism to monitor the presence of new weed populations and the proliferation of existing "sleeper" weeds to ensure rapid action is undertaken if a weed is inadvertently or deliberately introduced or begins to spread rapidly.	Agencies, with assistance of SEWG as required.

4. CONTROL METHODS[1]

Weeds can be controlled by direct methods such as biological control agents, by manual methods, by using herbicides or indirectly by effective land and water management. The selection and implementation of the most appropriate method or combination of methods is a vital part of any weed control program. Correct selection will ensure that weeds are dealt with in a timely manner with minimal environmental costs both on and offsite.

Significant contributions are required at all levels of society (see Table 1). Activity cannot be effective on the ground without biological control and appropriate certifications for chemical control. Similarly control of introduction of weeds and quarantine are required at national and State scales.

4.1. Controlling Degradation Processes

Controlling degradation processes that increase ecosystem vulnerability to weeds is often the most effective way to control weeds.

In bushland areas procedures such as fire management, maintenance of buffer zones, prevention of nutrient inflows, fostering regeneration of indigenous species and restricting human access to managed walkways and roads all contribute to weed management. Reduction in weeds after the degradation processes are controlled may be slow and monitoring will be required to determine effectiveness and whether complementary measures such as revegetation or minor weed control are also required.

4.2. Herbicides

Herbicide application is often the most cost effective method for the control of weeds. While herbicide applications are efficient this approach requires careful consideration of:

- human health implications
- increasing herbicide resistance
- possible mitigation against the development of alternative approaches to weed management such as mechanical, ecological and system management due to current efficiency of the method
- impact on non-target flora and fauna, and
- the need for post treatment rehabilitation.

Careful consideration of the most appropriate use of herbicide control is required and over reliance on herbicides for weed control should be discouraged.

[1] *WeedPlan A Tasmanian Weed Management Strategy* is acknowledged as a major source for the development of this section.

4.3. Biological control

Biological control can be a very efficient form of weed management.

Biological control reduces weed populations and vigour through the introduction and release of natural parasites and predators. Biological control has many advantages over other weed control methods as it can be cost effective in the long term, is generally environmentally friendly and can reduce the need for less desirable weed control practices such as herbicide application. Biological control does not eliminate weeds but can reduce target weed populations to a level at which they have a low impact or are more readily controlled by other means. Biological control requires considerable investment and is long term. Increased research for biological control of the major weeds impacting on biodiversity in Western Australia is required. Managers must recognise the limitations of biological control and apply additional controls where required to protect conservation values.

4.4. Manual Control

Manual control is physical removal of the weed by mechanical or human effort.

Manual control is often the most expensive form of weed removal but it is the most appropriate method in many circumstances, e.g. for threatened flora populations where disturbance to individual native plants has to be avoided. It is particularly valuable for small infestations, where chemical control is inappropriate and where resources are available. Manual control needs to be carefully managed as enthusiastic efforts resulting in gross soil disturbance can lead to weed replacement, and the approach recommended by Bradley (1988) where revegetation is carried out in conjunction with weed removal needs to be considered.

Demonstrations of the most appropriate use of mechanical weed removal are required as examples to the community of best practice. These need to be documented as case studies and made available to weed control groups and for weed management education.

4.5. Fire Management

Fire is an acknowledged perturbation factor which occurs naturally in all terrestrial ecosystems but currently is often human mediated as a planned management tool or as an accidental or criminal action. Fire regimes in many parts of Western Australia have altered since European settlement, particularly in areas of high population density. The presence of environmental weeds may then contribute to a fire-weed cycle that is the primary cause of bushland degradation in some areas (Wycherley, 1984).

The causes of the cycle are many and diverse, but some of the key points are:

- Weed species are often advantaged by the burst of nutrients available immediately after a fire.
- Weed species, particularly grass weed species, accumulate biomass rapidly thus rapidly increasing fuel loads to levels that will sustain fires more frequently.
- Grass fuels have a different structure to shrub fuels. The grasses have a fine, evenly spread structure, compared with the more heterogenous, discreet structure of native understorey shrubs. This affects fire behaviour and rate of spread, particularly in the initial stages of a fire.
- Weed seeders are usually annuals whilst native seeder species require time between fires not only to set seed but also to replenish their seed stocks. This may take several years. Frequent fires deplete native seed stocks and encourage weed seed stocks, thus rapidly eliminating the native species from the species assemblage.
- Resprouters can also succumb if the fire interval is so frequent that the root stock resources become depleted.

Thus grassy weeds have characteristics which enable them to respond quickly to fires, and which support more frequent fire events, than many of the native perennial understorey shrubs. Some weed species (e.g. Acacias) are well adapted to fire and in the absence of their natural limiting agents are able to proliferate at the expense of endemic species.

However, arson or planned fire events may provide opportunities for weed control through the reduction in weed biomass and the provision of opportunities to treat resprouting plants. For example, a fire event in a thick infestation of Pampas Grass *(Cortaderia selloana)* will allow access to the area after burning to selectively chemically treat regrowth as well as allowing revegetation of bare areas.

To date, little research has been carried out on the definition of appropriate fire regimes for Western Australian ecosystems in terms of fire intervals, intensities and patchiness, and their relationship to environmental weeds. Without this information, the specific role of fire in ecosystem vulnerability to environmental weeds within different vegetation communities is unknown.

Table 1: WEED CONTROL PRIORITIES FROM NATIONAL AND LOCAL LEVELS

Methods	National	State	Regional	Local	Patch
Introduction and Spread	Quarantine, transportation measures, education	Quarantine, transportation measures, education	Sensitive commercial revegetation strategies, education	Fire control strategies, education, hygiene	Amelioration of causal agents
Biological Control	Establish National research priorities	Promote special State research requirements	Distribution and monitor effectiveness	Monitor effectiveness	Monitor effectiveness
Herbicide Control	Health and safety standards, research	Health and safety standards, training, research	Training	Training	Implementation and monitoring
Fire Management		Fire management policies, research	Fire management policies	Fire permits and training	Implementation and monitoring
Manual Control		Training and volunteer group support	Recognition of roles, training, volunteer group support	Volunteer group support and training	Implementation and monitoring

SUMMARY

Control options for environmental weeds include:

- *controlling ecosystem degradation processes*
- *herbicides*
- *biological control*
- *manual control, and*
- *fire management.*

For many ecosystem/weed combinations in WA the best control options are not known and further research is required.

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R4.1	Facilitate research by the Federal Government into the biological control of weeds impacting on biodiversity in Western Australia.	Agencies, with assistance of SEWG as required.
R4.2	Facilitate research into appropriate fire regimes for Western Australian ecosystems in terms of fire intervals, intensities and patchiness, and their relationship to environmental weeds.	Agencies managing natural areas, assisted by SEWG.
R4.3	Certify additional herbicides for environmental weed control to increase the range of treatments available.	Pesticide companies encouraged by SEWG.

5. MONITORING AND EVALUATION

Monitoring and evaluation of environmental weed occurrences, their impacts, weed spread, condition of intact areas, condition of threatened species and communities threatened by weeds and weed eradication/control operations is essential for making sound decisions for weed control. Currently there is no coordinating mechanism in Western Australia for this to occur.

Mechanisms and procedures by which the success of the Environmental Weed Strategy and other weed management programs may be monitored and evaluated are required. Mechanisms for monitoring at local scales are currently poorly developed and understood with little implementation. Key areas for monitoring include:

5.1. Patch Level

- Map bushland condition and distribution of high and moderately rated weed population at regular intervals (e.g. every 5 years).
- Establish monitoring quadrants and survey and record annually – particularly for different weed control treatments.
- Photograph trial areas from set points – use digital technology if available (ie digital camera or video).
- Monitor effectiveness of community weed removal and restoration work.

5.2. Local Level

- Monitor effectiveness of discrete and broadscale weed control programs in reserves vested with Local and State Government authorities.
- Map distribution of high and moderate rated weeds in reserves.
- Liaise with private landowners with bushland who are undertaking weed control programs and monitor and evaluate their successes and failures.
- Identify priority areas for weed control.

5.3. Regional Level

- Monitor the effectiveness of weed control programs within the region.
- Monitor the impacts of environmental weed species on different ecosystems and evaluate the resilience of different vegetation assemblages.
- Monitor the introduction of new weed species in terms of their impacts on biodiversity.
- Monitor for the emergence of "sleeper" weeds.
- Monitor awareness and education programs and attitudes of the public towards environmental weeds.

- Monitor the sale and distribution of potential and existing environmental weeds from wholesale and retail outlets.

5.4. State Level

- Continue the work of AQIS (Australian Quarantine and Inspection Service) to monitor the imports of new plants to Australia.
- Evaluate the success of environmental weed control programs.
- Develop proforma monitoring schedules for patch, local and regional levels and evaluate incoming data.
- Monitor impacts of weed control methods on biodiversity.
- Monitor the success of weed control and threatened species and ecological communities recovery plans.

SUMMARY

Western Australia needs weed monitoring programs covering the physical locations of weeds, rates of spread, success of control containment operations and the success of community effort. These monitoring efforts should be undertaken at patch, local, regional and State levels.

RECOMMENDATION		
Number	**Action**	**Responsibility**
R5.1	Monitor and evaluate weed control programs at patch, local, regional and State levels. Develop adequate training and pro formas for those undertaking these tasks.	Agencies, with assistance from SEWG as required.

6. COORDINATION AND INTEGRATION

6.1. Coordination

The challenge of adequately dealing with the environmental weed problem in Western Australia requires the adoption of a new and innovative response to weed management and control. To be effective this response needs to be of sufficient focus and capacity to match the capacity of environmental weeds to invade and alter natural ecosystems.

The response will need to be strategic and pro-active rather than piecemeal and reactive. Characteristics of the strategic approach include identification of key goals and objectives, recognition of the available resources and adoption of a range of responses followed up by evaluation and critical appraisal of success. A key element of the strategic approach to environmental weed control is a high degree of coordination and integration between the different players.

The response that is required involves a whole of government and community (including private landowners) approach which effectively forges links, relationships and networks between the groups and individuals involved. There is a need for strong inter-agency cooperation and efficient coordination between the various agencies that have a role in environmental weed management and control in WA. Coordination is also needed at all levels. It is essential at the policy level as well as the program and control strategy level and all the way through the process right down to on-ground weed control efforts.

Part of the process of building and improving the coordination between agencies and groups will involve recognition of the wide range of inputs needed to address the problem and recognition of the diversity of resources, skills and experience that is currently available both within the community and government agencies. The critical link is to match the resources and skills available to the problem that exists through effective coordination and integration.

The role of CALM in achieving the necessary degree of intra and inter-agency coordination will be pivotal. CALM will be the main coordinating agency in the response to the environmental weed problem due to its statutory responsibility for protection of flora and fauna in WA.

However, many other government agencies have responsibilities for weed management, e.g. Water and Rivers Commission, Department of Land Administration, Main Roads Western Australia, etc. The skills and resources of these agencies need to be coordinated across the State.

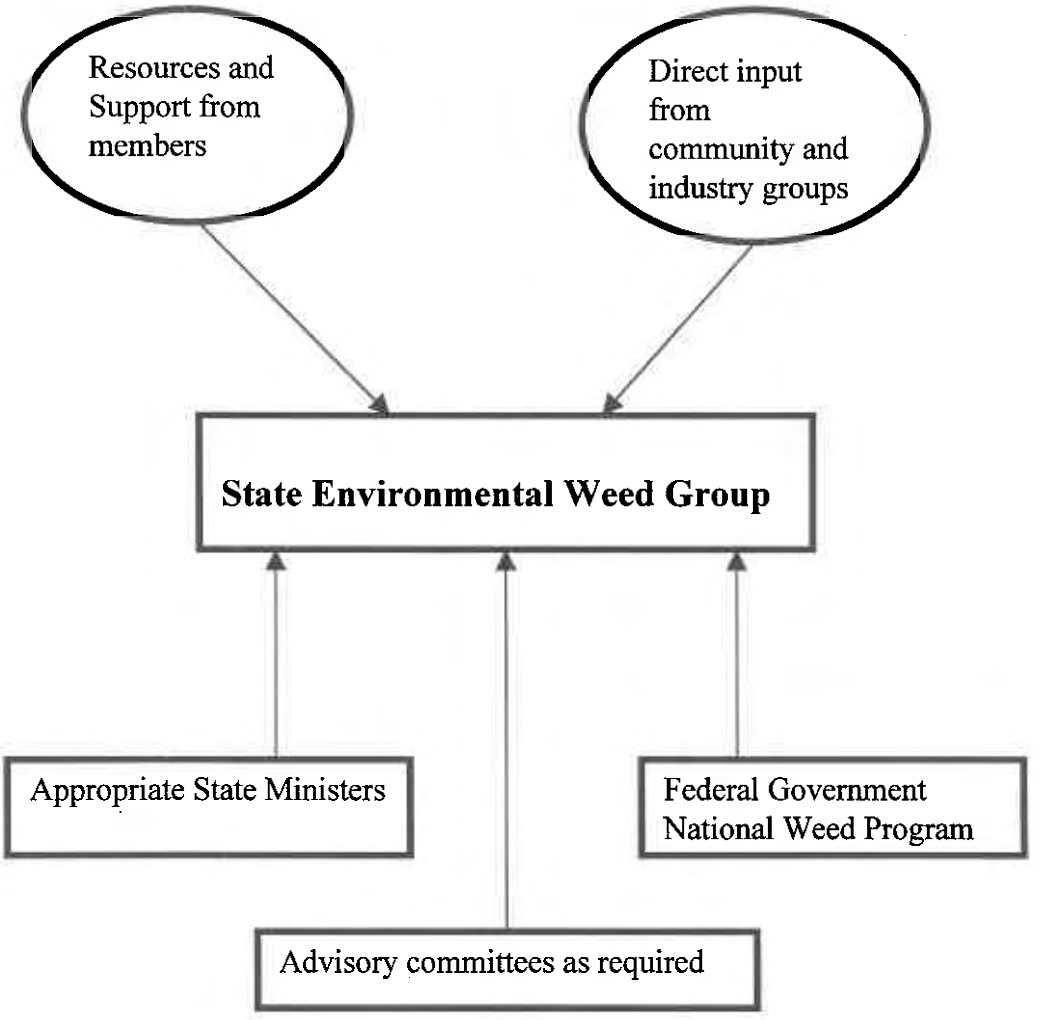
Coordination at the community level is also essential and should be carried out through local governments and existing community based non-government organisations.

There is clearly the need to build cooperative relationships between the active environment community and the weed control agencies and concentrate on skills, information and technology transfer.

The proposed method of achieving the required degree of coordination is through the formation of a senior level advisory group. This group will aim specifically to advise on and coordinate the implementation of the Environmental Weed Strategy for WA. The group will consist of members from local government organisations, State government agencies, private landowners, research institutions and community organisations. It is proposed that this advisory group be called the **State Environmental Weed Group.** This Group should be formed as a matter of priority following adoption of the Strategy.

The Mission Statement for the State Environmental Weed Group is to facilitate, advise and coordinate the successful implementation of the Environmental Weed Strategy for WA.

FIGURE 9. RELATIONSHIPS TO STATE ENVIRONMENTAL WEED GROUP



The proposed terms of reference of the State Environmental Weed Group are:

- Advise Government on environmental weed management in Western Australia.
- Provide leadership for environmental weed management.
- Recommend priorities for environmental weed management in Western Australia.
- Coordinate the implementation of the Environmental Weed Strategy for Western Australia.
- Coordinate between the government and non-government interests in environmental weeds.
- Coordinate between all relevant State Government agencies.
- Coordinate from a State perspective between the various levels of government.
- Advise on priorities for implementation of the Environmental Weed Strategy.
- Pursue funding for environmental weed management and control.
- Consult with industry including the farming, pastoral, forestry and nursery industries and the community in relation to environmental weed management and control.
- Promote research into environmental weeds by research organisations, educational organisations and community groups.
- Increase the awareness in WA of the insidious impacts of environmental weeds on natural ecosystems and bushland areas.
- Promote monitoring of environmental weeds and the success of control efforts.
- Assist to educate the community as a whole on the detrimental impacts of environmental weeds.

The appointment of the State Environmental Weed Group should be by the Minister for the Environment following the adoption of the Environmental Weed Strategy and negotiations with the proposed member bodies. The roles and responsibilities of member groups of the Environmental Weed Group will include adequately resourcing their involvement and commitment to the objectives of the State Environmental Weed Strategy. The groups and agencies that comprise the State Environmental Weed Group will need to commit to a whole of government and community approach to the environmental weed problem.

The State Environmental Weed Group should be supported by CALM through the provision of executive and secretarial resources.

If a State Weed Strategy is produced aimed at all weed issues in WA, then the roles and responsibilities of the State Environmental Weed Group would be reviewed and the most appropriate structures and arrangements adopted.

There are a number of other plans and strategies whose development is directly relevant to the Environmental Weed Strategy. These additional strategies should be taken into account by the State Environmental Weed Group in the implementation of the Environmental Weed Strategy in WA. These other strategies include:

- The National Weeds Strategy
- The National Strategy for the Conservation of Australia's Biological Diversity
- The proposed Biological Diversity Conservation Strategy for WA
- CALM's Bushland Weeds Policy, and
- The WA State of the Environment Report.

6.2. *Integration*

Integration of the Environmental Weed Strategy for WA involves the execution of policies and programs with maximum efficiency and cooperation and with a minimum of repetition and waste of time and resources. Integration will have to cover all facets of the Environmental Weed Strategy for WA, i.e. research, resourcing, priorities, control, education, monitoring and communication.

The primary method of integration of the various levels of weed control and management will be through the advisory and coordination roles of the State Environmental Weed Group. Integration of the various activities of the member groups of the State Environmental Weed Group will be an essential task if the aims and objectives of the Environmental Weed Strategy for WA are to be met. Within the confines of statutory obligations and available resources under which Group members must function, integration and coordination of activities will need to be a necessary part of each agency's commitment to the Environmental Weed Strategy for WA. It is proposed that integration be approached firstly through achieving a good understanding of agency responsibilities, constraints, current activities and proposed initiatives under the umbrella of an Environmental Weed Strategy for WA.

The process of integration of activities will be based on a structure (Figure 10) that recognises that as the geographical area of interest gets smaller and more localised, and the number of weed species under consideration decreases, the focus increases on the most effective control option rather than on environmental weed policy or strategy. Similarly there can be increasing local community input and involvement in weed control at the local level. Priorities can be set for local environmental weed problems based on local knowledge and the framework that the environmental weeds database and the integrated environmental weed management methodology provides.

Integration should be based on a common recognition and acceptance of a structure that has an increasing focus on progressively smaller geographic areas. The scales of operation with some examples of determining factors and integration strategies are outlined below (see Figure 11).

These scales are based on a combination of natural determinants and cultural units. Where possible the focus should be based on an appropriate scale determined by an ecological boundary (e.g. soil type, vegetation units) rather that a cultural boundary which often ignores the natural features and thus further complicates weed management and control.

FIGURE 10. CONCEPTUAL ILLUSTRATION OF THE CO-ORDINATION AND INTEGRATION OF THE ENVIRONMENTAL WEED STRATEGY FOR WA

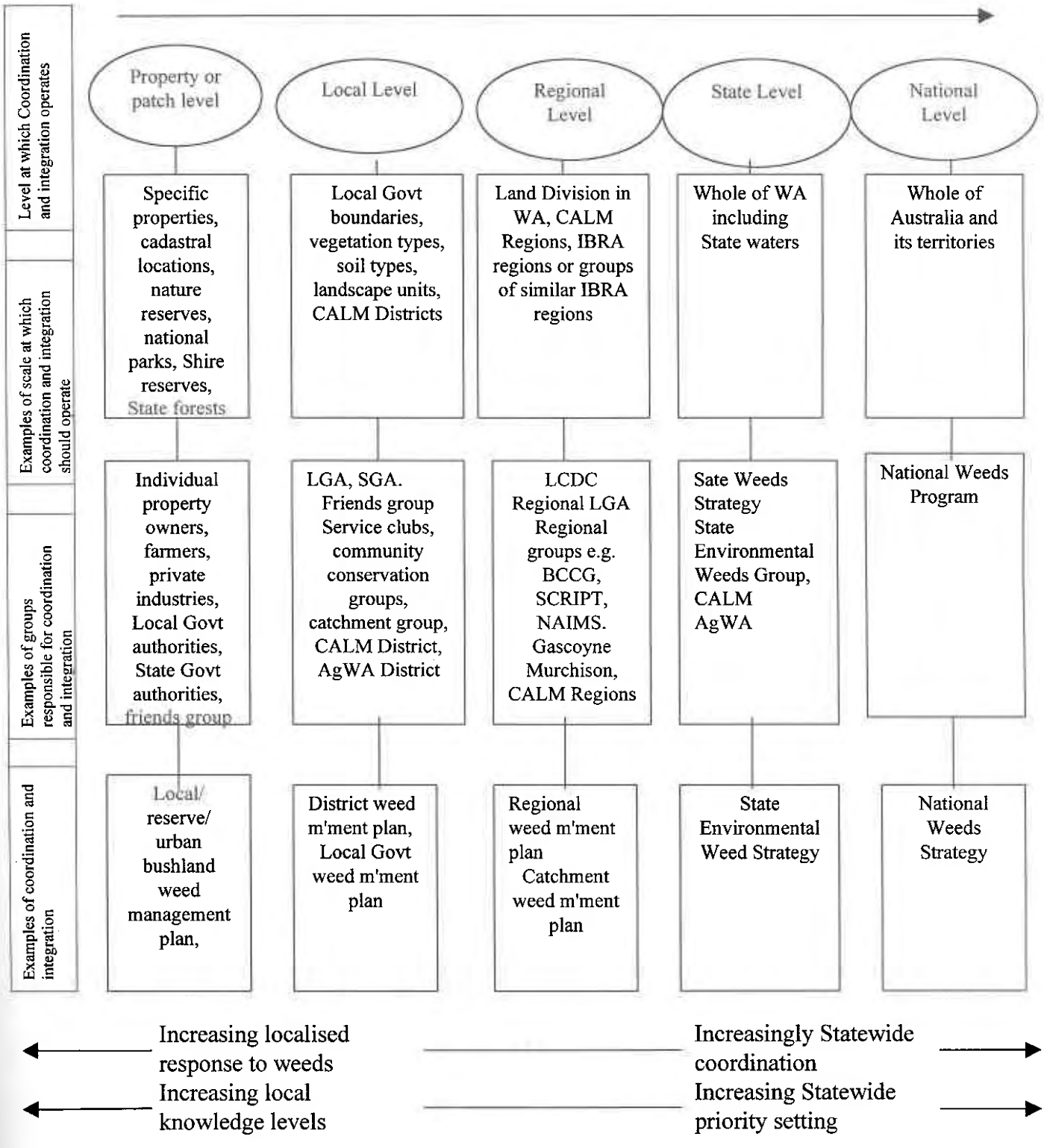
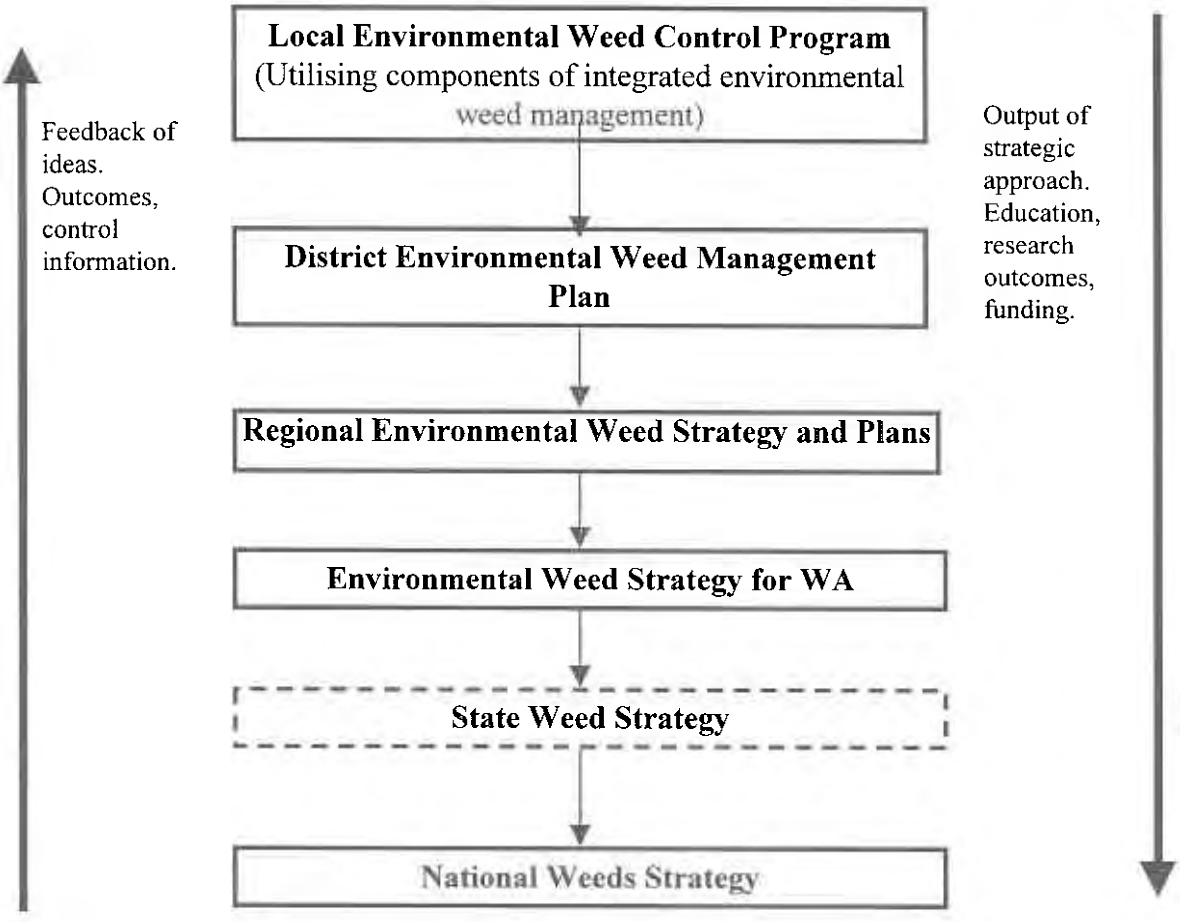


FIGURE 11. HIERARCHY OF RESPONSE TO ENVIRONMENTAL WEED MANAGEMENT CONTROL



SUMMARY

Successful coordination and integration of environmental weed management in Western Australia will require the appointment of an advisory/coordinating body. The Environmental Weed Strategy for Western Australia advocates the establishment of the State Environmental Weed Group.

Integration of activities can be achieved through a State Environmental Weed Group provided it has the acceptance and support of government agencies, local government, industry and the community.

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R6.1	The coordinating group to consist of members from local government organisations, State government agencies, private landowners, industry, research institutions and community organisations. It is proposed that this group be called the **State Environmental Weed Group** and that members be appointed by the Minister for the Environment.	State Government
R6.2	Provide the State Environmental Weed Group with executive and secretarial support.	CALM

7. ROLES AND RESPONSIBILITIES

Environmental weed problems characteristically cross cultural boundaries including land tenure boundaries, jurisdiction boundaries and boundaries of legal and legislative responsibilities. The coordination and involvement of all of the landholders in a defined geographic area towards collective action will be necessary to instigate effective long term control of any target species within any target area.

It is important to recognise all of the contributions to the Environmental Weed Strategy. A large range of groups have a role or responsibility in environmental weed control in WA. Virtually any agency or group, both government and non-government, involved in natural resource research, regulation and management has a role and or a responsibility in the Environmental Weed Strategy.

An appreciation of the roles and responsibilities of the various groups involved in the Environmental Weed Strategy will assist in further defining and separating the roles of the agencies that comprise the State Environmental Weed Group.

The roles and responsibilities of the myriad of players in environmental weed management and control should be clearly understood in order to provide a better recognition of the current legislative framework and to identify any gaps in responsibility that are not covered by existing structures.

At present there is no legislation that specifically addresses environmental weeds. Current legislation relating to weed control is focused on weeds that impact on agricultural values. There are three pieces of State legislation relating to weed management; Agricultural and Related Resources Protection Act 1976 (ARRP Act), Local Government Act 1996; and the Seeds Act 1981.

The ARRP Act focuses on weeds that impact on agricultural values. Many environmental weeds do not impact on these values and are not declared. The Agriculture Protection Board administers this Act. The Act enables the "declaration" of weeds in various areas of the State. Landholders are required to control all declared plants on their properties. Declaration allocates the target weed to one of five categories of control:

- P1 - Prevention: Plants, which cannot be introduced or spread. Most declared plants are under this category;
- P2 - Eradication: Includes potentially serious weeds which are not yet widely established;
- P3 - Control: Plant infestations should be reduced over time if eradication is not realistic;
- P4 - Containment: Plants should be prevented from further spread;
- P5 - Special action on public land: Provides for control on native reserves, saleyards and roadsides

The Local Government Act allows a local authority to declare plants as "pest plants". Declaration requires the control of that weed species on all lands within the local authority boundary. This legislation has the ability to address environmental weeds but is seldom used. When it is applied there is no requirement for consistency between adjacent local authorities resulting in uncoordinated and ineffective control.

The Seeds Act controls the movement of plant material into the State. A list of prohibited species restricts the importation of plants that are considered to be potentially damaging weeds. Species of environmental weed may not be included on this list as its focus is on weeds that may be damaging to industry.

Existing legislation such as the CALM Act, Wildlife Conservation Act, Soil and Land Conservation Act and the Environmental Protection Act that deals with environmental values, do not specifically address weeds. The Wildlife Conservation Act is currently under review and is intended to address the impact of environmental weeds on biodiversity in its new form. A major deficiency of the current legislative framework is that it is fragmented and not directly aimed at environmental weed management. It is recommended that the proposed review of the Wildlife Conservation Act specifically aim at ensuring that there is a legislative framework to support the general thrust of the Environmental Weeds Strategy for Western Australia. The impact of environmental weeds should be taken into account as part of conserving biodiversity.

A model of the roles and responsibilities, showing a hierarchy of response to the implementation of environmental weed management is shown in Table 2.

SUMMARY

Everyone has a role to play in environmental weed management. These roles need to be clearly stated and understood. The lack of a specific legislative base for environmental weed management is a major concern which can be corrected through revision of existing legislation to ensure clarity in defining roles and responsibilities.

RECOMMENDATIONS		
R7.1	The lack of a specific legislative base for environmental weed control should be corrected through revision of existing legislation.	CALM

Table 2: MODEL OF ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL WEED MANAGEMENT

Group or Agency									
Federal Government Agencies	**Co-Ordination**	**Policy**	**Legislation**	**Funding**	**Research**	**Monitoring**	**Education**	**Advocacy**	**Environmental Weed Control**
CSIRO									
Australian Quarantine and Inspection Service									
Environment Australia									
Dept of Primary Industry									
Defence Department									
State Government Agencies									
Department of Conservation and Land Management									
Agriculture Western Australia									
Water and Rivers Commission									
Department of Environment Protection									
Main Roads WA									
Department of Land Administration									
Westrail									
Western Power									
Alinta Gas									
Water Corporation									
Swan River Trust									
Other State Level Boards, Authorities and Committees									
Lands and Forest Commission									
National Parks and Nature Conservation Authority									
Environmental Protection Authority									
Kings Park Board									
Roadside Conservation Committee									
Gordon Reid Foundation									
Pastoral Lands Board									
Rottnest Island Authority									
Local Government Interests									

Individual Local Government Authorities									
	Co-Ordination	**Policy**	**Legislation**	**Funding**	**Research**	**Monitoring**	**Education**	**Advocacy**	**Environmental Weed Control**
Local Government Regional Groups									
WA Municipal Association									
Country Shire Councils Association									
Local Volunteer Bush Fire Brigades									
Non Government Organisations									
Greening Western Australia									
Environmental Weeds Action Network									
Australian Association of Bush Regeneration (WA)									
Plant Protection Society									
Wildflower Society									
WA Naturalists Club									
Birds Australia									
Conservation Council of WA									
Australian Association Environmental Education									
Friends Groups									
Land Conservation Districts									
Catchment Groups									
Regional Partnership Groups									
Progress Associations									
Nursery Industry Association									
Farming Groups									
Australian Bush Heritage Fund									
National Trust of WA									
Private conservation land managers									
Urban Bushland Council									
Private Enterprise									
Farmers									
Mining Companies									
Bush Regenerators									
Nurseries									
Seed Companies									

Rehabilitation/Revegetation Companies									
Environmental Consultants									
Landscape Architects									
Private Landowners									

8. RESOURCES

In order to adequately deal with the challenges that effective environmental weed control in WA presents it is essential to have an understanding of the many and varied resources that will be needed to implement the Environmental Weed Strategy for WA. This section outlines some of these resources and how they can be utilised in a coordinated manner by the many players in the Strategy.

Currently available resources needed to be identified as well as potential resources and resource deficiencies. The basic resources needed to implement the Strategy have been divided into the broad categories of people resources, information resources and funding resources. These are briefly described below

8.1. Human Resources

Well-trained human resources are scarce. People's expertise, skills, knowledge and experience need to be fully appreciated and utilised to best effect to meet the needs of the Environmental Weed Strategy. Training is required to broaden the human resource base in numbers of individuals involved and increase the skill level of new recruits and volunteers generally.

There is also a need to educate the public as a whole about environmental weeds and the Environmental Weed Strategy. Volunteers should be encouraged to work on environmental weed control where appropriate though they should be adequately coordinated, trained, managed and resourced and their efforts fully appreciated and recognised.

8.2. Information Resources

Information on environmental weeds needs to be generated, disseminated and applied to meet the needs of the Environmental Weed Strategy.

Existing applicable information within Australia and overseas needs to be utilised as much as possible through improved mechanisms of sharing, exchanging and disseminating information. This can be achieved in a variety of ways including seminars, workshops, field days, newsletters, and environmental weed web sites. All current and useful sources of information on environmental weeds needs to be made accessible and specifically promoted.

The availability of information on environmental weeds is generally limited and the Environmental Weeds Database (WeedBase) is aimed at filling some of these gaps. The database needs to be progressively completed as research and monitoring results improve our knowledge-base on the existing and potential environmental weeds of WA. It also needs to

be regularly updated and promoted to the relevant level in the environmental weed response hierarchy. Information on species specific control needs to be promoted at the most appropriate level.

Where a specific lack of information has been identified the required new information should be gather through targeted research projects. The need for research and its funding should be coordinated through the State Environmental Weed Group in order to maximise the return on the available research funding and avoid unnecessary duplication. Priorities for detailed longterm research such as biological control of environmental weeds will need to be coordinated nationally.

8.3. Funding Resources

Money is an essential resource that is primary to the success of the Environmental Weed Strategy, as the task is both large and complex.

A detailed understanding of the opportunities available to gain funding for the implementation of the strategy will be essential to its success. As many of the integrated environmental weed management programs are long term, securing long term funding commitments will be necessary. Short term and one-off annual funding will not meet all of the requirement of the Environmental Weed Strategy. The costs of environmental weed control will need to be shared equitably within the community as the benefits of environmental weed control are often not immediately identifiable or attributable to any one group in society.

Funding is available from both recurrent sources (e.g. annual grant schemes, departmental budgets) and also from one off special grants (e.g. the Natural Heritage Trust, industry sponsorships or the Gordon Reid Foundation).

SUMMARY

Environmental weed management in Western Australia will require significant resources to be successful. Resources include people resources, information resources and funding. Weed management is long term and resources need to be applied in the long term if the Environmental Weed Strategy is to be successful.

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R8.1	Identify Government, industry and community resources and skills available for weed control. Identify deficiencies and recommend options for resolution.	Agencies, industry and community groups with assistance from SEWG.
R8.2	Identify sources of and promote funding for control of environmental weeds.	Agencies and community groups with assistance from SEWG.

9. PUBLIC AWARENESS AND COMMUNITY INVOLVEMENT

9.1. Introduction

The community plays a substantial role in extending the knowledge, enthusiasm and human resources for environmental weed management across the vast areas of Western Australia. A growing number of community members are contributing to the awareness and control of environmental weeds. In many cases the community has resources which are not readily available to government, such as grants and labour.

Since the 1970's there has been a growing awareness of the role of environmental weeds and their impacts on the natural environment. Joan Bradley wrote her first book on the value of weed control and developed the concept of 'bush regeneration' in Australia (Bradley 1971). Since that time there has been a rapid increase in the concern and practical involvement in weed management.

Some of the community groups involved and concerned about the management of environmental weeds include:

Group	Description
Environmental Weeds Action Network (EWAN)	A group concerned with environmental weeds – lobbying for recognition of their importance and management needs
Australian Association of Bush Regenerators (WA) AABR(WA)	Fosters and encourages sound ecological practices of bushland management including weed removal and restoration
ECOPLAN	A Department of Environmental Protection initiative to encourage and train community involvement in bushland care and management
Friends Groups	There are probably over 150 Friends groups in the State involved in bushland management
Catchment Groups	A large number of community catchment groups exist which undertake river and catchment restoration work
Land Conservation Districts (LCD's)	Landcare groups are a well established community organisation involved in fostering sustainable land management practices
Wildflower Society	The Wildflower Society undertakes flora and vegetation surveys and is active in

	environmental weed publications
National Trust of WA	Concerned with the preservation of bush and natural environment. Manages some bushland areas
Urban Bushland Council	Lobby group for bushland protection and management
Conservation Council of WA	Umbrella group for various conservation organisations
Botanical Societies e.g. Broome Botanical Society	Undertakes botanical surveys of flora and weeds
Plant Protection Society	Has a very specific interest in weeds and has published widely including Western Weeds
Coastal Marine Alliance	A group interested in marine ecosystem conservation including introduced marine flora
Greening WA	A community based group organisation with a focus on revegetation and protecting remnant vegetation
Australian Trust for Conservation Volunteers	ATCV provides a voluntary workforce which assists in conservation works including weed control programs
APACE Aid Inc.	Apace runs Introduction to Bush Regeneration courses

9.2. Support

Support for community groups comes from a wide range of sources. For those groups directly involved in weed management and control, support is in the form of government assistance such as training and awareness (e.g. ECOPLAN). Training is also carried out by community organisations such as Apace Aid (Inc). Community groups also produce newsletters that contain information items on weed control and management. A number of large and small seminars and workshops have been organised by various community groups to help establish best practice management techniques for weed management

The WA Herbarium has developed the Regional Herbaria Project, which supports and trains community groups to collect and curate their own plant specimens. The program is being broadened to embrace naturalised species.

Local authorities provide assistance to community groups in the form of tools, machinery and funding. Grants such as the Gordon Reid Foundation (Lotteries Commission) grants, the

Natural Heritage Trust grants and others support efforts to coordinate and facilitate community action on environmental weed management.

9.3. Benefits

Community groups contribute to the management of environmental weeds in a number of ways, these include:

- Raising awareness of the significance of environment weeds
- Lobbying government and the private sector for more resources to be put into weed management
- Direct control of weeds through the control or removal of environmental weed populations in bushland areas
- Bushland restoration
- Informing government agencies on occurrence and distribution of weed population (e.g. flora surveys)
- Experimentation with weed control methods
- Contributing to a positive community attitude to the importance of native vegetation
- Establishment of local and regional herbariums so that weeds can be easily identified
- Preparing publications on the identification and control of weeds species
- Holding seminars and workshops on weed management

The community has a long standing commitment to the conservation and management of our native environment and properly resourced, it can provide a major role in managing environmental weeds. Integration of community led programs into the broader Environmental Weed Strategy for WA, and the strengthening and support of partnerships and networking between community groups and other agencies will ensure that all efforts contribute to achievement of broader goals.

9.4. Constraints

There are important constraints to community involvement in practical weed control work particularly volunteer work. For example, people who lack training in weed recognition and removal may unwittingly contribute to the weed problem through the removal of non target species and unnecessary disturbance of the soil. Volunteer weed removal programs often lack follow-up work in successive years because of lack of energy or time and hence primary weed removal weed work can have minimal, if not negative, effects on the native ecosystem. Some of the other constraints on community involvement in weed management include:

- Lack of partnership and recognition – there is no explicit code of practice between landowners (such as Councils) and community groups such as friends groups which identify roles and recognises and rewards effort and achievement (although this is starting to emerge more strongly now).

- Lack of promotion – there is a general lack of broad scale promotion of the impacts of environmental weeds and the contribution the community can make to managing them.
- Lack of training and education – only one course currently exists (Introduction to Bush Regeneration) which teaches an integrated way of managing bushland including weed identification and removal. TAFE or other education institution as yet have not developed courses which have specific training on environmental weed management.
- Standards of training and experience need to be developed so that weed management work is carried out with a proper understanding of the restorative processes of the environment. Developing standards for environmental weed management and control work is critical for successful implementation of management programs.
- There is generally poor coordination between government and non-government agencies who manage land areas which contain remnant ecosystems.
- Monitoring and support for monitoring programs is generally lacking or poorly resourced and executed.
- Weed management, particularly weed removal work, is difficult and sometimes dangerous. The scale of weed control required is large and can not be done by community volunteers alone. Support in the form of qualified professional bush regenerators, either employed by government or private practice, is required to provide the main front of attack with support from local volunteers. Management programs need to be long term to ensure that weed control is properly augmented.
- A general lack of expertise is available to community groups to help them tackle the weed problem they are addressing. This reflects both the lack of work being undertaken in this area and also the lack of training and research programs available.

9.5. Future Directions

Community involvement in recent years in environmental weed management has been strategically important. Community groups have played an advocacy role and set the direction and pace for tackling this major environmental problem. Future support for community involvement in weed management needs to be considered in the light of the integrated processes recommended in this strategy.

9.5.1. Public Awareness and Promotion

Important considerations for the future of community involvement include public awareness and promotion to make people aware of:

- Their personal impact on native vegetation
  - carrying weed seeds on vehicles, produce, footwear and clothing
  - pets such as dogs, cats and horses carrying weed seeds in their coats and droppings, and increasing the soil nutrients through their droppings
  - horses through the above and also soil disturbance

  - dumping of garden refuse which contains potential weeds
  - trampling and destruction of vegetation leading to weed invasion, and
  - the role of fire in promoting weed invasion of bushland.
- Liaison and lobbying both print and television media for a focus on environmental weeds in
  - gardening and environmental programs
  - posters and pamphlets to help people identify weeds and learn how to control them
  - promotion of Weed Buster Week
  - publishing the work that is being carried out by community groups
  - providing an award system for groups which demonstrate outstanding commitment and success to environmental weed management, and
  - development of internet web sites.

9.5.2. Education and Training

Training programs in bush regeneration and restoration ecology techniques need to be developed so that community volunteers can be trained in preparing weed management plans, restoration plans and specific weed control techniques. These training programs should be based on the best practices elsewhere in Australia and made available to community groups.

- Community volunteers need to be educated. Planning and training is critical before any weed control programs are undertaken in bushland areas.
- Local government should take a lead role in developing bush regeneration trained field staff so that they can work with and direct community volunteer efforts. Local governments could also facilitate workshops with community groups on the weed problem within its boundaries and the means by which it is going to manage it.
- Promotion of community involvement such as through ECOPLAN should be expanded to rural areas to increase awareness and training in these communities. It would also help promote greater integration and co-operation between city and rural communities.
- Standards – adequate standards of training and experience need to be developed for people undertaking weed management work (e.g. the Australian Association of Bush Regenerators (WA) have standards for bush regeneration professionals).

9.5.3. Research and Environmental Weeds Database

Community groups should be encouraged to participate in research programs such as identifying and reporting the occurrences of weeds in Western Australia so that the knowledge of environmental weed distribution is increased. Community groups should be encouraged to experiment with different weed control methodologies and monitor and report their success. These can be entered onto the environmental weeds database as suggested methods of control.

Community groups should be encouraged to participate in the development of the environmental weeds database through inputting data such as weed distributions, photographs of weeds, weed control methods etc thus making it a community resource.

SUMMARY

The community is now playing a significant beneficial role in environmental weed management and awareness raising in Western Australia and have some support from government and through community led training. Significant constraints have been identified to greater involvement by the community in achieving best practice and in maximising outcomes. These constraints need to be overcome to maximise outcomes in mobilising the community not only in actual weed control but also in awareness raising, training, research and monitoring of environmental weeds in WA.

RECOMMENDATIONS		
Number	**Action**	**Responsibility**
R9.1	Increase public awareness of the importance of and threats posed by environmental weeds.	Agencies and community groups with assistance from SEWG.
R9.2	Encourage and support community participation in all aspects of weed management and control.	Agencies supported by SEWG where required.
R9.3	Support existing training programs for weed control and bush regeneration. Encourage establishment of new training programs.	Agencies, educational institutes, community groups supported by SEWG where required.

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APPENDIX 1: ENVIRONMENTAL WEEDS RATING

Weeds have impacts on biodiversity and their impacts vary between weed species. National ranking schemes have been proposed for determining the significance of weed flora. For example, the Animal and Plant Control Commission, South Australia is developing a scoring system for determining the national significance of weed species, both agricultural and environmental in Australia (Virtue and Cooke 1997). The Commission prepared a questionnaire to nationally survey individuals involved in weed extension, research and management to gather data so that weeds of national significance could be determined and to assist in funding decisions for national weed management programs. The assessment categories for each weed species were:

- current and potential distribution
- invasiveness
- impacts
- feasibility of control.

More recently the National Weeds Strategy Executive Committee prepared criteria for the assessment of weeds to determine a list of Weeds of National Significance (WONS) which will form a major part of the National Weeds Strategy. This National Strategy includes both environmental and agricultural weeds. The aim of developing criteria for determining weeds of national significance is to enable ranking of weeds to aid policy development and action decision making at a national and state level (Thorp, 1998). In particular it was felt that it is important to concentrate action on Australia's most significant weeds.

Four criteria have been developed to determine the national significance of a weed. These are:

- invasiveness
- impacts
- potential for spread
- socioeconomic and environmental values.

The general methodology by which the weeds will be assessed is through a series of reference panels selected by the National Weeds Strategy Executive Committee. Panel membership will be drawn from renowned scientific and policy experts in weeds and weed risk assessment (Thorp, 1998). The panels will rank a weed on each of the attributes on a scale of one to five and these data will be subject to non-parametric rank analysis to obtain a weed's ranking.

The panel system will be used specifically for the first two criteria (invasiveness and impacts) but less for the last two criteria where others will be consulted and other indicators for ranking will be used. The National Weeds Strategy Executive Committee in forming a proposed list of nationally significant weeds will consider all the information on all the criteria which has been subject to multivariate and other statistical tests.

The end result will be a national list of approximately 75 weeds that will be considered as the Weeds of National Significance (WONS).

In developing the Environmental Weed Strategy for WA, criteria for the assessment and rating of weeds in terms of their environmental impact on biodiversity were also formulated. The criteria were determined through a workshop involving participants from CALM, CSIRO, Agriculture WA, Water and Rivers Commission and relevant community group representatives. It was decided to rate the weeds in broad groups such as high impact, medium impacts and low impacts, rather than rank them from the worst to the least important weed. The criteria arrived at by workshop participants were :

- ability to invade undisturbed bushland
- pattern of current and potential distribution
- record/history of a weed elsewhere
- impacts on biodiversity through alteration of the structure and function of an ecosystem, occupying large extensive areas, altering fire regimes, inhibits/ interferes with regeneration or rehabilitation.

These criteria were further reviewed including evaluation by John Thorp, Project Manager for the National Weeds Strategy and modified accordingly. The final criteria arrived at were:

- **Invasiveness** ability to invade bushland in good to excellent condition or ability to invade waterways. (Score as yes or no).
- **Distribution** – wide current or potential distribution including consideration of known history of wide spread distribution elsewhere in the world. (Score as yes or no).
- **Environmental Impacts** – ability to change the structure, composition and function of ecosystems. In particular an ability to form a monoculture in a vegetation community. (Score as yes or no).

The rating of each weed was to be determined by the following scoring system:

- **High** - a weed species would have to score yes for all three criteria. Rating a weed species as high would indicate prioritising this weed for control and/or research ie prioritising funding to it.
- **Moderate** -a weed species would have to score yes for two of the above criteria. Rating a weed species as moderate would indicate that control or research effort should be directed to it if funds are available, however it should be monitored (possibly a reasonably high level of monitoring).
- **Mild** – a weed species scoring one of the criteria. A mild rating would indicate monitoring of the week and control where appropriate.
- **Low** – a weed species would score none of the criteria. A low ranking would mean that this species would require a low level of monitoring.

Rating each weed using the above criteria was undertaken by a State weed expert with extensive field botanical experience and who has published widely on the environmental weeds of Western Australia. Greg Keighery from CALMScience undertook the rating task for the weeds listed in Appendix 3.

The database has been designed for rating each weed in each IBRA region so that a full data set of weed rating by IBRA region can be achieved. This will help determine a more accurate prioritising of weed management in regions and localities. Other factors, such as the threat

posed to critically endangered plants or communities must also be considered. Weeds affecting these will receive high prioirity for control, in accordance with recovery plans developed by CALM, irrespective of the rating given to the specific weed.

In future a suggested method by which a weed rating may be reviewed is through a selected committee which meets on an annual basis with appropriate membership. The panel may review the status of weeds and assign new ratings depending on the outcome of their deliberations. The results of this process particularly if there are any changes to the existing status should be communicated to national weed programs and any others of relevance.

APPENDIX 2: DATABASE OF ENVIRONMENTAL WEEDS OF WA - WEEDBASE

Design and Design Philosophy

WeedBase – the relational database for the environmental weeds of Western Australia is a Visual Basic 5 application using Microsoft Access 7 as the data engine. A virtual machine-interface provides a user-friendly screen with easy-to-operate control buttons aimed to encouraging user participation.

The design supports an open architecture to allow users to extend the capacity of the software. WeedBase works both as an informative system (ie, supplies information on environmental weeds) and as a data catchment tool (ie, receives information and can be regularly updated). The database is intended to be a stand-alone application prepared for widespread distribution. The design has been developed to encourage the development of a user community to share reports, queries and other relevant information. There is an inherent for expansion to enable the inclusion of GIS, statistical mapping and expert systems. The database is also Web-aware with links to specific weed web sites, the national weed database, WeedBase homepage at CALM and other relevant sites.

The database has been developed with advice and assistance from CALM Herbarium personnel so that its design is compatible with technology and data systems currently being used by CALM. Authority table on taxa nomenclature from CALM WACENSUS was used for taxa identification for the database. The program is also an adjunct to MAX (CALM WACensus field research database). WACENSUS was used as the baseline for 'Weedbase' and to it were added names of naturalised plant species only recorded from publications - mainly Western Weeds (Hussey et. al 1997). Additional data were added from WAHERB, Managing Perth's Bushland (Scheltema and Harris, 1995) and Greg Keighery (CALMScience).

Fields

The database fields were developed from a workshop held with relevant experts in the weed science field as described previously in the report. Fields were also determined from previously published work such Carr et al. (1992) and Ecoscape (1994). The final fields were:

Taxon Identification: (derived from WACensus)
- Identification number (icluding Taxon ID)
-Genus Species
-Family
-Infraspecies
-Common Names

Origin:
Country of origin eg South Africa or with Australian plants – state of original ie Victoria

Introduction:
Method of introduction eg horticultural purposes

Weed Elsewhere:
Other countries or Australian states where the plant is an environmental weed

Availability:
Available from commercial nurseries

Life Form:
Annual, biennial, tree, vine etc

Time to First Fruit:
Time in months to produce first fruit

Fruiting Time:
Fruiting time in days

Dispersal Time:
Time in days it takes before all fruit are dispersed

Seed Dormancy:
Period of seed dormancy (years, months)

Dispersal:
Means of dispersal eg animal, wind etc

Ranking:
Ranking status eg High, Moderate, Mild, Low or No Record
Person who undertook ranking and date

Observations:
Location
Date
Source
Collector Name, Collector ID
Recency
Infestation
Soil Type
Landform
Vegetation Type
Latitude
Longitude
AMG co-ordinate
IBRA
Shire
CALM Region
User ID

Control:
Means of Control
-Mechanical
-Temperature
-Chemical
-Biological
Suggestions on Control
Notes

Notes:
General notes page on the weed, may include botanical description and any other points of interest

Pictures:
Pictures of the plant including close-up of flowering inflorescence

NB: In addition tot he identification number from WACENCUS (1-20,000), additional numbers (90,000 onwards) were added for taxa which have not been recorded as present in WA by the WA Herbarium.

Data Entry
Initial data entry has been carried out using existing data sources from WACensus, WAHerb, Managing Perth Bushlands, and Greg Keighery. This included taxa identification data, taxa location data, control methods for a number of weed taxa and rating of environmental weeds.

Further data entry will be required to complete the database this will need to be carried out once the database system is warehoused at CALM. The database will be linked to WACensus so that regular upgrades to the existing taxonomic species authority list will results in automatic changes to the weed flora list. The protocols for data entry will need to be determined by CALM.

Reports
Reports from the interrogation of the database can be generated using the report generating screen button.

Warehousing and Maintenance
The database will be warehoused at CALM. Assistance from the WA Herbarium and SEWG (which comprises individuals from CALM and other interested agencies and relevant community groups) will be required. The database will require standard, regular maintenance that will need to be budgeted for on an annual basis.

Distribution
It is expected that the database will be widely distributed and ultimately available on CALM's web page. A CD-ROM should be annually updated and made available to the broader community at a reasonable price.

APPENDIX 3: LIST OF ENVIRONMENTAL WEED SPECIES OF ACTUAL AND POTENTIAL SIGNIFICANCE IN WA

The list of potential environmental weeds in Western Australia to be included in this database was discussed in detail at a workshop held as part of the development of this Strategy. The workshop which included experts in weed sciences and management from CALM, CSIRO, Agriculture Western Australia, Water and Rivers Commission and community representatives. The initial weed list chosen, was that prepared for Western Weeds (Hussey et. al., 1997) which was derived from an annotated list prepared by Keighery (1995).

Subsequent discussion with the WA Herbarium enabled the use of WACensus data (an authoritative list of West Australian flora that contains both naturalised non-naturalised taxa) as the list of environmental weed taxa. A total of 1350 taxa have been identified as both potential and existing environment weeds. This is represented by 107 families and 588 genera. The list also includes native species that exhibit weed characteristics.

The following list identifies the weeds used in the database. Future changes to WACensus will automatically result in changes to taxon nomenclature in the environmental weed database.

The following list contains those species identified as both existing and potential weeds along with impacts on biodiversity rating, as discussed in Appendix 2.

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
High	3333	Acacia farnesiana	Mimosaceae	Mimosa Bush	Yes	Yes	Yes
High	2646	Aerva javanica	Amaranthaceae	Kapok bush	Yes	Yes	Yes
High	1202	Asparagus asparagoides	Asparagaceae	Bridal Creeper	Yes	Yes	Yes
High	3000	Brassica tournefortii	Brassicaceae	Mediterranean Turnip	Yes	Yes	Yes
High	249	Bromus diandrus	Poaceae	Great Brome	Yes	Yes	Yes
High	6582	Calotropis procera	Asclepiadaceae	Calotrope Rubber tree	Yes	Yes	Yes
High	3008	Carrichtera annua	Brassicaceae	Ward's Weed	Yes	Yes	Yes
High	258	Cenchrus ciliaris	Poaceae	Buffel Grass	Yes	Yes	Yes
High	10924	Cenchrus setiger	Poaceae	Birdwood grass	Yes	Yes	Yes
High	277	Cortaderia selloana	Poaceae	Pampas Grass	Yes	Yes	Yes
High	347	Ehrharta calycina	Poaceae	Veld Grass or Perennial Veld Grass	Yes	Yes	Yes
High	1169	Eichhornia crassipes	Pontederiaceae	Water Hyacinth	Yes	Yes	Yes
High	10881	Elodea canadensis	Hydrocharitaceae	Canadian pondweed	Yes	Yes	Yes
High	376	Eragrostis curvula	Poaceae	Weeping Love Grass African Love Grass	Yes	Yes	Yes
High	4648	Euphorbia terracina	Euphorbiaceae	Geraldton Carnation Weed	Yes	Yes	Yes
High	90457	Freesia hybrid	Iridaceae	Freesia	Yes	Yes	Yes
High	1528	Homeria flaccida	Iridaceae	One-leaf Cape Tulip Cape Tulip	Yes	Yes	Yes
High	452	Hyparrhenia hirta	Poaceae	Tambookie Grass	Yes	Yes	Yes
High	1370	Lachenalia reflexa	Hyacinthaceae		Yes	Yes	Yes
High	467	Lagurus ovatus	Poaceae	Hares Tail Grass	Yes	Yes	Yes
High	4946	Lavatera arborea	Malvaceae	Tree Mallow	Yes	Yes	Yes
High	5850	Leptospermum laevigatum	Myrtaceae	Victorian Tea Tree	Yes	Yes	Yes
High	4066	Lupinus cosentinii	Papilionaceae	Sandplain Lupin	Yes	Yes	Yes
High	6968	Lycium ferocissimum	Solanaceae	African box-thorn	Yes	Yes	Yes
High	5226	Passiflora foetida	Passifloraceae	Stinking passion flower	Yes	Yes	Yes

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
High	4343	Pelargonium capitatum	Geraniaceae	Rose Pelargonium	Yes	Yes	Yes
High	1042	Phoenix dactylifera	Arecaceae	Date palm	Yes	Yes	Yes
High	1556	Romulea rosea	Iridaceae	Guildford grass	Yes	Yes	Yes
High	2443	Rumex vesicarius	Polygonaceae	Rosy dock Ruby dock	Yes	Yes	Yes
High	79	Salvinia molesta	Salviniaceae	Salvinia	Yes	Yes	Yes
High	1558	Sparaxis bulbifera	Iridaceae	Harlequin Flower	Yes	Yes	Yes
High	99	Typha orientalis	Typhaceae	Bullrush	Yes	Yes	Yes
High	1564	Watsonia bulbillifera	Iridaceae	Bungle Lily Watsonia	Yes	Yes	Yes
High	1049	Zantedeschia aethiopica	Araceae	Arum Lily	Yes	Yes	Yes
Moderate	184	Aira caryophyllea	Poaceae	Silvery Hair Grass	Yes	Yes	
Moderate	185	Aira cupaniana	Poaceae		Yes	Yes	
Moderate	1378	Allium triquetrum	Alliaceae	Three Cornered Garlic		Yes	Yes
Moderate	6480	Anagallis arvensis	Primulaceae		Yes	Yes	
Moderate	202	Anthoxanthum odoratum	Poaceae		Yes	Yes	
Moderate	7838	Arctotheca calendula	Asteraceae	Cape Weed	Yes	Yes	
Moderate	7839	Arctotheca populifolia	Asteraceae		Yes	Yes	
Moderate	7844	Aster subulatus	Asteraceae	Bushy Starwort	Yes	Yes	
Moderate	233	Avena barbata	Poaceae	Bearded Oat	Yes	Yes	
Moderate	234	Avena fatua	Poaceae	Wild Oat	Yes	Yes	
Moderate	7046	Bellardia trixago	Scrophulariaceae		Yes	Yes	
Moderate	244	Briza maxima	Poaceae	Blowfly Grass	Yes	Yes	
Moderate	245	Briza minor	Poaceae	Shivery Grass	Yes	Yes	
Moderate	253	Bromus rubens	Poaceae	Red Brome	Yes	Yes	
Moderate	6213	Bupleurum semicompositum	Apiaceae		Yes	Yes	
Moderate	3002	Cakile maritima	Brassicaceae	Sea Rocket	Yes	Yes	
Moderate	4717	Callitriche stagnalis	Callitrichaceae		Yes	Yes	
Moderate	4743	Cardiospermum halicacabum	Sapindaceae		Yes	Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	7909	Carduus pycnocephalus	Asteraceae	Slender Thistle	Yes	Yes	
Moderate	754	Carex divisa	Cyperaceae	Divided Sedge	Yes	Yes	
Moderate	2795	Carpobrotus edulis	Aizoaceae	Hottentot Fig	Yes	Yes	
Moderate	7916	Centaurea melitensis	Asteraceae	Maltese Cockspur	Yes	Yes	
Moderate	6539	Centaurium erythraea	Gentianaceae	Common Centaury	Yes	Yes	
Moderate	1513	Chasmanthe floribunda	Iridaceae	African Corn-flag	Yes	Yes	
Moderate	7927	Chrysanthemoides monilifera	Asteraceae		Yes	Yes	
Moderate	7937	Cirsium vulgare	Asteraceae	Slender Thistle	Yes	Yes	
Moderate	90267	Clitorea ternata			Yes	Yes	
Moderate	4861	Corchorus olitorius	Tiliaceae		Yes	Yes	
Moderate	3140	Crassula glomerata	Crassulaceae		Yes	Yes	
Moderate	3142	Crassula natans	Crassulaceae		Yes	Yes	
Moderate	90312	Cryptostegia grandiflora	Asclepiadaceae		Yes	Yes	
Moderate	12683	Cryptostegia madagascariensis	Asclepiadaceae		Yes	Yes	
Moderate	6663	Cuscuta epithymum	Cuscutaceae	Dodder	Yes	Yes	
Moderate	283	Cynodon dactylon		Couch	Yes	Yes	
Moderate	776	Cyperus brevifolius	Cyperaceae		Yes	Yes	
Moderate	781	Cyperus compressus	Cyperaceae		Yes	Yes	
Moderate	783	Cyperus congestus	Cyperaceae	Dense Flat Sedge	Yes	Yes	
Moderate	792	Cyperus eragrostis	Cyperaceae		Yes	Yes	
Moderate	795	Cyperus hamulosus	Cyperaceae		Yes	Yes	
Moderate	810	Cyperus rotundus	Cyperaceae		Yes	Yes	
Moderate	815	Cyperus tenellus	Cyperaceae		Yes	Yes	
Moderate	6962	Datura leichhardtii	Solanaceae		Yes	Yes	
Moderate	3857	Desmodium tortuosum	Papilionaceae		Yes	Yes	
Moderate	90366	Dischisma arenaria	Scrophulariaceae		Yes	Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	90367	Dischisma capitata	Scrophulariaceae		Yes	Yes	
Moderate	346	Ehrharta brevifolia	Poaceae		Yes	Yes	
Moderate	349	Ehrharta longiflora	Poaceae	Annual Veldgrass	Yes	Yes	
Moderate	351	Ehrharta villosa	Poaceae		Yes	Yes	
Moderate	370	Eragrostis barrelieri	Poaceae		Yes	Yes	
Moderate	4331	Erodium aureum	Geraniaceae		Yes	Yes	
Moderate	4333	Erodium cicutarium	Geraniaceae		Yes	Yes	
Moderate	90426	Eucalyptus citriodora	Myrtaceae			Yes	Yes
Moderate	90427	Eucalyptus cladocalyx	Myrtaceae			Yes	Yes
Moderate	90430	Eucalyptus maculata	Myrtaceae			Yes	Yes
Moderate	4629	Euphorbia hirta	Euphorbiaceae		Yes	Yes	
Moderate	4636	Euphorbia paralias	Euphorbiaceae		Yes	Yes	
Moderate	4638	Euphorbia peplus	Euphorbiaceae	Petty Spurge	Yes	Yes	
Moderate	1747	Ficus carica	Moraceae	Fig		Yes	Yes
Moderate	7321	Galium divaricatum	Rubiaceae	Slender Bedstraw	Yes	Yes	
Moderate	7323	Galium murale	Rubiaceae	Small Goosegrass	Yes	Yes	
Moderate	1520	Gladiolus caryophyllaceus	Iridaceae	Wild Gladiolus	Yes	Yes	
Moderate	1524	Gladiolus undulatus	Iridaceae		Yes	Yes	
Moderate	437	Glyceria maxima	Poaceae	Reed Sweetgrass	Yes	Yes	
Moderate	6587	Gomphocarpus fruticosus	Asclepiadaceae	Swan Plant or Narrow Cottonbush	Yes	Yes	
Moderate	1525	Gynandriris setifolia	Iridaceae	Thread Iris	Yes	Yes	
Moderate	438	Hainardia cylindrica	Poaceae	Barb Grass	Yes	Yes	
Moderate	90512	Hedyotis corymbosa			Yes	Yes	
Moderate	3016	Heliophila pusilla	Brassicaceae		Yes	Yes	
Moderate	1526	Hesperantha falcata	Iridaceae		Yes	Yes	
Moderate	1527	Hexaglottis lewisiae	Iridaceae		Yes	Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	4926	Hibiscus diversifolius	Malvaceae		Yes	Yes	
Moderate	4939	Hibiscus sabdariffa	Malvaceae		Yes	Yes	
Moderate	444	Holcus lanatus	Poaceae	Yorkshire Fog	Yes	Yes	
Moderate	445	Holcus setiger	Poaceae	Annual Fog	Yes	Yes	
Moderate	1529	Homeria miniata	Iridaceae	Two-leaf Cape Tulip	Yes	Yes	
Moderate	448	Hordeum glaucum	Poaceae		Yes	Yes	
Moderate	449	Hordeum leporinum	Poaceae	Barley Grass	Yes	Yes	
Moderate	450	Hordeum marinum	Poaceae	Sea Barley	Yes	Yes	
Moderate	6238	Hydrocotyle ranunculoides	Apiaceae			Yes	Yes
Moderate	3017	Hymenolobus procumbens	Brassicaceae		Yes	Yes	
Moderate	8086	Hypochaeris glabra	Asteraceae	Smooth Cat's Ear Flat Weed	Yes	Yes	
Moderate	6876	Hyptis suaveolens	Lamiaceae		Yes	Yes	
Moderate	16061	Indigofera oblongifolia	Papilionaceae		Yes	Yes	
Moderate	90558	Ipomoea pes-tigridis	Convolvulaceae		Yes	Yes	
Moderate	6638	Ipomoea quamoclit	Convolvulaceae		Yes	Yes	
Moderate	90560	Ipomoea triloba	Convolvulaceae		Yes	Yes	
Moderate	14540	Isolepis hystrix	Cyperaceae		Yes	Yes	
Moderate	10831	Isolepis prolifera	Cyperaceae		Yes	Yes	
Moderate	90570	Jatropha curcas	Euphorbiaceae		Yes	Yes	
Moderate	10869	Jatropha gossypifolia	Euphorbiaceae		Yes	Yes	
Moderate	1175	Juncus acutus	Juncaceae	Spiny Rush	Yes	Yes	
Moderate	1178	Juncus bufonius	Juncaceae	Toad Rush	Yes	Yes	
Moderate	1180	Juncus capitatus	Juncaceae		Yes	Yes	
Moderate	8096	Lactuca serriola	Asteraceae	Prickly Lettuce	Yes	Yes	
Moderate	468	Lamarckia aurea	Poaceae		Yes	Yes	
Moderate	6733	Lantana camara	Verbenaceae		Yes	Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	90611	Leonotis nepetifolia	Lamiaceae		Yes	Yes	
Moderate	3613	Leucaena leucocephala	Mimosaceae		Yes	Yes	
Moderate	90622	Limonium campanyonis	Plumbaginaceae		Yes	Yes	
Moderate	478	Lolium rigidum	Poaceae	Annual Rye Grass	Yes	Yes	
Moderate	479	Lolium temulentum	Poaceae		Yes	Yes	
Moderate	90651	Lythrum hyssopifolium	Lythraceae		Yes	Yes	
Moderate	4962	Malvastrum americanum	Malvaceae		Yes	Yes	
Moderate	90679	Melilotus indica	Papilionaceae		Yes	Yes	
Moderate	2812	Mesembryanthemum aitonis	Aizoaceae		Yes	Yes	
Moderate	2813	Mesembryanthemum crystallinum	Aizoaceae	Ice Plant	Yes	Yes	
Moderate	1665	Monadenia bracteata	Orchidaceae	South African Orchid	Yes	Yes	
Moderate	2931	Myosurus minimus	Ranunculaceae		Yes	Yes	
Moderate	6185	Myriophyllum aquaticum	Haloragaceae	Parrots Feather	Yes	Yes	
Moderate	6138	Oenothera drummondii	Onagraceae		Yes	Yes	
Moderate	6503	Olea europaea	Oleaceae		Yes	Yes	
Moderate	7122	Orobanche minor	Orobanchaceae	Lesser Broomrape	Yes	Yes	
Moderate	7089	Parentucellia latifolia	Scrophulariaceae	Common Bartsia	Yes	Yes	
Moderate	7090	Parentucellia viscosa	Scrophulariaceae	Sticky Bartsia	Yes	Yes	
Moderate	3673	Parkinsonia aculeata	Caesalpiniaceae		Yes	Yes	
Moderate	527	Paspalum dilatatum	Poaceae	Paspalum	Yes	Yes	
Moderate	528	Paspalum distichum	Poaceae	Water Couch	Yes	Yes	
Moderate	533	Paspalum vaginatum	Poaceae		Yes	Yes	
Moderate	17613	Pelargonium alchemilloides	Geraniaceae		Yes	Yes	
Moderate	536	Pennisetum clandestinum	Poaceae		Yes	Yes	
Moderate	538	Pennisetum macrourum	Poaceae			Yes	Yes
Moderate	90810	Pennisetum pedicillatum	Poaceae	Kikuyu	Yes	Yes	
Moderate	90811	Pennisetum polystachion	Poaceae			Yes	Yes

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	543	Pentaschistis airoides	Poaceae		Yes	Yes	
Moderate	551	Phalaris minor	Poaceae	Lesser Canary Grass	Yes	Yes	
Moderate	6734	Phyla nodiflora var. nodiflora	Verbenaceae	Carpet Weed	Yes	Yes	
Moderate	6982	Physalis minima	Solanaceae		Yes	Yes	
Moderate	6983	Physalis peruviana	Solanaceae	Cape Gooseberry	Yes	Yes	
Moderate	87	Pinus pinaster	Pinaceae	Pinaster Pine	Yes	Yes	
Moderate	88	Pinus radiata	Pinaceae	Radiata Pine	Yes	Yes	
Moderate	582	Polypogon monspeliensis	Poaceae	Annual Beardgrass	Yes	Yes	
Moderate	8189	Pseudognaphalium luteoalbum	Asteraceae	Jersey Cudweed	Yes	Yes	
Moderate	4822	Rhamnus alaternus	Rhamnaceae	Buckthorn	Yes	Yes	
Moderate	1554	Romulea flava	Iridaceae		Yes	Yes	
Moderate	3066	Rorippa nasturtium-aquaticum	Brassicaceae		Yes	Yes	
Moderate	10970	Rostraria cristata	Poaceae		Yes	Yes	
Moderate	11151	Rostraria pumila	Poaceae		Yes	Yes	
Moderate	3188	Rubus discolor	Rosaceae		Yes	Yes	
Moderate	3190	Rubus selmeri	Rosaceae		Yes	Yes	
Moderate	3191	Rubus ulmifolius	Rosaceae		Yes	Yes	
Moderate	90930	Rubus ursinus	Rosaceae		Yes	Yes	
Moderate	6485	Samolus valerandi	Primulaceae		Yes	Yes	
Moderate	11027	Schinus terebinthifolia	Anacardiaceae		Yes	Yes	
Moderate	596	Schismus arabicus	Poaceae		Yes	Yes	
Moderate	597	Schismus barbatus	Poaceae		Yes	Yes	
Moderate	8203	Senecio diaschides	Asteraceae		Yes	Yes	
Moderate	14365	Senna alata	Caesalpiniaceae		Yes	Yes	
Moderate	10848	Senna occidentalis	Caesalpiniaceae		Yes	Yes	
Moderate	8223	Sigesbeckia orientalis	Asteraceae		Yes	Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	3072	Sisymbrium orientale	Brassicaceae		Yes	Yes	
Moderate	6988	Solanum americanum	Solanaceae		Yes	Yes	
Moderate	7020	Solanum linnaeanum	Solanaceae	Glossy Nightshade	Yes	Yes	
Moderate	7022	Solanum nigrum	Solanaceae		Yes	Yes	
Moderate	91008	Solanum sodomaeum	Solanaceae	Black Nightshade, Blackberry Nightshade	Yes	Yes	
Moderate	1765	Soleirolia soleirolii	Urticaceae		Yes	Yes	
Moderate	8230	Sonchus asper	Asteraceae		Yes	Yes	
Moderate	8231	Sonchus oleraceus	Asteraceae	Common Sowthistle	Yes	Yes	
Moderate	8232	Sonchus tenerrimus	Asteraceae		Yes	Yes	
Moderate	1559	Sparaxis grandiflora	Iridaceae			Yes	Yes
Moderate	2915	Spergularia rubra	Caryophyllaceae		Yes	Yes	
Moderate	636	Stenotaphrum secundatum	Poaceae	Buffalo Grass		Yes	Yes
Moderate	91042	Succowia balaerica	Brassicaceae		Yes	Yes	
Moderate	15741	Tamarix aphylla	Tamaricaceae		Yes	Yes	
Moderate	91047	Tamarix pentaphylla	Tamaricaceae		Yes	Yes	
Moderate	2820	Tetragonia decumbens	Aizoaceae		Yes	Yes	
Moderate	10874	Thinopyrum distichum	Poaceae		Yes	Yes	
Moderate	2830	Trianthema portulacastrum	Aizoaceae		Yes	Yes	
Moderate	11112	Tribolium uniolae	Poaceae		Yes	Yes	
Moderate	8252	Tridax procumbens	Asteraceae		Yes	Yes	
Moderate	4291	Trifolium arvense	Papilionaceae		Yes	Yes	
Moderate	4292	Trifolium campestre	Papilionaceae	Hop Clover	Yes	Yes	
Moderate	4293	Trifolium cernuum	Papilionaceae	Drooping Flower Clover	Yes	Yes	
Moderate	4295	Trifolium dubium	Papilionaceae		Yes	Yes	
Moderate	4297	Trifolium glomeratum	Papilionaceae	Ball Clover Cluster Clover	Yes	Yes	
Moderate	4313	Trifolium subterraneum	Papilionaceae	Subterranean Clover	Yes	Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Moderate	716	Urochloa mutica	Poaceae		Yes	Yes	
Moderate	8254	Urospermum picroides	Asteraceae	False Hawkbit	Yes	Yes	
Moderate	8255	Ursinia anthemoides	Asteraceae	Ursinia	Yes	Yes	
Moderate	8257	Vellereophyton dealbatum	Asteraceae	White Cudweed	Yes	Yes	
Moderate	4322	Vicia sativa	Papilionaceae		Yes	Yes	
Moderate	4324	Vigna radiata	Papilionaceae		Yes	Yes	
Moderate	13597	Vigna trilobata	Papilionaceae		Yes	Yes	
Moderate	722	Vulpia bromoides	Poaceae	Squirrels Tail Fescue	Yes	Yes	
Moderate	11137	Vulpia fasciculata	Poaceae		Yes	Yes	
Moderate	723	Vulpia membranacea	Poaceae		Yes	Yes	
Moderate	724	Vulpia myuros	Poaceae		Yes	Yes	
Moderate	7384	Wahlenbergia capensis	Campanulaceae	Cape Bluebell	Yes	Yes	
Moderate	15117	Watsonia borbonica subsp. borbonica	Iridaceae			Yes	Yes
Moderate	1566	Watsonia marginata	Iridaceae	Watsonia		Yes	Yes
Moderate	1567	Watsonia meriana	Iridaceae			Yes	Yes
Moderate	8286	Xanthium occidentale	Asteraceae		Yes	Yes	
Mild	90004	Acacia dealbata	Mimosaceae	Silver Wattle			Yes
Mild	16975	Acacia decurrens	Mimosaceae	Early Black Wattle			Yes
Mild	189	Alopecurus geniculatus	Poaceae		Yes		
Mild	190	Alopecurus myosuroides	Poaceae		Yes		
Mild	90085	Anagallis minima	Primulaceae			Yes	
Mild	201	Andropogon distachyos	Poaceae				Yes
Mild	2961	Argemone ochroleuca	Papaveraceae		Yes		
Mild	1364	Asphodelus fistulosus	Asphodelaceae	Wild Onion	Yes		
Mild	1511	Babiana disticha	Iridaceae	Baboon Flower	Yes		
Mild	90236	Chamaecytisus palmensis				Yes	
Mild	90293	Cotyledon orbiculare				Yes	

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Mild	285	Cynosurus echinatus	Poaceae		Yes		
Mild	7961	Dittrichia graveolens	Asteraceae	Stinkwort	Yes		
Mild	328	Echinochloa colona	Poaceae			Yes	
Mild	350	Ehrharta pusilla	Poaceae			Yes	
Mild	17359	Eucalyptus botryoides	Myrtaceae		Yes		
Mild	4643	Euphorbia segetalis	Euphorbiaceae			Yes	
Mild	2969	Fumaria capreolata	Fumariaceae				Yes
Mild	2971	Fumaria muralis	Fumariaceae	Wall Fumitory			Yes
Mild	3934	Genista canariensis	Papilionaceae				Yes
Mild	1518	Gladiolus angustus	Iridaceae	Long Tubed Painted Lady	Yes		
Mild	8007	Hedypnois rhagadioloides	Asteraceae		Yes		
Mild	2893	Herniaria hirsuta	Caryophyllaceae		Yes		
Mild	6620	Ipomoea cairica	Convolvulaceae	Five Leaved Morning Glory		Yes	
Mild	6630	Ipomoea indica	Convolvulaceae	Morning Glory		Yes	
Mild	1177	Juncus articulatus	Juncaceae			Yes	
Mild	1186	Juncus microcephalus	Juncaceae		Yes		
Mild	1187	Juncus oxycarpus	Juncaceae			Yes	
Mild	13562	Lachenalia aloides	Hyacinthaceae	Soldiers		Yes	
Mild	2811	Lampranthus glaucus	Aizoaceae		Yes		
Mild	4065	Lupinus angustifolius	Papilionaceae		Yes		
Mild	4077	Medicago minima	Papilionaceae		Yes		
Mild	4079	Medicago polymorpha	Papilionaceae		Yes		
Mild	4083	Medicago truncatula	Papilionaceae		Yes		
Mild	14985	Melinis repens	Poaceae		Yes		
Mild	5053	Melochia pyramidata	Sterculiaceae		Yes		
Mild	4660	Mercurialis annua	Euphorbiaceae		Yes		

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Mild	2814	Mesembryanthemum nodiflorum	Aizoaceae		Yes		
Mild	90698	Micropterum papillosum	Aizoaceae		Yes		
Mild	2894	Moenchia erecta	Caryophyllaceae	Erect Chickweed	Yes		
Mild	1535	Moraea fugax	Iridaceae		Yes		
Mild	1536	Moraea vegeta	Iridaceae				Yes
Mild	1168	Murdannia nudiflora	Commelinaceae		Yes		
Mild	6974	Nicotiana glauca	Solanaceae	Tree Tobacco	Yes		
Mild	2922	Nymphaea mexicana	Nymphaeaceae	Yellow Waterlily		Yes	
Mild	2923	Nymphaea odorata	Nymphaeaceae	Fragrant Waterlily		Yes	
Mild	6907	Ocimum basilicum	Lamiaceae		Yes		
Mild	4113	Ornithopus compressus	Papilionaceae	Yellow Serradella	Yes		
Mild	499	Oryza sativa	Poaceae		Yes		
Mild	8156	Osteospermum clandestinum	Asteraceae	Stinking Roger	Yes		
Mild	4348	Oxalis caprina	Oxalidaceae		Yes		
Mild	4351	Oxalis flava	Oxalidaceae		Yes		
Mild	4352	Oxalis glabra	Oxalidaceae		Yes		
Mild	4356	Oxalis pes-caprae	Oxalidaceae		Yes		
Mild	516	Parapholis incurva	Poaceae	Coast Barbgrass	Yes		
Mild	1763	Parietaria judaica	Urticaceae	Wall Pellitory		Yes	
Mild	541	Pennisetum setaceum	Poaceae	Fountain Grass	Yes		
Mild	545	Periballia minuta	Poaceae		Yes		
Mild	2895	Petrorhagia velutina	Caryophyllaceae	Velvet Pink	Yes		
Mild	13405	Phyllopodium cordatum	Scrophulariaceae		Yes		
Mild	2793	Phytolacca octandra	Phytolaccaceae	Ink Weed	Yes		
Mild	1045	Pistia stratiotes	Araceae			Yes	
Mild	7304	Plantago major	Plantaginaceae	Great Plantain	Yes		
Mild	571	Poa annua	Poaceae	Annual Winter Grass	Yes		

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Mild	3620	Prosopis pallida	Mimosaceae		Yes		
Mild	90891	Psilocaulon tenue				Yes	
Mild	4155	Psoralea pinnata	Papilionaceae		Yes		
Mild	2768	Pupalia lappacea	Amaranthaceae			Yes	
Mild	3061	Raphanus raphanistrum	Brassicaceae	Wild Radish	Yes		
Mild	8197	Reichardia tingitana	Asteraceae		Yes		
Mild	2432	Rumex conglomeratus	Polygonaceae	Clusterd Dock	Yes		
Mild	2433	Rumex crispus	Polygonaceae	Curled Dock	Yes		
Mild	2440	Rumex pulcher	Polygonaceae		Yes		
Mild	611	Setaria sphacelata	Poaceae		Yes		
Mild	7362	Sherardia arvensis	Rubiaceae	Field Madder	Yes		
Mild	4965	Sida acuta	Malvaceae		Yes		
Mild	2910	Silene nocturna	Caryophyllaceae		Yes		
Mild	3070	Sisymbrium irio	Brassicaceae	London Rocket	Yes		
Mild	7017	Solanum laciniatum	Solanaceae			Yes	
Mild	2914	Spergularia diandra	Caryophyllaceae		Yes		
Mild	4212	Stylosanthes guianensis	Papilionaceae		Yes		
Mild	12353	Stylosanthes hamata	Papilionaceae			Yes	
Mild	4214	Stylosanthes humilis	Papilionaceae			Yes	
Mild	91054	Thinopyrum elongatum	Poaceae		Yes		
Mild	1368	Trachyandra divaricata	Asphodelaceae	Onion Weed	Yes		
Mild	4307	Trifolium repens	Papilionaceae		Yes		
Mild	4309	Trifolium scabrum	Papilionaceae		Yes		
Mild	715	Urochloa mosambicensis	Poaceae		Yes		
Mild	1767	Urtica urens	Urticaceae	Stinging Nettle or Small Nettle	Yes		
Mild	91142	Washingtonia filifera			Yes		

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Mild	1569	Watsonia versfeldii	Iridaceae				Yes
Low	4903	Abutilon theophrasti	Malvaceae	Velvet Leaf			
Low	90002	Acacia baileyana	Mimosaceae	Cootamundra wattle			
Low	90006	Acacia elata	Mimosaceae	Mountain Cedar Wattle			
Low	90008	Acacia floribunda	Mimosaceae	Catkin Wattle White Sallow Wattle			
Low	90009	Acacia iteaphylla	Mimosaceae	Flinders Range Wattle			
Low	3397	Acacia karroo	Mimosaceae				
Low	10955	Acacia melanoxylon	Mimosaceae				
Low	90015	Acacia nilotica	Mimosaceae	Karroo			
Low	90016	Acacia podalyriifolia	Mimosaceae	Blackwood			
Low	3504	Acacia pycnantha	Mimosaceae	Golden Wattle			
Low	3183	Acaena agnipila	Rosaceae				
Low	3184	Acaena echinata	Rosaceae				
Low	3185	Acaena novae-zelandiae	Rosaceae				
Low	7811	Acanthospermum hispidum	Asteraceae				
Low	90023	Acanthus mollis	Acanthaceae				
Low	90025	Acetosella vulgaris					
Low	7812	Achillea millefolium	Asteraceae	Yarrow Milfoil			
Low	7813	Acroptilon repens	Asteraceae				
Low	2926	Adonis microcarpa	Ranunculaceae				
Low	90030	Aeonium arboreum	Crassulaceae				
Low	90031	Aeonium castello-paviae	Crassulaceae				
Low	3681	Aeschynomene villosa	Papilionaceae				
Low	1488	Agapanthus praecox	Alliaceae				
Low	1505	Agave americana	Agavaceae				
Low	90037	Agave sisalana	Agavaceae	Sisal			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	90038	Ageratina adenophora					
Low	173	Agropyron distichum	Poaceae				
Low	174	Agropyron repens	Poaceae				
Low	90042	Agrostemma githago					
Low	177	Agrostis capillaris	Poaceae				
Low	179	Agrostis gigantea	Poaceae				
Low	182	Agrostis stolonifera	Poaceae				
Low	186	Aira elegantissima	Poaceae	Hairgrass			
Low	187	Aira praecox	Poaceae	Hairgrass			
Low	1369	Albuca canadensis	Hyacinthaceae				
Low	3682	Alhagi maurorum	Papilionaceae				
Low	90053	Alisma lanceolata	Alismataceae				
Low	15107	Allamanda cathartica	Apocynaceae				
Low	1374	Allium ampeloprasum	Alliaceae				
Low	1375	Allium neapolitanum	Alliaceae				
Low	1379	Allium vineale	Alliaceae				
Low	90059	Alocasia brisbanensis					
Low	191	Alopecurus pratensis	Poaceae				
Low	1405	Alstroemeria pulchella	Alstroemeriaceae				
Low	90064	Alternanthera philoxeroides	Amaranthaceae				
Low	2653	Alternanthera pungens	Amaranthaceae				
Low	17146	Alysicarpus vaginalis	Papilionaceae				
Low	2990	Alyssum linifolium	Brassicaceae				
Low	2655	Amaranthus albus	Amaranthaceae				
Low	2656	Amaranthus caudatus	Amaranthaceae	Tumbleweed			
Low	2659	Amaranthus cruentus	Amaranthaceae				
Low	90071	Amaranthus hybridum	Amaranthaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	2665	Amaranthus lividus	Amaranthaceae				
Low	2668	Amaranthus powellii	Amaranthaceae				
Low	2669	Amaranthus retroflexus	Amaranthaceae				
Low	2670	Amaranthus tricolor	Amaranthaceae				
Low	2671	Amaranthus viridis	Amaranthaceae				
Low	1489	Amaryllis belladonna	Amaryllidaceae				
Low	7820	Ambrosia artemisiifolia	Asteraceae				
Low	7821	Ambrosia psilostachya	Asteraceae	Perennial Ragweed			
Low	6209	Ammi majus	Apiaceae				
Low	192	Ammophila arenaria	Poaceae	Marram Grass			
Low	6671	Amsinckia calycina	Boraginaceae				
Low	6672	Amsinckia lycopsoides	Boraginaceae				
Low	16694	Anchusa arvensis	Boraginaceae				
Low	6673	Anchusa capensis	Boraginaceae				
Low	4908	Anoda cristata	Malvaceae				
Low	17455	Anredera cordifolia	Basellaceae				
Low	7837	Anthemis cotula	Asteraceae				
Low	13822	Antigonon leptopus	Polygonaceae				
Low	90095	Apentia cordifolia					
Low	3186	Aphanes arvensis	Rosaceae				
Low	17355	Araujia sericifera	Asclepiadaceae				
Low	7840	Arctotis stoechadifolia	Asteraceae	White Arctotis			
Low	17652	Arenaria serpyllifolia	Caryophyllaceae				
Low	7841	Argyranthemum frutescens	Asteraceae	Marguerite Daisy			
Low	226	Arundo donax	Poaceae				
Low	90108	Asarina barclaiana					
Low	6580	Asclepias curassavica	Asclepiadaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	1201	Asparagus officinalis	Asparagaceae				
Low	15681	Asterolinon linum-stellatum	Primulaceae				
Low	2460	Atriplex hortensis	Chenopodiaceae				
Low	2464	Atriplex leptocarpa	Chenopodiaceae				
Low	235	Avena sativa	Poaceae				
Low	236	Avena sterilis	Poaceae				
Low	237	Avena strigosa	Poaceae				
Low	238	Axonopus affinis	Poaceae				
Low	1512	Babiana stricta	Iridaceae				
Low	16894	Babiana tubulosa	Iridaceae				
Low	90131	Baccharis halmifolia					
Low	1382	Baeometra uniflora	Colchicaceae	3			
Low	90135	Bellis perennis					
Low	7853	Berkheya rigida	Asteraceae				
Low	12686	Berula erecta	Apiaceae				
Low	6674	Borago officinalis	Boraginaceae				
Low	8661	Brachypodium distachyon	Poaceae	False Broome			
Low	11187	Brassica barrelieri subsp. oxyrrhina	Brassicaceae				
Low	2993	Brassica fruticulosa	Brassicaceae				
Low	2994	Brassica juncea	Brassicaceae				
Low	2995	Brassica napus	Brassicaceae				
Low	2996	Brassica nigra	Brassicaceae				
Low	2997	Brassica oleracea	Brassicaceae				
Low	2998	Brassica oxyrrhina	Brassicaceae	Smooth Stem Turnip			
Low	246	Bromus alopecuros	Poaceae				
Low	248	Bromus catharticus	Poaceae				
Low	90156	Bromus coloratus	Poaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	250	Bromus hordeaceus	Poaceae				
Low	251	Bromus japonicus	Poaceae	Prairie Grass			
Low	10988	Bromus lanceolatus	Poaceae				
Low	252	Bromus madritensis	Poaceae				
Low	90163	Bromus rigidus	Poaceae				
Low	90166	Bromus tectorum	Poaceae	Lesser Brome			
Low	90167	Brugmansia candida					
Low	14157	Buddleja dysophylla	Buddlejaceae				
Low	6537	Buddleja madagascariensis	Buddlejaceae	Buddleia			
Low	6675	Buglossoides arvensis	Boraginaceae				
Low	10921	Bulbinella robusta	Asphodelaceae				
Low	90172	Bupleurum lanceolatum					
Low	11022	Caesalpinia gilliesii	Caesalpiniaceae				
Low	3001	Cakile edentula	Brassicaceae				
Low	14925	Calotropis gigantea	Asclepiadaceae				
Low	3747	Canavalia ensiformis	Papilionaceae				
Low	3004	Capsella bursa-pastoris	Brassicaceae				
Low	3005	Cardamine hirsuta	Brassicaceae				
Low	3007	Cardaria draba	Brassicaceae				
Low	17318	Cardiospermum grandiflorum	Sapindaceae				
Low	7908	Carduus nutans	Asteraceae				
Low	7910	Carduus tenuiflorus	Asteraceae				
Low	90197	Carduus tinctorius	Asteraceae				
Low	90199	Caribbean stylo					
Low	2794	Carpobrotus aequilaterus	Aizoaceae				
Low	7911	Carthamus lanatus	Asteraceae				
Low	7912	Carthamus leucocaulos	Asteraceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	13679	Cascabela thevetia	Apocynaceae				
Low	90206	Cassia fistula	Caesalpiniaceae				
Low	90207	Casuarina cunninghamiana					
Low	90208	Casuarina equisetifolia					
Low	90209	Casuarina glauca					
Low	90210	Catapodium marinum					
Low	6569	Catharanthus roseus	Apocynaceae				
Low	257	Cenchrus biflorus	Poaceae				
Low	259	Cenchrus echinatus	Poaceae				
Low	261	Cenchrus incertus	Poaceae				
Low	262	Cenchrus longispinus	Poaceae				
Low	7915	Centaurea calcitrapa	Asteraceae				
Low	7917	Centaurea solstitialis	Asteraceae				
Low	6540	Centaurium maritimum	Gentianaceae				
Low	90226	Centaurium pulchellum	Gentianaceae				
Low	6542	Centaurium tenuiflorum	Gentianaceae				
Low	7366	Centranthus macrosiphon	Valerianaceae				
Low	7367	Centranthus ruber	Valerianaceae				
Low	3750	Centrosema pubescens	Papilionaceae				
Low	2888	Cerastium diffusum	Caryophyllaceae				
Low	2889	Cerastium glomeratum	Caryophyllaceae	Chickweed			
Low	2890	Cerastium semidecandrum	Caryophyllaceae				
Low	90237	Chamaesyce australis					
Low	90238	Chamaesyce drummondii					
Low	90240	Chamomilla suaveolens					
Low	2483	Chenopodium album	Chenopodiaceae	White Goosefoot Fat Hen			
Low	2484	Chenopodium ambrosioides	Chenopodiaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	2490	Chenopodium glaucum	Chenopodiaceae				
Low	2491	Chenopodium macrospermum	Chenopodiaceae				
Low	2493	Chenopodium multifidum	Chenopodiaceae				
Low	2494	Chenopodium murale	Chenopodiaceae	Nettleleaf Goosefoot Green Fat Hen			
Low	266	Chloris barbata	Poaceae				
Low	267	Chloris gayana	Poaceae				
Low	272	Chloris virgata	Poaceae				
Low	7925	Chondrilla juncea	Asteraceae				
Low	90252	Chromolaena odorata					
Low	4607	Chrozophora tinctoria	Euphorbiaceae				
Low	7928	Chrysanthemum coronarium	Asteraceae				
Low	7929	Chrysanthemum segetum	Asteraceae				
Low	6543	Cicendia filiformis	Gentianaceae	Slender Cicendia			
Low	16524	Cicendia quadrangularis	Gentianaceae				
Low	7935	Cichorium intybus	Asteraceae				
Low	90260	Ciclospermum leptophyllum					
Low	90261	Cinnamomum camphora					
Low	7936	Cirsium arvense	Asteraceae				
Low	7369	Citrullus colocynthis	Cucurbitaceae				
Low	7370	Citrullus lanatus	Cucurbitaceae	Pie Melon or Afghan Melon			
Low	4449	Coleonema album	Rutaceae	Diosma			
Low	90271	Commelina benghalensis					
Low	6217	Conium maculatum	Apiaceae				
Low	2930	Consolida ambigua	Ranunculaceae				
Low	6611	Convolvulus arvensis	Convolvulaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	7938	Conyza albida	Asteraceae	Tall Fleabane			
Low	7939	Conyza bonariensis	Asteraceae	Flaxleaf Fleabane			
Low	7940	Conyza canadensis	Asteraceae				
Low	7941	Conyza parva	Asteraceae				
Low	90280	Coprosma repens					
Low	7942	Coreopsis grandiflora	Asteraceae				
Low	90283	Coriandrum sativum					
Low	3009	Coronopus didymus	Brassicaceae				
Low	90285	Corrigiola littoralis	Caryophyllaceae				
Low	90287	Cotoneaster glaucophyllus					
Low	90288	Cotoneaster pannosus					
Low	7944	Cotula bipinnata	Asteraceae	Ferny Cotula			
Low	7947	Cotula turbinata	Asteraceae	Funnel Weed			
Low	90294	Crambe hispanica					
Low	3136	Crassula alata	Crassulaceae				
Low	90297	Crassula multicava	Crassulaceae				
Low	17019	Crassula tetragona	Crassulaceae				
Low	3146	Crassula thunbergiana	Crassulaceae				
Low	7952	Crepis capillaris	Asteraceae				
Low	7953	Crepis foetida	Asteraceae	Hawksbeard			
Low	7954	Crepis vesicaria	Asteraceae				
Low	90304	Crinum moorei					
Low	90305	Crinum x powellii					
Low	90306	Critesion hystrix					
Low	1514	Crocosmia x crocosmiiflora	Iridaceae				
Low	90308	Crotalaria agatifolia	Papilionaceae				
Low	3777	Crotalaria goreensis	Papilionaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	3780	Crotalaria juncea	Papilionaceae				
Low	278	Crypsis schoenoides	Poaceae				
Low	90314	Cucurbita maxima					
Low	1487	Cyanella hyacinthoides	Tecophilaeaceae				
Low	51	Cyathea cooperi	Cyatheaceae				
Low	7053	Cymbalaria muralis	Scrophulariaceae				
Low	7956	Cynara cardunculus	Asteraceae				
Low	7957	Cynara scolymus	Asteraceae				
Low	284	Cynosurus cristatus	Poaceae				
Low	90330	Cyperus involucratus	Cyperaceae				
Low	801	Cyperus laevigatus	Cyperaceae				
Low	90332	Cyperus papyrus	Cyperaceae				
Low	816	Cyperus tenuiflorus	Cyperaceae				
Low	14537	Cyperus vorsteri	Cyperaceae				
Low	90339	Cyrtomium falcatum					
Low	3789	Cytisus proliferus	Papilionaceae				
Low	287	Dactylis glomerata	Poaceae				
Low	288	Dactyloctenium aegyptium	Poaceae				
Low	289	Dactyloctenium australe	Poaceae				
Low	90344	Datura candida	Solanaceae				
Low	6960	Datura ferox	Solanaceae				
Low	10823	Datura inoxia	Solanaceae				
Low	6963	Datura metel	Solanaceae				
Low	6964	Datura stramonium	Solanaceae				
Low	6965	Datura wrightii	Solanaceae				
Low	10871	Daucus carota	Apiaceae				
Low	10894	Delairea odorata	Asteraceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	302	Dichanthium aristatum	Poaceae				
Low	90355	Dichondra micrantha					
Low	90356	Dierama pendulum					
Low	90357	Digitaria aequiglumis					
Low	311	Digitaria ciliaris	Poaceae				
Low	314	Digitaria didactyla	Poaceae				
Low	320	Digitaria sanguinalis	Poaceae				
Low	321	Digitaria violascens	Poaceae				
Low	90362	Dimorphotheca ecklonis					
Low	3011	Diplotaxis muralis	Brassicaceae	Wall Rocket			
Low	3012	Diplotaxis tenuifolia	Brassicaceae				
Low	3867	Dipogon lignosus	Papilionaceae	Dolichos Pea			
Low	7962	Dittrichia viscosa	Asteraceae				
Low	90370	Dorotheanthus bellidiformis					
Low	90371	Droseranthemum candens					
Low	7374	Ecballium elaterium	Cucurbitaceae				
Low	11105	Echinochloa crus-galli	Poaceae				
Low	329	Echinochloa crus-pavonis	Poaceae				
Low	16093	Echinochloa esculenta	Poaceae				
Low	332	Echinochloa frumentacea	Poaceae				
Low	335	Echinochloa microstachya	Poaceae				
Low	336	Echinochloa oryzoides	Poaceae				
Low	90381	Echinochloa polystachya	Poaceae				
Low	337	Echinochloa pyramidalis	Poaceae				
Low	338	Echinochloa telmatophila	Poaceae				
Low	339	Echinochloa utilis	Poaceae				
Low	159	Egeria densa	Hydrocharitaceae	Leafy Elodea			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	348	Ehrharta erecta	Poaceae				
Low	350	Ehrharta pusilla	Poaceae				
Low	11076	Eleusine coracana	Poaceae				
Low	353	Eleusine indica	Poaceae				
Low	10873	Elytrigia repens	Poaceae				
Low	2409	Emex australis	Polygonaceae	Doublegee			
Low	2410	Emex spinosa	Polygonaceae				
Low	7965	Emilia sonchifolia	Asteraceae				
Low	6132	Epilobium ciliatum	Onagraceae				
Low	6134	Epilobium tetragonum	Onagraceae				
Low	90404	Equisetum arvense					
Low	374	Eragrostis cilianensis	Poaceae				
Low	17612	Eragrostis mexicana	Cyperaceae				
Low	389	Eragrostis minor	Poaceae				
Low	17610	Eragrostis tenuifolia	Cyperaceae				
Low	4613	Eremocarpus setiger	Euphorbiaceae				
Low	90412	Erica baccans					
Low	7968	Erigeron karvinskianus	Asteraceae				
Low	90414	Eriobotrya japonica					
Low	90415	Eriocereus martinii					
Low	4332	Erodium botrys	Geraniaceae				
Low	90418	Erodium brachycarpum	Geraniaceae	Long Storksbill			
Low	4336	Erodium moschatum	Geraniaceae				
Low	3013	Eruca sativa	Brassicaceae				
Low	90422	Erythrina x sykesii					
Low	2962	Eschscholzia californica	Papaveraceae				
Low	90429	Eucalyptus globulus	Myrtaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	90431	Eucalyptus muelleriana	Myrtaceae				
Low	90432	Eucalyptus polyanthemos	Myrtaceae				
Low	90433	Eucalyptus saligna	Myrtaceae				
Low	7972	Eupatorium adenophorum	Asteraceae				
Low	4624	Euphorbia dendroides	Euphorbiaceae				
Low	4627	Euphorbia helioscopia	Euphorbiaceae				
Low	11157	Euphorbia heterophylla	Euphorbiaceae				
Low	4631	Euphorbia lathyrus	Euphorbiaceae				
Low	4633	Euphorbia marginata	Euphorbiaceae				
Low	90449	Euphorbia tirucalli	Euphorbiaceae				
Low	2411	Fagopyrum esculentum	Polygonaceae				
Low	430	Festuca arundinacea	Poaceae				
Low	431	Festuca pratensis	Poaceae				
Low	433	Festuca rubra	Poaceae				
Low	90458	Ficus benjamina	Moraceae				
Low	7974	Filago gallica	Asteraceae				
Low	90461	Fuchsia magellanica	Fumariaceae				
Low	2970	Fumaria densiflora	Fumariaceae				
Low	90466	Furcraea foetida					
Low	2801	Galenia pubescens	Aizoaceae				
Low	7976	Galinsoga parviflora	Asteraceae				
Low	17348	Galium aparine	Rubiaceae				
Low	7324	Galium tricornutum	Rubiaceae				
Low	15046	Gamochaeta falcata	Asteraceae				
Low	434	Gastridium phleoides	Poaceae				
Low	16311	Gazania linearis	Asteraceae	Gazania			
Low	3936	Genista linifolia	Papilionaceae	Flaxleaf Broom			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	4337	Geranium dissectum	Geraniaceae				
Low	4339	Geranium molle	Geraniaceae	Cranesbill			
Low	1517	Gladiolus alatus	Iridaceae				
Low	1519	Gladiolus cardinalis	Iridaceae				
Low	90484	Gladiolus carneus	Iridaceae				
Low	1521	Gladiolus communis	Iridaceae				
Low	1523	Gladiolus tristis	Iridaceae				
Low	2963	Glaucium corniculatum	Papaveraceae				
Low	3663	Gleditsia triacanthos	Caesalpiniaceae				
Low	13681	Gliricidia sepium	Papilionaceae				
Low	90496	Gnaphalium luteoalbun	Asteraceae				
Low	7985	Gnaphalium polycaulon	Asteraceae				
Low	2677	Gomphrena celosioides	Amaranthaceae				
Low	8006	Gorteria personata	Asteraceae				
Low	4913	Gossypium hirsutum	Malvaceae				
Low	90504	Grevillea robusta					
Low	90505	Guilleminea densa					
Low	90511	Hedera helix					
Low	3962	Hedysarum coronarium	Papilionaceae				
Low	8008	Helianthus annuus	Asteraceae				
Low	8009	Helianthus debilis	Asteraceae				
Low	8010	Helianthus tuberosus	Asteraceae				
Low	6710	Heliotropium europaeum	Boraginaceae				
Low	17367	Heliotropium indicum	Boraginaceae				
Low	6717	Heliotropium supinum	Boraginaceae				
Low	8084	Helminthotheca echioides	Asteraceae				
Low	90535	Homoglossum watsonianum	Iridaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	447	Hordeum geniculatum	Poaceae				
Low	451	Hordeum vulgare	Poaceae				
Low	90541	Humulus lupulus					
Low	6225	Hydrocotyle bonariensis	Apiaceae				
Low	90544	Hydrocotyle verticillata	Apiaceae				
Low	90547	Hypericum androsaemum	Clusiaceae				
Low	5182	Hypericum perforatum	Clusiaceae				
Low	11062	Hypolepis rugosula	Dennstaedtiaceae				
Low	1380	Ipheion uniflorum	Alliaceae				
Low	1531	Iris germanica	Iridaceae				
Low	1532	Ixia maculata	Iridaceae	Yellow Ixia			
Low	1533	Ixia paniculata	Iridaceae				
Low	1534	Ixia polystachya	Iridaceae	Variable Ixia			
Low	17428	Ixia viridiflora	Iridaceae				
Low	90576	Juncus effusus	Juncaceae				
Low	90577	Juncus gerardii	Juncaceae				
Low	14630	Juncus imbricatus	Juncaceae				
Low	1191	Juncus polyanthemus	Juncaceae				
Low	1196	Juncus usitatus	Juncaceae				
Low	90583	Kochia scoparia	Scrophulariaceae				
Low	90584	Kochia scoparia var. trichophylla	Scrophulariaceae				
Low	16091	Lachenalia bulbifera	Hyacinthaceae				
Low	90587	Lachenalia mutabilis	Hyacinthaceae				
Low	8095	Lactuca saligna	Asteraceae	Wild Lettuce			
Low	90591	Lagunaria patersonii	Malvaceae				
Low	6877	Lamium amplexicaule	Lamiaceae				
Low	90595	Lampranthus coccineus	Aizoaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	17040	Lathyrus latifolius	Papilionaceae				
Low	10789	Lathyrus sylvestris	Papilionaceae				
Low	4047	Lathyrus tingitanus	Papilionaceae	Perennial Sweet pea, Tangier Pea			
Low	10963	Lavandula angustifolia	Lamiaceae				
Low	6878	Lavandula dentata	Lamiaceae				
Low	6879	Lavandula stoechas	Lamiaceae	French Lavender			
Low	4947	Lavatera cretica	Malvaceae	Cretan Mallow			
Low	4949	Lavatera trimestris	Malvaceae				
Low	6880	Leonotis leonurus	Lamiaceae	Lion's Ear			
Low	8099	Leontodon saxatilis	Asteraceae				
Low	3018	Lepidium africanum	Brassicaceae				
Low	90614	Lepidium aucheri	Brassicaceae				
Low	3021	Lepidium bonariense	Brassicaceae				
Low	3036	Lepidium perfoliatum	Brassicaceae				
Low	90617	Lepidium sativum	Brassicaceae				
Low	90620	Leucanthemum vulgare	Asteraceae				
Low	1493	Leucojum aestivum	Amaryllidaceae				
Low	6488	Limonium lobatum	Plumbaginaceae				
Low	6489	Limonium sinuatum	Plumbaginaceae				
Low	4363	Linum trigynum	Linaceae	French Flax			
Low	4364	Linum usitatissimum	Linaceae				
Low	3048	Lobularia maritima	Brassicaceae				
Low	475	Lolium multiflorum	Poaceae				
Low	476	Lolium perenne	Poaceae	Perennial Rye Grass			
Low	477	Lolium remotum	Poaceae				
Low	7365	Lonicera japonica	Caprifoliaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	90638	Lonicera x americana	Caprifoliaceae	Honeysuckle			
Low	4059	Lotus angustissimus	Papilionaceae	Narrowleaf Trefoil			
Low	4062	Lotus suaveolens	Papilionaceae				
Low	4063	Lotus uliginosus	Papilionaceae				
Low	4064	Lupinus albus	Papilionaceae				
Low	4067	Lupinus luteus	Papilionaceae				
Low	4068	Lupinus mutabilis	Papilionaceae				
Low	4069	Lupinus pilosus	Papilionaceae				
Low	11146	Lychnis coronaria	Caryophyllaceae				
Low	10900	Lycopersicon esculentum	Solanaceae				
Low	5282	Lythrum junceum	Lythraceae				
Low	4070	Macroptilium atropurpureum	Papilionaceae				
Low	4071	Macroptilium lathyroides	Papilionaceae				
Low	4961	Malva parviflora	Malvaceae	Marshmallow			
Low	4719	Mangifera indica	Anacardiaceae				
Low	6881	Marrubium vulgare	Lamiaceae				
Low	90660	Martynia annua					
Low	3049	Matthiola incana	Brassicaceae				
Low	4072	Medicago arabica	Papilionaceae				
Low	4073	Medicago intertexta	Papilionaceae				
Low	4074	Medicago laciniata	Papilionaceae				
Low	4076	Medicago lupulina	Papilionaceae				
Low	4078	Medicago orbicularis	Papilionaceae				
Low	11030	Medicago praecox	Papilionaceae				
Low	4080	Medicago sativa	Papilionaceae				
Low	4081	Medicago scutellata	Papilionaceae				
Low	4785	Melianthus major	Melianthaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	90678	Melilotus alba	Papilionaceae				
Low	4086	Melilotus messanensis	Papilionaceae				
Low	4087	Melilotus officinalis	Papilionaceae				
Low	481	Melinis minutiflora	Poaceae				
Low	6882	Mentha aquatica	Lamiaceae				
Low	6882	Mentha aquatica	Lamiaceae				
Low	6883	Mentha pulegium	Lamiaceae				
Low	6885	Mentha suaveolens	Lamiaceae	Pennyroyal			
Low	6886	Mentha x piperita	Lamiaceae				
Low	90690	Mentha x spicata	Lamiaceae				
Low	6644	Merremia aegyptia	Convolvulaceae				
Low	6646	Merremia dissecta	Convolvulaceae				
Low	482	Mibora minima	Poaceae				
Low	90699	Mimosa invisa					
Low	90700	Mimosa pigra					
Low	90701	Mimosa pudica					
Low	90703	Mirabilis jalapa					
Low	486	Miscanthus sinensis	Poaceae	Eulalia			
Low	7085	Misopates orontium	Scrophulariaceae	Lesser Snapdragon			
Low	4963	Modiola caroliniana	Malvaceae				
Low	6906	Moluccella laevis	Lamiaceae				
Low	7410	Monopsis debilis	Lobeliaceae				
Low	90713	Moraea pavonis	Iridaceae				
Low	16896	Muehlenbeckia complexa	Polygonaceae				
Low	1371	Muscari comosum	Hyacinthaceae				
Low	11019	Narcissus papyraceus	Amaryllidaceae				
Low	1494	Narcissus pseudonarcissus	Amaryllidaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	1495	Narcissus tazetta	Amaryllidaceae				
Low	6667	Navarretia squarrosa	Polemoniaceae				
Low	90726	Nemesia hybrid					
Low	90727	Nephrolepis cordifolia					
Low	6970	Nicandra physalodes	Solanaceae				
Low	1381	Nothoscordum gracile	Alliaceae				
Low	6137	Oenothera affinis	Onagraceae				
Low	6139	Oenothera glazioviana	Onagraceae	Evening Primose			
Low	12473	Oenothera indecora	Onagraceae				
Low	16347	Oenothera laciniata	Onagraceae				
Low	6140	Oenothera mollissima	Onagraceae				
Low	6141	Oenothera speciosa	Onagraceae				
Low	6142	Oenothera stricta	Onagraceae				
Low	8154	Onopordum acaulon	Asteraceae				
Low	1372	Ornithogalum arabicum	Hyacinthaceae				
Low	90748	Ornithogalum longibracteatum	Hyacinthaceae				
Low	1373	Ornithogalum thyrsoides	Hyacinthaceae				
Low	4114	Ornithopus pinnatus	Papilionaceae				
Low	4115	Ornithopus sativus	Papilionaceae				
Low	499	Oryza sativa	Poaceae				
Low	8155	Osteospermum calendulaceum	Asteraceae				
Low	4347	Oxalis bowiei	Oxalidaceae				
Low	13118	Oxalis compressa	Oxalidaceae				
Low	4350	Oxalis corymbosa	Oxalidaceae				
Low	90765	Oxalis debilis	Oxalidaceae				
Low	17212	Oxalis depressa	Oxalidaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	4353	Oxalis hirta	Oxalidaceae				
Low	4354	Oxalis incarnata	Oxalidaceae				
Low	4358	Oxalis purpurea	Oxalidaceae	Four O'Clock, Large Flower Wood Sorrel			
Low	4359	Oxalis violacea	Oxalidaceae				
Low	90774	Pancratium maritimum					
Low	502	Panicum capillare	Poaceae				
Low	10811	Panicum coloratum	Poaceae				
Low	507	Panicum miliaceum	Poaceae				
Low	509	Panicum schinzii	Poaceae				
Low	2964	Papaver hybridum	Papaveraceae				
Low	2965	Papaver rhoeas	Papaveraceae				
Low	2966	Papaver somniferum	Papaveraceae				
Low	90788	Parthenium hysterophorus					
Low	526	Paspalum conjugatum	Poaceae				
Low	90792	Paspalum fasiculatum	Poaceae				
Low	90793	Paspalum paspaloides	Poaceae				
Low	530	Paspalum plicatulum	Poaceae				
Low	532	Paspalum urvillei	Poaceae	Yassey Grass			
Low	5225	Passiflora filamentosa	Passifloraceae				
Low	6244	Pastinaca sativa	Apiaceae				
Low	10828	Pavonia hastata	Malvaceae				
Low	90802	Peganum harmala					
Low	90805	Pelargonium x asperum	Geraniaceae				
Low	11139	Pelargonium x domesticum	Geraniaceae				
Low	537	Pennisetum glaucum	Poaceae				
Low	540	Pennisetum purpureum	Poaceae	Elephant Grass			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	542	Pennisetum villosum	Poaceae	Feathertop			
Low	544	Pentaschistis thunbergii	Poaceae				
Low	8158	Pentzia globifera	Asteraceae				
Low	8159	Pentzia suffruticosa	Asteraceae				
Low	90821	Persicaria capitata	Polygonaceae				
Low	16983	Persicaria maculosa	Polygonaceae				
Low	90823	Petrorhagia nanteuilii	Caryophyllaceae				
Low	90825	Petroselinum crispum					
Low	90826	Petunia x hybrida					
Low	6669	Phacelia tanacetifolia	Hydrophyllaceae				
Low	547	Phalaris angusta	Poaceae				
Low	548	Phalaris aquatica	Poaceae				
Low	549	Phalaris arundinacea	Poaceae				
Low	550	Phalaris canariensis	Poaceae				
Low	552	Phalaris paradoxa	Poaceae				
Low	553	Phleum arenarium	Poaceae				
Low	90835	Phleum pratensis					
Low	555	Phragmites australis	Poaceae				
Low	6984	Physalis philadelphica	Solanaceae				
Low	6985	Physalis pubescens	Solanaceae				
Low	6986	Physalis viscosa	Solanaceae				
Low	90848	Pinus canariensis	Pinaceae				
Low	90849	Pinus halepensis	Pinaceae				
Low	90851	Pinus pinea	Pinaceae				
Low	90852	Pinus ponderosa	Pinaceae				
Low	557	Piptatherum miliaceum	Poaceae				
Low	557	Piptatherum miliaceum	Poaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	7297	Plantago coronopus	Plantaginaceae				
Low	7298	Plantago cretica	Plantaginaceae				
Low	7303	Plantago lanceolata	Plantaginaceae	Ribwort Plantain			
Low	90861	Platanus x acerifolia					
Low	572	Poa bulbosa	Poaceae				
Low	576	Poa infirma	Poaceae				
Low	17016	Podalyria sericea	Papilionaceae				
Low	7093	Polycarena heterophylla	Scrophulariaceae				
Low	2905	Polycarpon tetraphyllum	Caryophyllaceae	Four-leaf Allseed			
Low	4578	Polygala virgata	Polygalaceae				
Low	2416	Polygonum arenastrum	Polygonaceae				
Low	2419	Polygonum aviculare	Polygonaceae	Sand Wireweed			
Low	2421	Polygonum convolvulus	Polygonaceae	Wireweed			
Low	90873	Polygonum persicaria	Polygonaceae				
Low	581	Polypogon maritimus	Poaceae	Coast Beardgrass			
Low	584	Polypogon viridis	Poaceae				
Low	11100	Pontederia cordata	Pontederiaceae				
Low	90879	Populus alba					
Low	90880	Populus nigra					
Low	7121	Proboscidea louisianica	Martyniaceae				
Low	3619	Prosopis glandulosa	Mimosaceae				
Low	15992	Protasparagus densiflorus	Asparagaceae	Asparagus Fern			
Low	6927	Prunella vulgaris	Lamiaceae				
Low	17211	Prunus cerasifera	Rosaceae				
Low	591	Puccinellia ciliata	Poaceae				
Low	2933	Ranunculus muricatus	Ranunculaceae	Sharp Buttercup or Rough Buttercup			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	2938	Ranunculus trilobus	Ranunculaceae				
Low	3061	Raphanus raphanistrum	Brassicaceae	Wild Radish			
Low	3063	Rapistrum rugosum	Brassicaceae				
Low	90609	Reragrostis cilianensis					
Low	3083	Reseda alba	Resedaceae				
Low	3084	Reseda lutea	Resedaceae				
Low	3085	Reseda luteola	Resedaceae				
Low	17273	Richardia brasiliensis	Rubiaceae				
Low	7360	Richardia scabra	Rubiaceae				
Low	4705	Ricinus communis	Euphorbiaceae	Castor Oil Plant			
Low	17020	Robinia pseudoacacia	Papilionaceae				
Low	2967	Romneya coulteri	Papaveraceae	Californian Tree Poppy			
Low	2968	Romneya trichocalyx	Papaveraceae				
Low	90914	Romulea minutiflora	Iridaceae				
Low	1555	Romulea obscura	Iridaceae				
Low	16243	Rosa canina	Rosaceae				
Low	10931	Rosa chinensis X moschata	Rosaceae				
Low	10764	Rosa chinensis X multiflora	Rosaceae				
Low	16323	Rosa laevigata	Rosaceae				
Low	3187	Rosa rubiginosa	Rosaceae				
Low	90926	Rubus fruticosus	Rosaceae				
Low	3189	Rubus hillii	Rosaceae				
Low	2431	Rumex bucephalophorus	Polygonaceae				
Low	2437	Rumex frutescens	Polygonaceae				
Low	2438	Rumex obtusifolius	Polygonaceae				
Low	2441	Rumex sagittatus	Polygonaceae				
Low	2441	Rumex sagittatus	Polygonaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	2816	Ruschia tumidula	Aizoaceae				
Low	2906	Sagina apetala	Caryophyllaceae	Annual Pearlwort			
Low	2908	Sagina maritima	Caryophyllaceae				
Low	2907	Sagina procumbens	Caryophyllaceae				
Low	90943	Sagittaria graminea	Alismataceae				
Low	90944	Sagittaria montevidensis	Alismataceae				
Low	17591	Sagittaria platyphylla	Alismataceae				
Low	90946	Salix babylonica					
Low	6987	Salpichroa origanifolia	Solanaceae				
Low	6929	Salvia verbenaca	Lamiaceae				
Low	3192	Sanguisorba minor	Rosaceae				
Low	7368	Scabiosa atropurpurea	Dipsacaceae	Purple Pincushion			
Low	603	Secale cereale	Poaceae				
Low	8209	Senecio jacobaea	Asteraceae				
Low	8220	Senecio vulgaris	Asteraceae	Common Groundsel			
Low	90965	Senna obtusifolia	Caesalpiniaceae				
Low	90969	Senna tora	Caesalpiniaceae				
Low	90970	Sequoia sempervirens					
Low	607	Setaria gracilis	Poaceae				
Low	608	Setaria italica	Poaceae				
Low	609	Setaria palmifolia	Poaceae				
Low	610	Setaria pumila	Poaceae				
Low	613	Setaria verticillata	Poaceae				
Low	90983	Silene apetala	Caryophyllaceae				
Low	2909	Silene gallica	Caryophyllaceae				
Low	2911	Silene vulgaris	Caryophyllaceae				
Low	8227	Silybum marianum	Asteraceae	Varigated Thistle			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	3067	Sinapis alba	Brassicaceae				
Low	3068	Sinapis arvensis	Brassicaceae				
Low	3069	Sisymbrium erysimoides	Brassicaceae				
Low	3071	Sisymbrium officinale	Brassicaceae				
Low	3073	Sisymbrium runcinatum	Brassicaceae				
Low	1557	Sisyrinchium exile	Iridaceae				
Low	6990	Solanum aviculare	Solanaceae				
Low	7005	Solanum elaeagnifolium	Solanaceae				
Low	10966	Solanum pseudocapsicum	Solanaceae				
Low	7033	Solanum rostratum	Solanaceae				
Low	91007	Solanum sisymbrifolium	Solanaceae				
Low	7039	Solanum triflorum	Solanaceae				
Low	8228	Solidago canadensis	Asteraceae				
Low	8229	Soliva pterosperma	Asteraceae				
Low	616	Sorghum bicolor	Poaceae				
Low	617	Sorghum halepense	Poaceae				
Low	621	Sorghum sudanense	Poaceae	Timothy Grass			
Low	91019	Sorghum x almum	Poaceae				
Low	1559	Sparaxis grandiflora	Iridaceae				
Low	1560	Sparaxis pillansii	Iridaceae	Harlequin Flower			
Low	2912	Spergula arvensis	Caryophyllaceae	Corn Spurry			
Low	626	Spinifex sericeus	Poaceae				
Low	632	Sporobolus indicus	Poaceae				
Low	91029	Sporobolus pyramidalis	Poaceae				
Low	6930	Stachys arvensis	Lamiaceae	Stagger Weed			
Low	2918	Stellaria media	Caryophyllaceae	Chickweed			
Low	12354	Stylosanthes scabra	Papilionaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	14491	Stylosanthes viscosa	Papilionaceae				
Low	4216	Sutherlandia frutescens	Papilionaceae				
Low	91044	Talinum paniculatum					
Low	3677	Tamarindus indica	Caesalpiniaceae				
Low	8245	Taraxacum officinale	Asteraceae				
Low	91049	Tecoma stans					
Low	13551	Tetragonia nigrescens	Aizoaceae				
Low	91052	Thevetia peruviana					
Low	91055	Thlaspi arvense					
Low	8248	Tolpis barbata	Asteraceae				
Low	91058	Trachynia distachya	Poaceae				
Low	91059	Tradescantia albiflora					
Low	8250	Tragopogon porrifolius	Asteraceae				
Low	10930	Tribolium echinatum	Poaceae				
Low	4289	Trifolium angustifolium	Papilionaceae				
Low	4294	Trifolium cherleri	Papilionaceae				
Low	4296	Trifolium fragiferum	Papilionaceae				
Low	4298	Trifolium hirtum	Papilionaceae				
Low	4299	Trifolium hybridum	Papilionaceae				
Low	4300	Trifolium incarnatum	Papilionaceae				
Low	4301	Trifolium lappaceum	Papilionaceae				
Low	4302	Trifolium ligusticum	Papilionaceae				
Low	4303	Trifolium micranthum	Papilionaceae				
Low	4304	Trifolium ornithopodioides	Papilionaceae				
Low	4305	Trifolium pilulare	Papilionaceae				
Low	4306	Trifolium pratense	Papilionaceae				
Low	4308	Trifolium resupinatum	Papilionaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	4310	Trifolium spumosum	Papilionaceae				
Low	4311	Trifolium stellatum	Papilionaceae				
Low	4312	Trifolium striatum	Papilionaceae				
Low	4314	Trifolium suffocatum	Papilionaceae				
Low	4315	Trifolium tomentosum	Papilionaceae				
Low	91092	Trifolium vesiculosum					
Low	708	Triticum aestivum	Poaceae				
Low	1561	Tritonia crocata	Iridaceae				
Low	1562	Tritonia lineata	Iridaceae				
Low	13468	Triumfetta pentandra	Tiliaceae				
Low	4360	Tropaeolum majus	Tropaeolaceae	Nasturtium			
Low	15039	Turnera ulmifolia	Turneraceae				
Low	4317	Ulex europaeus	Papilionaceae				
Low	91102	Ulmus procera					
Low	710	Urochloa decumbens	Poaceae				
Low	714	Urochloa maxima	Poaceae				
Low	91107	Urochloa panicoides					
Low	719	Urochloa ramosa	Poaceae				
Low	8256	Ursinia speciosa	Asteraceae				
Low	2920	Vaccaria hispanica	Caryophyllaceae				
Low	91115	Vallisneria americana					
Low	7105	Verbascum creticum	Scrophulariaceae				
Low	7106	Verbascum thapsus	Scrophulariaceae				
Low	7107	Verbascum virgatum	Scrophulariaceae	Twiggy Mullerin			
Low	6739	Verbena bonariensis	Verbenaceae				
Low	6740	Verbena rigida	Verbenaceae				
Low	15725	Verbesina encelioides	Asteraceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
Low	7111	Veronica persica	Scrophulariaceae				
Low	4319	Vicia benghalensis	Papilionaceae				
Low	4320	Vicia hirsuta	Papilionaceae	Hairy Vetch			
Low	4321	Vicia monantha	Papilionaceae				
Low	6575	Vinca major	Apocynaceae	Blue Periwinkle			
Low	5223	Viola odorata	Violaceae				
Low	11018	Vulpia muralis	Poaceae				
Low	1563	Watsonia aletroides	Iridaceae				
Low	91150	Xanthium cavanillesii	Asteraceae				
Low	91151	Xanthium italicum	Asteraceae				
Low	91153	Xanthium orientale	Asteraceae				
Low	8287	Xanthium spinosum	Asteraceae				
Low	16992	Yucca aloifolia	Agavaceae				
Low	7113	Zaluzianskya divaricata	Scrophulariaceae				
Low	4847	Ziziphus mauritiana	Rhamnaceae				
TBA*	13561	Aeonium castello-paivae	Crassulaceae				
TBA	16596	Aeschynomene americana	Papilionaceae				
TBA	11700	Agapanthus praecox subsp. praecox	Alliaceae				
TBA	14580	Agave americana var. americana	Agavaceae	Agave			
TBA	13230	Ageratum conyzoides	Asteraceae				
TBA	11961	Agrostis capillaris var. capillaris	Poaceae				
TBA	11752	Agrostis capillaris var. aristata	Poaceae				
TBA	11908	Agrostis stolonifera var. ramosa	Poaceae				
TBA	95015	Agyropyron racemosum					
TBA	95018	Aira cupiana	Poaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	3609	Albizia lebbeck	Mimosaceae				
TBA	154	Alisma lanceolatum	Alismataceae				
TBA	1376	Allium orientale	Alliaceae				
TBA	1377	Allium porrum	Alliaceae				
TBA	95022	Alopecuros geniculatus	Poaceae				
TBA	2662	Amaranthus hybridus	Amaranthaceae				
TBA	95027	Anagallis arvensis var. coerulea	Primulaceae				
TBA	95026	Anagallis arvensis var. arvensis	Primulaceae				
TBA	95028	Anagallis minor	Primulaceae				
TBA	17649	Anagallis sp.Perth(G.J.Keighery 10414)	Primulaceae				
TBA	17276	Annona reticulata	Annonaceae				
TBA	95030	Anredra cordifolia					
TBA	3694	Arachis hypogaea	Papilionaceae				
TBA	6579	Araujia hortorum	Asclepiadaceae				
TBA	95034	Arctotheca populiifolia	Asteraceae				
TBA	10986	Arctotis venusta	Asteraceae				
TBA	95035	Argemone ochroleuca syn. A. mexicana	Papaveraceae				
TBA	224	Arrhenatherum bulbosum	Poaceae				
TBA	11542	Arrhenatherum elatius var. bulbosum	Poaceae				
TBA	7843	Artemisia absinthium	Asteraceae				
TBA	11389	Arundo donax var. donax	Poaceae	Giant Reed or Bamboo			
TBA	11789	Arundo donax var. versicolor	Poaceae				
TBA	1203	Asparagus declinatum	Asparagaceae	Bridal Veil			
TBA	7161	Asystasia gangetica	Acanthaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	16369	Atriplex canescens	Chenopodiaceae				
TBA	2471	Atriplex prostrata	Chenopodiaceae				
TBA	231	Avellinia michelii	Poaceae	3			
TBA	232	Avena abyssinica	Poaceae				
TBA	11037	Avena byzantina	Poaceae				
TBA	11851	Avena sterilis subsp. ludoviciana	Poaceae				
TBA	16346	Bacopa monnieri	Scrophulariaceae				
TBA	15037	Bartsia trixago	Scrophulariaceae				
TBA	2482	Bassia scoparia	Chenopodiaceae				
TBA	95047	Bellardia trixiago	Scrophulariaceae				
TBA	7854	Bidens bipinnata	Asteraceae				
TBA	7855	Bidens pilosa	Asteraceae				
TBA	10898	Brassica barrelieri	Brassicaceae				
TBA	2999	Brassica rapa	Brassicaceae				
TBA	15260	Brassica sp.A Perth Flora(R.A.Saffrey 229)	Brassicaceae				
TBA	11480	Bromus hordeaceus subsp. hordeaceus	Poaceae	Soft Brome			
TBA	11998	Bromus japonicus var. japonicus	Poaceae				
TBA	17329	Bromus japonicus var. vestitus	Poaceae				
TBA	95061	Buddleja dyssophylla	Buddlejaceae				
TBA	11088	Buglossoides arvense	Boraginaceae				
TBA	6212	Bupleurum lancifolium	Apiaceae				
TBA	3744	Cajanus cajan	Papilionaceae				
TBA	3003	Camelina sativa	Brassicaceae				
TBA	11110	Canna generalis	Cannaceae				
TBA	11081	Canna orchiodes	Cannaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	1571	Canna x orchiodes	Cannaceae				
TBA	95065	Canna x orchioides	Cannaceae				
TBA	10753	Capsella bursapastoris	Brassicaceae				
TBA	3006	Cardamine paucijuga	Brassicaceae				
TBA	11707	Cardiospermum halicacabum var. halicacabum	Sapindaceae				
TBA	7913	Carthamus tinctorius	Asteraceae				
TBA	3647	Cassia occidentalis	Caesalpiniaceae				
TBA	3659	Cassia surattensis	Caesalpiniaceae				
TBA	263	Cenchrus setigerus	Poaceae				
TBA	10902	Centaurea cyanoides	Asteraceae				
TBA	13680	Centrosema pascuorum	Papilionaceae				
TBA	14975	Cerastium fontanum subsp. vulgare	Caryophyllaceae				
TBA	14974	Cerastium fontanum	Caryophyllaceae				
TBA	6954	Cestrum parqui	Solanaceae				
TBA	10838	Chloris inflata	Poaceae				
TBA	11900	Chrysanthemoides monilifera subsp. monilifera	Asteraceae				
TBA	95082	Chrysanthemoides monilifera spp monilifera	Asteraceae				
TBA	17585	Chrysocoma coma-aurea	Asteraceae				
TBA	3766	Cicer arietinum	Papilionaceae				
TBA	3769	Clitoria ternatea	Papilionaceae				
TBA	276	Coix lacryma-jobi	Poaceae				
TBA	16092	Consolida ajacis	Ranunculaceae				
TBA	17361	Convolvulus sabatius subsp. mauritanicus	Convolvulaceae				
TBA	95090	Conzya parva	Asteraceae				
TBA	2891	Corrigiola litoralis	Caryophyllaceae	Strapwort			

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	95094	Cotoneaster species					
TBA	17015	Cotyledon orbiculata	Crassulaceae				
TBA	11221	Crassula alata var. alata	Crassulaceae				
TBA	3138	Crassula decumbens	Crassulaceae				
TBA	11345	Crassula thunbergiana subsp. thunbergiana	Crassulaceae				
TBA	3779	Crotalaria incana	Papilionaceae				
TBA	13334	Cryptostegia madagascariensis var. glaberrima	Asclepiadaceae				
TBA	7371	Cucumis melo	Cucurbitaceae				
TBA	12039	Cucumis melo subsp. agrestis	Cucurbitaceae				
TBA	7372	Cucumis myriocarpus	Cucurbitaceae	Paddy melon			
TBA	15714	Cullen stipulaceum	Papilionaceae				
TBA	11021	Cuscuta planiflora	Cuscutaceae				
TBA	6665	Cuscuta planifolia	Cuscutaceae				
TBA	6216	Cyclospermum leptophyllum	Apiaceae				
TBA	95104	Cyrtonium falcatum					
TBA	95105	Cytissus prolifera	Papilionaceae				
TBA	6961	Datura innoxia	Solanaceae				
TBA	14737	Delonix regia	Caesalpiniaceae				
TBA	17336	Dennstaedtia davallioides	Dennstaedtiaceae				
TBA	10832	Desmazeria rigida	Poaceae				
TBA	7054	Dischisma arenarium	Scrophulariaceae				
TBA	95110	Dischisma arenarium / D.capitatum	Scrophulariaceae				
TBA	7055	Dischisma capitatum	Scrophulariaceae				
TBA	17338	Dodonaea viscosa subsp. viscosa	Sapindaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	95112	Echinochloa crus-gallii	Poaceae				
TBA	330	Echinochloa crusgalli	Poaceae				
TBA	10929	Echinochloa muricata	Poaceae				
TBA	11818	Ehrharta brevifolia var. brevifolia	Poaceae				
TBA	11485	Ehrharta brevifolia var. cuspidata	Poaceae				
TBA	11861	Ehrharta villosa var. maxima	Poaceae	Pyp Grass			
TBA	352	Eleusine coracan	Poaceae				
TBA	12094	Emex spinosa var. minor	Polygonaceae				
TBA	11965	Emex spinosa var. spinosa	Polygonaceae				
TBA	17609	Eragrostis pilosa	Cyperaceae				
TBA	95128	Eucalyptus x maculata	Myrtaceae				
TBA	95129	Euphorbia helioscopa	Euphorbiaceae				
TBA	4628	Euphorbia heterohpylla	Euphorbiaceae				
TBA	429	Eustachys distichophylla	Poaceae				
TBA	14364	Evolvulus nummularius	Convolvulaceae				
TBA	11445	Ferraria crispa subsp. crispa	Iridaceae	Black Flag			
TBA	6221	Foeniculum vulgare	Apiaceae	Fennel			
TBA	12831	Frankenia pulverulenta	Frankeniaceae				
TBA	95136	Freesia aff. leichtlinii	Iridaceae				
TBA	1516	Freesia leichtlinii	Iridaceae				
TBA	11089	Freesia leichtlinii X refracta	Iridaceae				
TBA	11586	Fumaria capreolata subsp. capreolata	Fumariaceae	Whiteflower Fumitory			
TBA	2972	Fumaria officinalis	Fumariaceae				
TBA	2973	Fumaria parviflora	Fumariaceae				
TBA	11571	Galenia pubescens var. pubescens	Aizoaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	17555	Gaura lindheimeri	Onagraceae				
TBA	3935	Genista horrida	Papilionaceae				
TBA	11919	Gladiolus communis subsp. byzantinus	Iridaceae				
TBA	1522	Gladiolus floribundus	Iridaceae				
TBA	7978	Glossogyne bidens	Asteraceae				
TBA	17043	Glyceria declinata	Poaceae				
TBA	10959	Glyceria fluitans	Poaceae				
TBA	7980	Gnaphalium calviceps	Asteraceae	Cudweed			
TBA	7981	Gnaphalium coarctatum	Asteraceae				
TBA	13360	Gnaphalium falcatum	Asteraceae				
TBA	7984	Gnaphalium pensylvanicum	Asteraceae				
TBA	10996	Gnaphalium purpureum	Asteraceae				
TBA	95158	Hedra helix					
TBA	12016	Helianthus debilis subsp. cucumerifolius	Asteraceae				
TBA	14976	Herniaria cinerea	Caryophyllaceae				
TBA	11523	Hibiscus trionum var. trionum	Malvaceae				
TBA	11023	Hirschfeldia incana	Brassicaceae				
TBA	1530	Homoglossum watsonium	Iridaceae				
TBA	17575	Hordeum distichon	Poaceae				
TBA	8477	Hordeum murinum	Poaceae				
TBA	95169	Humulus lupus					
TBA	95170	Hydrocotyle rannunculoides	Apiaceae				
TBA	95171	Hymenobolus procumbens	Brassicaceae				
TBA	10772	Hyparrhenia quarrei	Poaceae				
TBA	11970	Hypericum perforatum var. angustifolium	Clusiaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	55	Hypolepis rugulosa	Dennstaedtiaceae				
TBA	17407	Illecebrum verticillatum	Caryophyllaceae				
TBA	16062	Indigofera sessiliflora	Papilionaceae				
TBA	14363	Ipomoea batatas	Convolvulaceae				
TBA	11783	Ipomoea carnea subsp. fistulosa	Convolvulaceae				
TBA	6622	Ipomoea carnea	Convolvulaceae				
TBA	6634	Ipomoea nil	Convolvulaceae				
TBA	95177	Isolepis prolifer	Cyperaceae				
TBA	4656	Jatropha gossypiifolia	Euphorbiaceae				
TBA	11898	Kickxia elatine subsp. elatine	Scrophulariaceae				
TBA	12008	Kickxia elatine subsp. crinita	Scrophulariaceae				
TBA	7067	Kickxia elatine	Scrophulariaceae				
TBA	7068	Kickxia spuria	Scrophulariaceae				
TBA	11574	Kickxia spuria subsp. spuria	Scrophulariaceae				
TBA	95184	Kunzea species					
TBA	4046	Lablab purpureus	Papilionaceae				
TBA	95191	Lagunaria patersonia	Malvaceae				
TBA	14646	Lagunaria patersoniana	Malvaceae				
TBA	14647	Lagunaria patersoniana subsp. patersoniana	Malvaceae				
TBA	469	Lasiochloa echinata	Poaceae				
TBA	95198	Leonotis nepetaeifolia	Lamiaceae				
TBA	4058	Lespedeza juncea	Papilionaceae				
TBA	8102	Leucanthemum maximum	Asteraceae				
TBA	6487	Limonium companyonis	Plumbaginaceae	Statice			
TBA	15038	Linaria dalmatica	Scrophulariaceae				
TBA	11073	Lolium hybridum	Poaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	14983	Lolium multiflorum x perenne	Poaceae				
TBA	10957	Lolium perenne x rigidum	Poaceae				
TBA	11766	Lolium temulentum forma arvense	Poaceae	Darnell			
TBA	11384	Lolium temulentum forma temulentum	Poaceae				
TBA	480	Lophochloa pumila	Poaceae				
TBA	95206	Lophostemon confertus					
TBA	95208	Lupinus angustifoliua	Papilionaceae				
TBA	6969	Lycopersicon lycopersicum	Solanaceae				
TBA	5281	Lythrum hyssopifolia	Lythraceae	Lesser Loosestrife			
TBA	10901	Matricaria matricarioides	Asteraceae				
TBA	12101	Medicago intertexta var. intertexta	Papilionaceae				
TBA	11275	Medicago laciniata var. laciniata	Papilionaceae				
TBA	11575	Medicago laciniata var. brachyacantha	Papilionaceae				
TBA	4075	Medicago littoralis	Papilionaceae				
TBA	11722	Medicago minima var. minima	Papilionaceae				
TBA	11664	Medicago minima var. brevispina	Papilionaceae				
TBA	11296	Medicago polymorpha var. polymorpha	Papilionaceae				
TBA	11934	Medicago polymorpha var. brevispina	Papilionaceae				
TBA	11913	Medicago polymorpha var. vulgaris	Papilionaceae	Burr Medic			
TBA	4082	Medicago tornata	Papilionaceae				
TBA	11889	Medicago truncatula var. truncatula	Papilionaceae				
TBA	11738	Medicago truncatula var.	Papilionaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
		longiaculeata					
TBA	4084	Melilotus albus	Papilionaceae				
TBA	4085	Melilotus indicus	Papilionaceae				
TBA	6884	Mentha spicata	Lamiaceae				
TBA	11145	Mentha x piperata	Lamiaceae				
TBA	95218	Mentha x suaveolens	Lamiaceae				
TBA	2815	Micropterum papulosum	Aizoaceae				
TBA	13408	Minuartia hybrida	Caryophyllaceae				
TBA	7379	Momordica charantia	Cucurbitaceae				
TBA	11040	Moraea pavonia	Iridaceae				
TBA	17503	Morus alba	Moraceae				
TBA	6908	Ocimum sanctum	Lamiaceae				
TBA	95235	Olea europea	Oleaceae				
TBA	12020	Opuntia stricta var. stricta	Cactaceae				
TBA	5227	Opuntia stricta	Cactaceae				
TBA	5228	Opuntia vulgaris	Cactaceae				
TBA	95241	Oxalis pes-caprae	Oxalidaceae				
TBA	4357	Oxalis polyphylla	Oxalidaceae				
TBA	501	Panicum antidotale	Poaceae				
TBA	11832	Panicum capillare var. capillare	Poaceae	Witchgrass			
TBA	12004	Panicum maximum var. maximum	Poaceae				
TBA	529	Paspalum fasciculatum	Poaceae				
TBA	10899	Passiflora caerulea	Passifloraceae				
TBA	11548	Pennisetum pedicellatum subsp. pedicellatum	Poaceae				
TBA	539	Pennisetum pedicellatum	Poaceae				
TBA	11506	Pennisetum pedicellatum	Poaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
		subsp. unispiculum					
TBA	17320	Peperomia pellucida					
TBA	16984	Persicaria lapathifolia	Polygonaceae				
TBA	10756	Phalaris aquatica X arundinacea	Poaceae				
TBA	11494	Phalaris arundinacea var. arundinacea	Poaceae				
TBA	554	Phleum pratense	Poaceae				
TBA	95264	Piptantherum miliaceum	Poaceae				
TBA	16322	Pittosporum undulatum	Pittosporaceae				
TBA	558	Plagiochloa uniolae	Poaceae				
TBA	11785	Plantago coronopus subsp. commutata	Plantaginaceae				
TBA	579	Poa pratensis	Poaceae				
TBA	2417	Polygonum argyrocoleon	Polygonaceae				
TBA	17275	Polygonum bellardii	Polygonaceae				
TBA	95275	Poplus alba					
TBA	95276	Poplus nigra					
TBA	10843	Prosopis juliflora	Mimosaceae				
TBA	15218	Prosopis sp.A Kimberley Flora	Mimosaceae				
TBA	11391	Pupalia lappacea var. velutina	Amaranthaceae				
TBA	3062	Raphanus sativus	Brassicaceae				
TBA	15308	Retama monosperma	Papilionaceae				
TBA	593	Rhynchelytrum repens	Poaceae	Red Natal Grass			
TBA	14485	Romulea flava var. minor	Iridaceae				
TBA	11544	Romulea rosea var. australis	Iridaceae	Guildford grass			
TBA	10889	Rorippa nasturtiumaquaticum	Brassicaceae				
TBA	11162	Rorippa palustris	Brassicaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	10790	Rosa chinensis	Rosaceae				
TBA	95289	Rosa chinensis x moschata 'manettii'	Rosaceae				
TBA	10813	Rosmarinus officinalis	Lamiaceae				
TBA	95290	Rubus discolor, Rubus ulmifolius, Rubus selmeri	Rosaceae				
TBA	11806	Rubus laciniatus subsp. selmeri	Rosaceae				
TBA	14359	Rulingia tuberosa	Acanthaceae				
TBA	2429	Rumex acetosella	Polygonaceae	Sorrel			
TBA	2430	Rumex brownii	Polygonaceae				
TBA	11822	Rumex pulcher subsp. divaricatus	Polygonaceae				
TBA	12017	Rumex pulcher subsp. pulcher	Polygonaceae				
TBA	6928	Salvia reflexa	Lamiaceae				
TBA	11589	Sanguisorba minor subsp. muricata	Rosaceae				
TBA	17055	Schinus molle	Anacardiaceae				
TBA	17056	Schinus molle var. areira	Anacardiaceae				
TBA	95298	Schinus terebinthifolius	Anacardiaceae				
TBA	8204	Senecio elegans	Asteraceae				
TBA	8214	Senecio mikanioides	Asteraceae				
TBA	11337	Setaria gracilis var. pauciseta	Poaceae				
TBA	11880	Setaria pumila subsp. pumila	Poaceae				
TBA	13791	Sida acuta subsp. carpinifolia	Malvaceae				
TBA	11803	Silene gallica var. quinquevulnera	Caryophyllaceae				
TBA	14582	Soccowia balearica	Brassicaceae				
TBA	95307	Solanum (sodomeum) linnaenum	Solanaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	11114	Solanum giganteum	Solanaceae				
TBA	7015	Solanum hystrix	Solanaceae				
TBA	7035	Solanum sisymbriifolium	Solanaceae				
TBA	7040	Solanum tuberosum	Solanaceae				
TBA	11048	Solanum villosum	Solanaceae				
TBA	10920	Soliva sessilis	Asteraceae				
TBA	9367	Sonchus hydrophilus	Asteraceae				
TBA	614	Sorghastrum nutans	Poaceae				
TBA	615	Sorghum almum	Poaceae				
TBA	95313	Spartium junceum					
TBA	2913	Spergula pentandra	Caryophyllaceae				
TBA	2916	Spergularia salina	Caryophyllaceae	Salt Sand Spurry			
TBA	11007	Spinacia oleracea	Chenopodiaceae				
TBA	12661	Sporobolus fertilis	Poaceae				
TBA	12030	Sporobolus indicus var. africanus	Poaceae				
TBA	15042	Sporobolus indicus var. major	Poaceae				
TBA	4215	Stylosanthes mucronata	Papilionaceae				
TBA	15108	Succowia balearica	Brassicaceae				
TBA	6725	Symphytum officinale	Boraginaceae				
TBA	8243	Tagetes minuta	Asteraceae				
TBA	13362	Themeda quadrivalvis	Poaceae				
TBA	95322	Thunbergia alata					
TBA	677	Trachynia distachyon	Poaceae				
TBA	95324	Tradescantia fluminense					
TBA	4288	Trifolium alexandrinum	Papilionaceae				
TBA	11099	Trifolium alexandrium	Papilionaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	17145	Trifolium angustifolium var. angustifolium	Papilionaceae	Narrow Leaf Clover			
TBA	4290	Trifolium argutum	Papilionaceae				
TBA	14738	Trifolium resupinatum var. resupinatum	Papilionaceae				
TBA	707	Trisetaria cristata	Poaceae	Annual Cats Tail			
TBA	709	Urochloa brizantha	Poaceae				
TBA	7128	Utricularia biflora	Lentibulariaceae				
TBA	6738	Verbena bipinnatifida	Verbenaceae				
TBA	7108	Veronica arvensis	Scrophulariaceae				
TBA	17261	Vicia monantha subsp. triflora	Papilionaceae				
TBA	12070	Vicia sativa subsp. sativa	Papilionaceae				
TBA	11474	Vicia sativa subsp. nigra	Papilionaceae				
TBA	11509	Vigna radiata var. setulosa	Papilionaceae				
TBA	17042	Vitis vinifera	Vitaceae				
TBA	12052	Vulpia myuros forma megalura	Poaceae	Rat's Tail Fescue			
TBA	16914	Vulpia myuros var. myuros	Poaceae				
TBA	16360	Vulpia myuros var. megalura	Poaceae				
TBA	1486	Wachendorfia paniculata	Haemodoraceae				
TBA	13103	Watsonia borbonica	Iridaceae				
TBA	13102	Watsonia borbonica subsp. ardernei	Iridaceae				
TBA	1565	Watsonia leipoldtii	Iridaceae	Watsonia			
TBA	15040	Watsonia mariana cv. bulbillifera	Iridaceae				
TBA	1568	Watsonia pyramidata	Iridaceae				
TBA	11712	Watsonia versfeldii var. alba	Iridaceae	Watsonia			
TBA	1570	Watsonia wordsworthiana	Iridaceae				

RATING	TAX ON ID	SPECIES	FAMILY	COMMON NAMES	DISTRIBUTION	INVASIVENESS	IMPACTS
TBA	736	Zea mays	Poaceae				
TBA	6681	Echium plantagineum	Boraginaceae	Patersons Curse	Yes		Yes
TBA	1515	Ferraria crispa	Iridaceae		Yes		Yes
TBA	12708	Myosotis sylvatica	Boraginaceae		Yes		Yes

* TBA – To be advised