



Western Australian Auditor General's Report

Managing the Impact of Plant and Animal Pests: A State-wide Challenge

Report 18 – December 2013





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WESTERN AUSTRALIAN AUDITOR GENERAL'S REPORT

**Managing the Impact of Plant and
Animal Pests: A State-wide Challenge**

Report 18
December 2013



**THE PRESIDENT
LEGISLATIVE COUNCIL**

**THE SPEAKER
LEGISLATIVE ASSEMBLY**

MANAGING THE IMPACT OF PLANT AND ANIMAL PESTS: A STATE-WIDE CHALLENGE

This report has been prepared for submission to Parliament under the provisions of section 25 of the *Auditor General Act 2006*.

Performance audits are an integral part of the overall audit program. They seek to provide Parliament with assessments of the effectiveness and efficiency of public sector programs and activities, and identify opportunities for improved performance.

The information provided through this approach will, I am sure, assist Parliament in better evaluating agency performance and enhance parliamentary decision-making to the benefit of all Western Australians.

A handwritten signature in black ink, appearing to read 'C. Murphy'.

COLIN MURPHY
AUDITOR GENERAL
12 December 2013

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Auditor General's Overview



Over 150 plants and animals have been declared as pests in Western Australia. Pests are a huge financial threat to agriculture, they cause serious damage to fragile ecosystems and the populations of native species and can even affect health and social amenity.

Controlling pests is not a task that government agencies such as the Department of Agriculture and Food and the Department of Parks and Wildlife can manage on their own. The scale of the task requires cooperation and collaboration amongst all stakeholders.

For this reason, both government and non-government landowners have a legislative responsibility for managing pests on their land and a collaborative approach is built into the state's legislative framework. Implementing that approach is a work in progress. Putting an integrated state-wide plan in place would help clarify roles and responsibilities and reduce the tendency for agencies to focus on their core business rather than taking a joined up approach to the pest problem.

Landholders made it clear to us through our survey and consultation that they understand and accept their responsibilities for managing pests, and do not expect government to do everything. They also made it clear that their continued willingness to meet their responsibilities depends on all landholders, including government agencies, managing pests on their property, and being held accountable if they do not. The current lack of enforcement activity puts that willingness at risk, and reduces the incentive for all landholders to be good neighbours.

Individual landholders, community groups and government agencies all commented on how resource constraints impact on their pest management responsibilities. The community will naturally look to government to provide leadership and to be significant contributors to the financial burden of controlling pests. Agencies need to prioritise and target their resources based on good information on both pests and the effectiveness of management programs. Information in both these areas needs to improve to make sure that priorities are soundly based, and significant threats are not missed. Agencies must also choose the right way to fund and implement pest programs to ensure that those who benefit most contribute fairly to the cost.

Executive summary

Background

Plant and animal pests can cause or have the potential to cause, very damaging impacts to agriculture, forests, the environment, social amenity and public health anywhere in the state.

It is estimated that plant and animal pests cost Australian agriculture and livestock farming approximately \$5 billion per annum. Pests can also have a significant negative impact on biodiversity and the environment. Loss of habitat from past clearing, along with introduced predators such as foxes and feral cats are the key factors in the decline of smaller native mammals. Pests like the European Wasp can also have a significant impact on Western Australia's outdoor lifestyle, tourism and human health if they are not controlled.

Despite Western Australia's advantage in being isolated and having natural boundaries like the Nullarbor, the challenge to control pests is escalating as the frequency and volume of people and goods entering Western Australia increases. Western Australia covers more than 2.5 million square kilometres and pests do not respect national, state, regional or neighbourhood borders. Once established, pests can be very difficult to eradicate or contain and control.

The *Biosecurity and Agriculture Management Act 2007* (BAM Act) is the principal legislation for the management of pests within Western Australia. It establishes a regulatory framework under the Minister for Agriculture and Food to provide effective biosecurity and agricultural management and provide a state-wide response to pest control. The Department of Agriculture and Food, Western Australia (DAFWA) is responsible for the administration of the BAM Act.

While the BAM Act is the main legislation for the management of pests, there are other Acts that place responsibility on other government agencies to manage invasive species. These include:

- the *Conservation and Land Management Act 1984* (CALM Act) and the *Wildlife Conservation Act 1950* that define the roles and responsibilities of the Department of Parks and Wildlife (DPaW) for managing the conservation reserves and wildlife in Western Australia respectively. These Acts facilitate work by DPaW to manage pests that impact on native flora and fauna. The CALM Act and associated regulations also provide DPaW with mechanisms for management of forest diseases, such as dieback (*Phytophthora cinnamomi*)
- the *Fish Resources Management Act 1994* contains provisions for the prescription and management of noxious fish and is administered by the Department of Fisheries.

The Biosecurity Council of Western Australia (the Council) was established in February 2008 as a specialist advisory group to the Minister for Agriculture and Food and the Director General of DAFWA on issues related to biosecurity. The Council liaises with the Biosecurity Senior Officers Group (BSOG) which is comprised of senior executives from each of the state government agencies with biosecurity responsibilities.

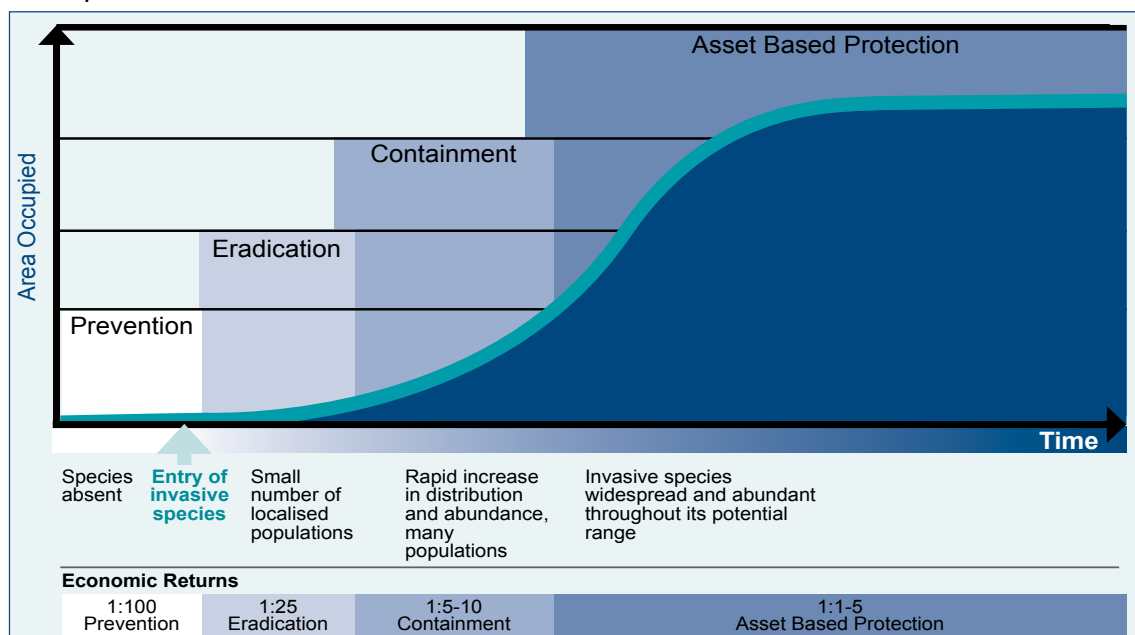
Executive summary

Although DAFWA is responsible for the administration of the BAM Act, it is individual landholders¹ that must take prescribed measures to control pests. DPaW is one of the largest landholders in the state. It has a responsibility under the BAM Act to control pests on 22 million hectares of national parks, conservation parks, nature reserves, state forest, marine parks and marine nature reserves vested in the Conservation Commission, and six million hectares of freehold and ex-pastoral leases managed for conservation purposes. It has also been made responsible by a government agreement for fire preparedness and pest control on 89 million hectares of Unallocated Crown Land and unmanaged reserves.

Plants and animals that have or may have an adverse impact can be declared a pest by the Minister for Agriculture and Food. Every declared pest is assigned to a category which determines the control measures that a landholder is required to carry out.

The management of pests involves the prevention of new incursions into the state and the eradication, containment and management of pests that are already established. This requires effective pre-border risk assessment, surveillance, border protection and post border response, monitoring and enforcement.

The Invasion Curve detailed in Figure 1 is the standard model used to manage pests in Australia. It illustrates that the greatest return on investment is achieved through investing in prevention and early intervention, compared to asset based protection once pests are widespread and established.



Source: Department of Primary Industries, Victoria

Figure 1: Invasion Curve (stages of managing pests)

¹ We have used the term landholder to refer to the landowner or person in control of land. This includes government agencies that have land vested in them, and/or manage such land.

Controlling pests is complex and to be effective requires collaboration between stakeholders. There are 169 declared pests that can have a local, regional and state-wide impact on agriculture, forests, the environment, social amenity and public health. There are also thousands of landholders with diverse and sometimes competing land uses. These include state government agencies, local governments, pastoralists, agriculturalists, lifestyle properties and horticulturalists.

Through the BAM Act, groups that control pests that impact on public as well as private interests can receive formal recognition as a Recognised Biosecurity Group (RBG). These groups can raise funds through compulsory rates on landowners in their area to carry out programs to control established animal and plant pests. The funds raised are matched dollar-for-dollar by the state government. This reflects a longer term intention to better align the costs of pest management to the beneficiaries.

Industry can also raise funds for the control of identified priority pests and diseases that threaten the profitability or competitiveness of their industries.

In 2012-13, DAFWA spent \$14.6 million in funds appropriated by Parliament on border security and the management of declared pests. An additional \$3.1 million in expenditure was funded from Royalties for Regions, Commonwealth and other state governments and \$6.3 million spent by RBGs and Industry Funding Schemes. DAFWA advised that expenditure has declined over the last decade and while it is unable to show how much it has declined, it points to a 32 per cent reduction in its full time staff since 2001-02 as illustrative of the reduced funding.

Transparency and consistency are essential to ensure confidence and compliance with the regulatory framework. For the framework to work agencies need: good information; robust and transparent processes to declare a pest; clear plans for what actions will be taken for which pests; and monitoring of the implementation and effectiveness of those actions.

This audit sought to assess how effectively terrestrial pests declared under the BAM Act are managed. DAFWA was the focus of the audit because of its lead role in administering the Act.

Audit conclusion

Western Australia is relatively free from many of the world's pests, plant and animal diseases, and no new pests have become established in the state since the arrival of the Cane Toad in 2009. However, it is difficult to verify how effectively established pests are managed throughout the state.

DAFWA's priority is to prevent new pests and plant and animal diseases entering the state, and to enable early intervention in eradicating those pests that do enter. This represents the area of greatest economic return in the control of pests.

For pests that are already established in the state, DAFWA undertakes some pest control activities itself and has formed partnerships with some regional and local groups. This reflects the fact that DAFWA cannot effectively manage all established pests state-wide on its own, and needs the cooperation and collaboration of landholders and other government agencies. However, current levels of cooperation and collaboration fall short of those needed and envisaged in the BAM Act.

An effective state-wide pest management framework is not yet in place. Specifically, there is no integrated state-wide plan, and information on the impact of established pests is limited. The prioritisation of some established pests and programs over others is not always clear and DAFWA conducts little or no enforcement activity to ensure landholders control pests on their land.

Individually, these issues raise concerns about whether resources are effectively used and targeted and whether landholders are controlling established pests on their land. Taken together and over time, they expose the state to an increased risk that established pests will spread and have a growing impact on agriculture, forests, the environment, social amenity and public health.

Key findings

- The BAM Act's purpose of providing for the state-wide management of pests has not yet been achieved as the framework under which government agencies, industry and community stakeholders set priorities, allocate funds and work in partnership is not fully established. Although the Council and the BSOG were established in 2008, Western Australia lacks an integrated state-wide plan for managing pests and respective roles and responsibilities of government agencies are not clearly defined. This impacts the state's capacity to manage pests and has led to gaps in pest management. DAFWA recognises that this is an issue and is working with the BSOG to develop a memorandum of understanding between agencies and a state biosecurity strategy for Western Australia.
- There is no up to date picture of the spread, abundance and impact of established pests. Information is not aggregated and reported. Useful data collected by agencies, industry, community groups and landholders is not always shared, as mechanisms for effective and timely exchange of information have not been developed. As a result, it is difficult to determine if the impact of pests is increasing, or assess how effective control mechanisms are in managing pests that are established within the state. The lack of up to date information also limits the state's ability to adapt pest management practices and target resources to changing threats and priorities.
- DAFWA policies and procedures for declaring species as pests under the BAM Act were reviewed in 2012 but are still 'draft'. There is also no public information to advise

stakeholders on how to submit a proposal to declare a species a pest or the criteria used to assess the threat. This increases the risk that emerging pest species may not be identified or poor decisions will be made.

- There was little evidence that the threat posed by declared pests that are established in the state are regularly reviewed or why one pest is prioritised over another for funding purposes. It is therefore difficult to assess the current status of declared pests or to give assurance that DAFWA's limited resources to fund operational control programs are allocated on the basis of greatest return. However, DAFWA has recently started an assessment of the status of declared plants; and it plans to use impact assessment and cost benefit analysis to target its control programs at the highest priority pests. A similar process is planned for animal pests. Implementation deadlines have not been set.
- There is limited monitoring and almost no enforcement of landowner responsibilities to control established pests. Since 2002-03 there has been a 55 per cent fall in the number of property inspections and a 99 per cent fall in the number of compliance notices, with only two issued in 2011-12. Monitoring and enforcement is a key element of a regulatory framework and there is a risk that some landholders will not control pests if there is no prospect of enforcement. DAFWA advised us that reductions in its resourcing has limited its capacity to conduct enforcement. However, it also advised that it intends to work more closely with community stakeholders to encourage landholders to meet their responsibilities to control widespread and established pests.
- DAFWA records and reports activity based data such as the number of baits laid, area covered and pests killed for key pest control programs such as starlings, wild dogs, camels and European Wasps. However, this data does not measure how effective its operational activities are in reducing adverse impacts. DAFWA plans to develop a monitoring and evaluation framework to provide better information on outcomes but implementation deadlines have not been set.

Recommendations

DAFWA should:

- ensure that an effective framework for the collaborative management of pests across the state is established; and that key roles of government agencies are defined – by 30 June 2014
- develop a state-wide plan for the management of all declared pests – by 30 June 2014
- ensure that information on the spread, abundance and impact of high priority pests is accurate, current and complete

Executive summary

- approve its draft policies and criteria to declare pests; and establish a transparent process that is visible to external stakeholders – by 30 June 2014
- establish a program under which the threat posed by potential and declared pests is subject to periodic documented review – by 30 June 2014
- develop effective prioritisation processes that ensure its operational resources are directed to combating the highest threats – by 30 June 2014
- develop an effective monitoring and evaluation regime to determine whether planned operational outcomes are being achieved – by 31 December 2014
- where appropriate, make greater use of enforcement mechanisms under the BAM Act to ensure landholders meet their responsibilities to control pests on their land.

Response from the Department of Agriculture and Food

The Department of Agriculture and Food (DAFWA) acknowledges the findings of the Performance Audit: Management of Declared Plants and Animals and appreciates recognition of past performance in this area and recognition of current improvement. DAFWA is committed to processes of continuous improvement in performance, and cost-effective regulation of declared pests.

The primary responsibility for DAFWA in the management of declared plants and animals in Western Australia is in administration of the *Biosecurity and Agricultural Management Act 2007* (BAM Act); it is mainly an education and regulatory role, not an operational control responsibility. Control of plants and animals declared under the BAM Act is the responsibility of land managers, both private and public.

The fundamental principle of land manager responsibility for control of declared pests has been established in statute since at least 1976. The Audit Conclusion implies that it is DAFWA's responsibility to control pests by stating that '...DAFWA cannot effectively manage all pests state-wide on its own, and need the cooperation and collaboration of landholders and other government agencies'. DAFWA has an important education and regulatory role to work with land managers to ensure weeds and pest animals are eradicated or controlled by the land manager.

One of the main roles for DAFWA is for regulation under the BAM Act. The Audit findings identify a reduction in the number of inspections and pest notices issued over the past decade. This reflects a significant reduction in staff capacity over this period. The Audit findings recognise the reduction in financial resources available to DAFWA. The impact of reduced finance on DAFWA's capacity has occurred since the 1990's. Information about DAFWA's finances is readily available in Annual Reports and is well documented in the 2008 Business Case to State Government (*Investing in Western Australia's Biosecurity*).

DAFWA does not have operational responsibility for the control of pest animals, with the single exception of a program for Starling eradication. Other operational programs undertaken by DAFWA are funded by industry (such as skeleton weed). DAFWA has additional roles in surveillance and early response to new incursions (e.g. detection of alien species at ports) in support of its comprehensive interstate quarantine measures. The extremely low level of new pest incursions to Western Australia in recent times provides an effective but little recognised performance measure of these roles.

The BAM Act provides a framework for holistic biosecurity regulation, however the funding required for pest control across the vast and diverse Western Australian landscape is not available. Other government departments, as relevant, may seek pest declaration and respond to biosecurity incursions. Cane Toads are currently a declared pest and the

Department of Parks and Wildlife coordinate a control program. The option to declare feral cats, an environmental pest rather than a pest of agriculture, under the BAM Act can be initiated by any department. Such declaration, in the absence of substantial new resources for control measures, and ready tools for routine control by landholders, is unlikely to significantly change the level of control for this well-established and widespread pest species.

DAFWA acknowledges the recommendations of the Audit and within its resource capacity will work with landholders, industry, community groups, and other government departments to improve declared pest outcomes.

Response from the Department of Parks and Wildlife

The DPaW is responsible for managing over 28 million hectares of the state's national parks, marine parks, state forests and other reserves, for conserving and protecting native animals and plants, and for managing many aspects of the use and enjoyment of the state's natural areas and wildlife. The Department has responsibilities for managing a wide range of pests on these lands, and on over 89 million hectares of unallocated Crown land and unmanaged reserves. It is a significant challenge.

Given the difficulty of eradicating pests that have become established, DPaW recognises that the principal focus of pest management in Western Australia needs to be the prevention of new incursions, whilst striving to maintain efforts to contain established pests. Successful control programs are reliant on resourcing and a collaborative effort, involving other agencies and land managers.

DPaW welcomes the findings that support the development of an integrated statewide biosecurity strategy and improvements to the collection and sharing of pest information.

Audit focus and scope

This audit sought to assess how effectively terrestrial plant and animal pests are managed under the BAM Act. We focused on three main questions:

- Are there clear legislative and regulatory powers to oversee the management of declared plants and animals?
- Are activities to identify threats and prevent incursions effective?
- Are eradication, containment and protection activities effective?

DAFWA was the focus of this audit. We also consulted DPaW, non-government stakeholders and conducted a survey of landholders seeking their views on the management of declared pests.

Our survey received 692 responses from landholders across the state. Throughout this report we have included survey results and specific comments from landholders provided in the survey as a generalisation of the overall sentiment being expressed. A summary of selected results from the survey is detailed in Appendix 1 (page 30).

This audit was conducted in accordance with the Australian Auditing and Assurance Standards.

The *Biosecurity and Agriculture Management Act 2007* is Western Australia's principal legislation for the management of pests

DAFWA is responsible for the administration of the *Biosecurity and Agriculture Management Act 2007*

Two of the main purposes of the BAM Act are to prevent new animal and plant pests and diseases from entering Western Australia and to manage the impact and spread of those pests already present in the state.

The Council was established in February 2008 as a specialist advisory group to the Minister for Agriculture and Food and the Director General of DAFWA on issues related to biosecurity.

The Council liaises with the BSOG. The BSOG is comprised of senior executives from the five State Government agencies that have biosecurity responsibilities – DAFWA, DPaW, Department of Fisheries, Forest Products Commission and the Department of the Premier and Cabinet.

DAFWA is responsible for the administration of the BAM Act. It aims to build capacity for shared responsibility between government agencies, industry and community to prevent the introduction of pests and to manage priority pests that are introduced or established in Western Australia. This work is undertaken through research, policy formulation, operational management and emergency response capacity.

In 2012-13, DAFWA spent \$14.6 million in funds appropriated by Parliament on border security and the management of declared pests. An additional \$3.1 million in expenditure was funded from Royalties for Regions, Commonwealth and other state governments and \$6.3 million spent by RBG and Industry Funding Schemes. DAFWA advised that expenditure has declined over the last decade and while it lacks the details to show that decline, it points to a 32 per cent reduction in its full time staff since 2001-02 as illustrative of the reduced funding.

DAFWA says that it focuses its efforts on preventing new pests and diseases entering the state and early intervention in eradicating those pests that do enter because this provides the greatest economic return in the control of pests. Since the arrival of Cane Toads in 2009 no new pests have become established in Western Australia.

DAFWA attempts to restrict new pests from entering the state through its domestic quarantine inspection services at key highway checkpoints (Eucla and Kununurra), rail terminals (Indian-Pacific train), interstate air passengers (Perth, Kununurra, Broome, Kalgoorlie and Karratha airports) and sea freight checks. DAFWA has reported that in 2012-13 the quarantine service seized 41 611 kilograms of quarantine risk material.

However, the nature and pathways of pests is such that many will not be detected at check points and it is therefore important to have a range of complementary controls in operation. DAFWA's long running starling control program is one example. This program

operates to prevent starlings from entering Western Australia and to eradicate them when they are detected. DAFWA advises that the program has been effective in mitigating the potential risk posed by this pest.

Case Study – Starling Control/Eradication Program



The Common Starling (*Sturnus vulgaris*) is considered one of the world's top 100 worst pests, decimating crops, fouling stock feed and transmitting diseases. Research indicates that the establishment of starlings in Western Australia would cost the agricultural sector over \$47 million a year.

In the seven years to 2012-13, 1 066 birds have been trapped or shot at a cost of \$10.6 million.

Most of DAFWA's activity to control starlings is focused in the south-east of the state. South Australia has a large number of starlings and entry into Western Australia through the Eucla area is seen as a serious risk. In the past, populations have been found and eradicated further west from Esperance to Hopetoun.

It is the responsibility of landholders to control pests on their land

Under the BAM Act it is the landholder of an area infested with a declared pest that must take prescribed measures to control the pest. The Act also requires that a person who finds or suspects the presence of a pest must report it to DAFWA. The BAM Act provides a range of state government officers with the power to conduct inspections and issue pest exclusion and control notices to landholders who fail to control pests on their land. These include:

- Fisheries Officers
- DPaW Wildlife Officers
- DAFWA Inspectors.

Through the BAM Act, groups that control pests that impact on public as well as private interests can receive formal recognition as a RBG. These groups give communities the opportunity to come together to address locally significant biosecurity issues. Communities can identify their priority pests, then plan and coordinate efforts to tackle these priorities. The framework is based on the concept that pests are rarely restricted by individual property boundaries. This means that effective management requires landholders to work together to coordinate their control efforts.

Industry Funding Schemes can also be established to raise funds for the control of identified priority pests and diseases that threaten the profitability and competitiveness of their industry.

DPaW also plays a significant role in controlling terrestrial pests

DPaW is one of the largest landholders in the state. It has a responsibility under the BAM Act to control pests on 22 million hectares of national parks, conservation parks, nature reserves, state forest, marine parks and marine nature reserves vested in the Conservation Commission, and six million hectares of freehold and ex-pastoral lease land managed for conservation purposes. It is also responsible through a government agreement for fire preparedness and pest control on 89 million hectares of Unallocated Crown Land and unmanaged reserves.

As part of its legislative responsibilities for flora and fauna conservation, particularly in relation to threatened species, DPaW may undertake activities related to the control of invasive species that pose a significant threat to species conservation. DPaW spent \$11.7 million on various invasive species programs in 2011-12. In meeting its responsibilities under the *Wildlife Conservation Act 1950*, DPaW also regulates the culling of native animals causing damage such as Western Grey Kangaroos, Corellas and Rainbow Lorikeets.

The *Biosecurity and Agriculture Management Act 2007* has not resulted in a state-wide response to pests

Limited strategic coordination between agencies has led to gaps in pest management

The framework under which government agencies, industry and community stakeholders set priorities, allocate funds and work in partnership is not fully established. Although the Council and the BSOG were established in 2008, Western Australia still lacks an integrated state-wide plan for managing pests and agencies roles and responsibilities under the BAM Act have not been clearly defined and agreed. Agencies focus on their core business and have different priorities and goals. This impacts the state's capacity to manage pests and has led to gaps in the management of pests.

DAFWA's draft invasive species strategy to support agricultural and pastoral industries reflects a focus on agricultural pests. DPaW's priority is conserving the state's natural environment. It has a number of plans that aim to lessen the effects of introduced pests on particular species and ecosystems with high biodiversity values, including a nature conservation strategy plan.

DAFWA agrees that it is important to have a state-wide plan and for agencies to have clear roles and responsibilities under the BAM Act. DAFWA and the BSOG are establishing terms of reference, a memorandum of understanding between agencies and are scoping the development of a state biosecurity strategy for Western Australia which is planned to be in place by July 2014. Completing these tasks should provide the foundation for an effective state-wide plan to manage pests using across-agency support and commitment.

Case Study – Feral Cats



Cats (*Felis catus*) have been in Australia since European settlement and are now established across the country.

Feral cats pose a substantial threat to native animals particularly in arid and semi-arid areas where foxes are less common. The State Environment Report 2007 stated that feral cats predate on a wide variety of native animals and are widely distributed across Western Australia.

*The number of cats in areas such as the Kimberley is unknown due to difficulties in surveying and unavailability of data. However, a radio-tracking study at Mornington Wildlife Sanctuary suggests there is one individual cat per three square kilometres, eating five to 12 native vertebrates daily.

*Source: Priority threat management to protect Kimberley wildlife – a report detailing the science on prioritising threat management for Kimberley wildlife. CSIRO and the Wilderness Society, Carwardine J, O'Connor T, Legge S, Mackey B, Possingham HP and Martin TG (2011).

The *Biosecurity and Agriculture Management Act 2007* has not resulted in a state-wide response to pests

Without clearly defined roles and responsibilities between key agencies there is an increased risk that some established pests may not be effectively controlled. For example, the feral cat is one of the world's worst invasive species. Although it has a significant negative impact on native animals the feral cat is not declared a pest in Western Australia. Consequently there is no responsibility on landholders to control feral cats on their land. We could not find evidence that the risk posed by feral cats had been assessed and a decision made not to declare under the BAM Act.

Efforts to control cats are mainly undertaken through the Western Shield fauna recovery program and other conservation related programs administered by DPaW.

There is no complete, up to date or accurate picture on the spread, abundance and impact of established pests

We found that there is no current picture of the abundance, spread and impact of established pests in Western Australia. The last reports² that mapped the distribution of pests in Western Australia were published in 2005 and 2007. Useful data collected by agencies, industry, community groups and landholders is not always shared, as mechanisms for effective and timely exchange of information have not been developed.

As a result, it is very difficult to determine if the impact of pests is increasing, or assess how effective control mechanisms are in managing pests. The lack of up to date information also limits the state's ability to adapt pest management practices and target resources to changing threats and priorities.

The majority of landholders who responded to our survey believe that the impacts of pests are increasing (Appendix 1, survey question 'Are the impacts of declared plants and animals increasing or decreasing?' page 35). The comments below express some of the concerns raised.

"Control of wild dogs, foxes, feral goats, donkeys and Prickly Pear, Parkinsonia are part of our normal business activities, more time consuming now than it ever has been in the past"

"It is becoming a major part of our everyday management. The density and variety of weeds is increasing at an alarming rate"

"Rainbow Lorikeets have only just arrived in the past year or so and numbers are building rapidly"

"Cotton bush is coming up everywhere even though we pull every one we see and don't let it seed on our property and adjacent roadsides. Have seen Saffron Thistle for the first time this year"

² *Distribution and Abundance of Pest Animals in Western Australia: A Survey of Institutional Knowledge* September 2005. By Andrew P Woolnough, Garry S Gray, Tim J Lowe, Winifred E Kirkpatrick, Ken Rose and Gary R Martin

State of the Environment Report Western Australia 2007: Environmental Protection Authority

The Biosecurity and Agriculture Management Act 2007 has not resulted in a state-wide response to pests

This highlights the need to establish an effective monitoring and reporting system that supports information exchange across property boundaries. Although monitoring all 169 declared pests would be cost prohibitive, DAFWA should establish a system to track temporal changes in high priority pests.

The following case study of the Cane Toad, which is a pest that is managed by DPaW, shows the westward migration that has occurred over the last five years. The map does not show abundance or impacts of the toad. DPaW is assessing the impact of the Cane Toad on native species by analysing changes to native species populations across a range of sites in the Kimberley. To better understand potential impacts and effective management responses, DPaW also liaises with relevant agencies in other jurisdictions where Cane Toads have been established for some time.

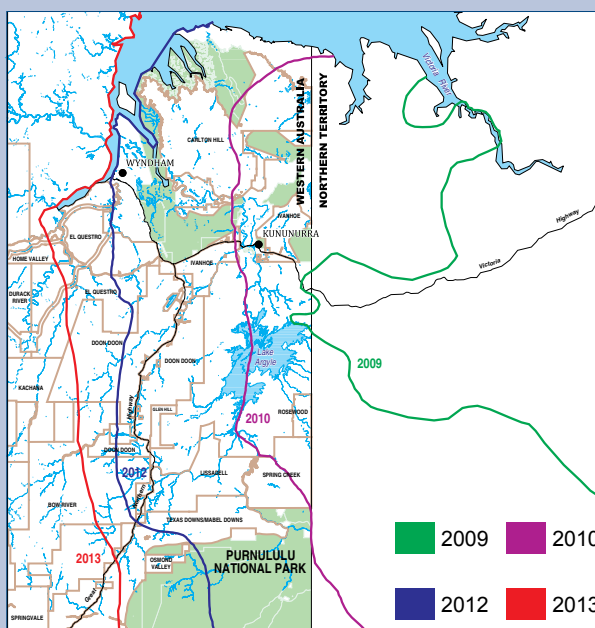
Case Study – Cane Toad



The Cane Toad (*Bufo marinus*) is native to South and Central America and was first introduced in Australia (northern Queensland) in 1935 to control beetles infesting sugar cane crops.

Cane Toads are prohibited in Western Australia. It is illegal to bring them into the state and toads found here should be destroyed. Since 2009, toad populations have become established in parts of the Kimberley with the front line expanding every year. Cane Toads have a significant impact on native animals through poisoning native predators such as quolls, fresh water crocodiles, goannas and snakes leading to population reductions. Toads also compete with native species for food, consuming large numbers of native invertebrates and they carry diseases that can spread to native frogs.

The map to the right shows their yearly progression but not abundance or impacts. Currently the view is that there is very little that can be done to prevent the toads spreading westwards.



Source: Front Line map DPaW

Cane Toad front line 2009-13

Public information about declared pests is not easy to find, increasing the risk that appropriate action is not taken

Because Western Australia covers a vast geographical area of 2.5 million square kilometres, DAFWA has to place a significant reliance on other agencies and the public reporting pest sightings and on partnerships with industry and community groups to complement its own surveillance and early response capabilities. This is complemented by a requirement under the BAM Act that a person who finds or suspects the presence of a declared pest must report it to DAFWA or risk a penalty of \$20 000.

Full use is not made of all potential information sources to enhance public awareness and to encourage the reporting of sightings. Public information about declared pests is not easy to locate. For example, although DAFWA's website contains some useful information we found it is hard to follow a line of sight from the declared pest list to individual pest management plans to identify what action landholders should take. The process to report pests is also not obvious to the uninformed.

DPaW also provides some information relating to environmental pests on its website and through hard copy brochures, publications and posters.

Our survey highlighted the opportunity to make better use of community information. Fifty-eight per cent of the 692 respondents said that they did not report sightings, incursions or infestations of declared pests. Two main reasons were given:

- landholders did not know where to report the sightings
- they did not report sightings because they believed little or no action would be taken.

Survey comments indicated that landholders wanted ready access to information about pests, to know where to go to report pest sightings and advice about control options.

"There is currently no reporting method – we have not been informed what we are required to do. We would love to report this to government though as this would mean that an interest is finally being taken in the issues that pests cause to our livelihoods"

"Please make declared species more widely known to city and country"

DAFWA should consider innovative ways to improve public awareness and reporting to increase the effectiveness of its surveillance. For instance, in Victoria trained members of the public report sightings of prohibited weeds. Social media could also be used to report sightings as a relatively low cost means for individuals to report sightings and for the information to be more easily aggregated and disseminated.

DAFWA advised that it is reviewing its website and plans to introduce a pest 'app' (application software) that can be downloaded and used to help identify pests.

Weaknesses in how pests are declared and prioritised is a risk to effective management

Threats may be missed or species declared without clear reasons because the process for 'declaring' pests is not robust

The declaration of a pest by the Minister for Agriculture and Food provides the legislative mandate and formalises the need to undertake control action on a pest. Any individual or organisation can lodge a proposal to have an organism declared a pest or an existing declaration amended. The process leading to the decision to declare a pest should be transparent, consistent and robust.

Although DAFWA has reviewed its policies and procedures to declare pests under the BAM Act, policies are still 'in draft'. There is also no publicly available information advising stakeholders how to submit a proposal or what criteria will be used to assess the threat. This increases the risk that inconsistent decisions may be made or that stakeholders will not lodge a proposal to declare a pest.

Stable Fly is the only species to be declared a pest since the BAM Act was enacted in 2007. Our review of the documentation supporting its declaration shows that it did not follow DAFWA's draft workflows and authorisation process for declaring pests under the BAM Act. DAFWA advised that this was because a commitment to declare it was made at a community meeting. We were also unable to find evidence that an assessment of the Stable Fly's impact had been conducted.

Case Study – Stable Fly



Stable Fly (*Stomoxys calcitrans*) is an insect that bites and breeds in vegetable crop residues, poultry and other manures. It affects the livestock industry and is detrimental to humans and pets as the fly inflicts painful bites and feeds continuously on mammals. Stable Fly has been recognised as a problem since 1998. The Department of Health was previously responsible for managing the effects of Stable Fly through the *Health (Poultry Manure) Regulations 2001*.

The then Minister for Agriculture agreed to provide legislative options under the BAM Act. The Minister agreed to declare Stable Fly in September 2012 and to prescribe affected shires under the BAM Act so that the effect of the health regulations was sustained after 1 September 2013. This allows regulatory action including fines for non-compliance with obligations and inspectors' directions.

The gazettal of the declaration was published on 25 September 2012.

The status and priority of declared pests has not been subject to regular review to ensure responses match the threats

There are 169 declared pests listed in the Western Australian Organism List³. Of these, 26 have been categorised as C1 (exclusion), six as C2 (eradication) and 137 as C3 (management).

The declaration status should reflect:

- the pest's spread, abundance and impact on both public and private interests
- an understanding of the public and private benefit in controlling the pest
- the capability, capacity, time and costs to control the pest.

To ensure that current threats are managed we expected to find a risk and cost benefit analysis supporting each of the 169 declared pests and ongoing review to ensure that declarations are amended when the characteristics of incursion change. For example, when the pest incursion is assessed as having become established or if eradication ceases to be practical and management becomes the only viable option.

In most cases the rationale for why a pest is declared is historical. There was little evidence that the threat posed by a declared pest has been subject to regular review. Information on threat, impact and spread of pests is poor and the basis for why one pest is prioritised over another is not well documented. It is therefore difficult to assess the current threat posed by a pest and we can only provide limited assurance that DAFWA has an effective process to prioritise pests.

With the BAM Act regulations coming into force on 1 May 2013, DAFWA has reclassified declared pests into the BAM Act categories. It has also started to review declared pest priorities and has advised that it plans to use impact assessment and cost benefit analysis for the highest priority pests. DAFWA has already used this analysis to support funding for the State Barrier Fence and to control pests such as camels, wild dogs and starlings. However, it has advised that its capacity to complete this analysis is limited by resources.

Without impact assessments to identify the priority pests and cost benefit analysis for guiding expenditure on pest control, assurance cannot be given that DAFWA's limited resources are directed at the greatest risk and on the basis of greatest return.

³ The Western Australian Organism List includes 19 diseases and some pests that appear in more than one category.

DAFWA could make more effective use of control mechanisms to manage established pests

DAFWA is implementing a model of shared responsibility with industry and community to control established pests

A range of mechanisms and funding sources are available to help control established pests in Western Australia. These include the principal government agencies as well as a range of industry and community groups and landholders that can fund, co-fund or implement a program to control pests.

A key factor in deciding the extent that these options should be called upon is an assessment of who is impacted and who would benefit most from their management. The BAM Act provides for shared and industry funding arrangements through RBGs or Industry Funding Schemes. DAFWA also provides grants to Declared Species Groups in the agricultural region.

DAFWA conducts operational programs to control some pests

There are occasions where landholders do not have the capability and capacity to control pests and where controlling established pests is in the public interest.

The State Barrier Fence is an example of a government funded control mechanism. In 2012-13 DAFWA spent \$401 000 maintaining the fence. The fence stretches from just north of Kalbarri to Jerdacuttup east of Ravensthorpe, a distance of approximately 1 170 kilometres.

The purpose of the fence is to minimise the risk and impact of emus migrating from the rangelands into the high value grain growing areas of the south west land division. In the last 20 years there have been three major migrations of emus. These were in 1994, 1998 and in 2002 which saw an estimated 50 000 birds spread along the fence.

The fence also acts as a deterrent to wild dogs. DAFWA has spent \$683 000 upgrading parts of the fence to dog proof standard and the employment of additional 'doggers' contracted to control dogs (\$518 000 was funded from Royalties for Regions). An extension project has been proposed to close the Yilgarn and Esperance gaps. A total of \$14.3 million has been committed through the Royalties for Regions funding.

Based on the relative benefits to private landholders or the public, some of the programs currently wholly funded by government agencies could be considered for shared or industry funding. For instance, the State Barrier Fence has a public benefit as it acts as insurance against a potential emu migration. The fence also benefits those landholders in immediate proximity to it, which would suggest at least a shared funding arrangement could be considered. Three other states (Queensland, South Australia

DAFWA could make more effective use of control mechanisms to manage established pests

and New South Wales) also have barrier fences. Shared funding schemes are used to maintain these fences with between 50 and 80 per cent of costs funded by landholders. We note that DAFWA has evaluated the long term funding options for the barrier fence.

DAFWA is collaborating with Recognised Biosecurity Groups to manage pests

RBGs are community groups authorised under the BAM Act to carry out programs to control established animal and plant pests that impact on public as well as private interests. There are currently five RBGs established in the pastoral areas of Western Australia (Figure 2). These groups raise funds through compulsory rates levied on landholders in their specified area to carry out pest control programs. The funds raised by rates are matched dollar-for-dollar by the State Government. In 2012-13 the matching contribution was \$1.2 million.

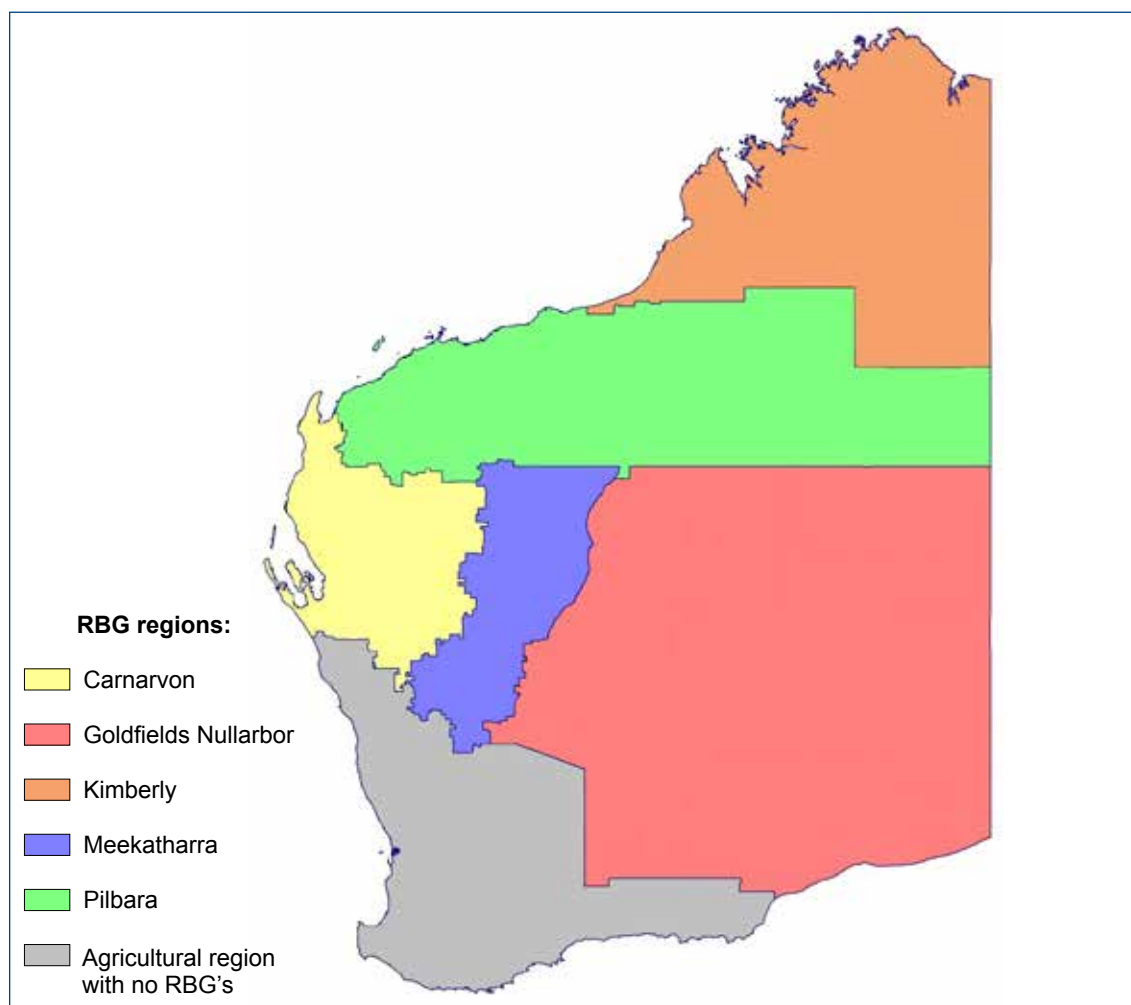


Figure 2: Recognised Biosecurity Groups in Western Australia

DAFWA could make more effective use of control mechanisms to manage established pests

These groups target local pest priorities, but there are risks to their longer term effectiveness and sustainability:

- the majority of funds are spent on one declared pest. Sixty-four per cent (\$1.7 million) of co-investment funding from the Declared Pest Account is spent on wild dog control. This focus on a single pest means there is limited attention given to other pests, such as control of emerging and established weeds which have been identified by DAFWA as requiring a higher priority
- some pastoralists and other landholders are not paying their rates and there is ongoing discussion between DAFWA, RBGs and the Department of Treasury to determine who should follow up unpaid amounts. The balance outstanding at 30 June 2013 was \$391 719
- RBGs also reported that they faced difficulty in encouraging members to remain engaged especially when members belong to an industry sector that is financially struggling
- RBGs complete annual plans for their activities and to identify funding required but longer term strategic plans envisaged under DAFWA's draft policy for RBGs have not generally been completed. There is a risk that RBGs focus on reactive issues at the expense of longer term big picture pest control
- RBGs may lack sufficient administrative capacity. Administrative support was provided by the Agriculture Protection Board until it was dissolved in 2008. RBG representatives advised us that they rely on their executive support officers to carry out the administrative functions but that many have struggled to fill the positions while others are filled with part-time staff that have competing priorities. This lack of capacity can also impact the levels of governance in the RBGs. DAFWA has identified the need for governance training for RBGs in its draft strategic plan.

The management of declared pests in the agricultural region is supported by 15 Declared Species Groups. Funding arrangements for these groups are not legislated under the BAM Act. They receive government grants and often are established to target one pest species. DAFWA is seeking to transition these groups into RBGs and some groups are proactive in making this happen. Establishing RBGs in the agricultural region will be a challenge as there are more differences in land use, land tenure and pest impact.

Potential exists to make more use of Industry Funding Schemes

The BAM Act provides for the establishment of Industry Funding Schemes to address biosecurity threats relevant to a sector of agricultural activity. The schemes use funding arrangements authorised under the BAM Act to raise industry funds to tackle priority pests and diseases.

DAFWA could make more effective use of control mechanisms to manage established pests

An Industry Management Committee oversees each scheme and determines which pest and disease threats require action, how best to deal with the threats, and what contributions will be needed from industry to tackle the problem. This allows producers to self-manage serious pests and diseases that may threaten the viability and sustainability of their industries.

Since July 2010, three schemes have commenced to address biosecurity threats relevant to the grains/seed/hay; sheep/goat; and cattle industries. In 2012-13 these schemes raised \$4.5 million.

For example, the Grains, Seeds and Hay Industry Funding Scheme funds a program to control Skeleton Weed and an eradication program for Three-horned Bedstraw. The funds to run these programs are collected from producers at a rate of 30 cents for every tonne of grain and seed grown in the agricultural area of Western Australia and sold to a registered receiver. DAFWA has been contracted to administer the two programs and provide the support to ensure proper governance including secretariat, communications, policy and technical support, in addition to financial management.

In our view, completion by DAFWA of its impact assessments and a cost benefit analysis for priority pests will place it in a good position to identify other pests which could be managed by Industry Funding Schemes.

There is limited evaluation of the effectiveness of the mechanisms used to control pests

Monitoring of the various pest control mechanisms is necessary to evaluate their effectiveness and to inform DAFWA's understanding of the spread, abundance and impact of pests.

DAFWA's current monitoring does not give it a good understanding of these issues. Although DAFWA collects a significant amount of data, it tends to be workload/activity based such as the dollars spent, the number of baits laid, geographical area covered and pests destroyed. Examples are programs to control starlings, European Wasps and wild dogs.

With the exception of Industry Funding Scheme annual reports, there is limited reporting on the change in adverse economic, environmental and social impacts.

DAFWA advised that at times it is not feasible to derive outcome measures and that activity data is an acceptable surrogate. Although this may be reasonable in the early stages of a control program the number of pests trapped/shot does not measure how effectively adverse impacts are mitigated. DAFWA also advised that it plans to develop a monitoring and evaluation framework to provide better information on outcomes.

DAFWA has reduced its property inspections significantly and compliance notices are now rarely issued

A landholder has a responsibility to control declared pests on their land. Monitoring and enforcement is a valuable tool in regulating activities and obtaining compliance with statutory requirements. If a landholder fails to control a pest they may be issued with a pest exclusion notice or a pest control notice.

Private landholders may be issued with a fine if they fail to comply with the notices. If a government agency fails to comply with a notice the Minister for Agriculture is required to table a statement in both houses of Parliament to that effect.

We note that DAFWA has not issued any pest control or exclusion notices to government agencies even though DPaW advised that it does not have the capacity to effectively control all pests on land that they manage.

Between 2002-03 and 2011-12 there was a 55 per cent fall in the number of property inspections and a 99 per cent fall in the number of compliance notices issued to private landholders. In 2002-03 a compliance notice was issued for every 71 inspections but by 2011-12 a compliance notice was issued every 2 260 inspections. This means that a landholder was 30 times less likely to be issued with a compliance notice in 2011-12 than a decade earlier (Figure 3). In the same period, the number of times DAFWA hired a contractor to conduct pest control on a landholder's property and recovered the costs from the landholder went from nine to zero.

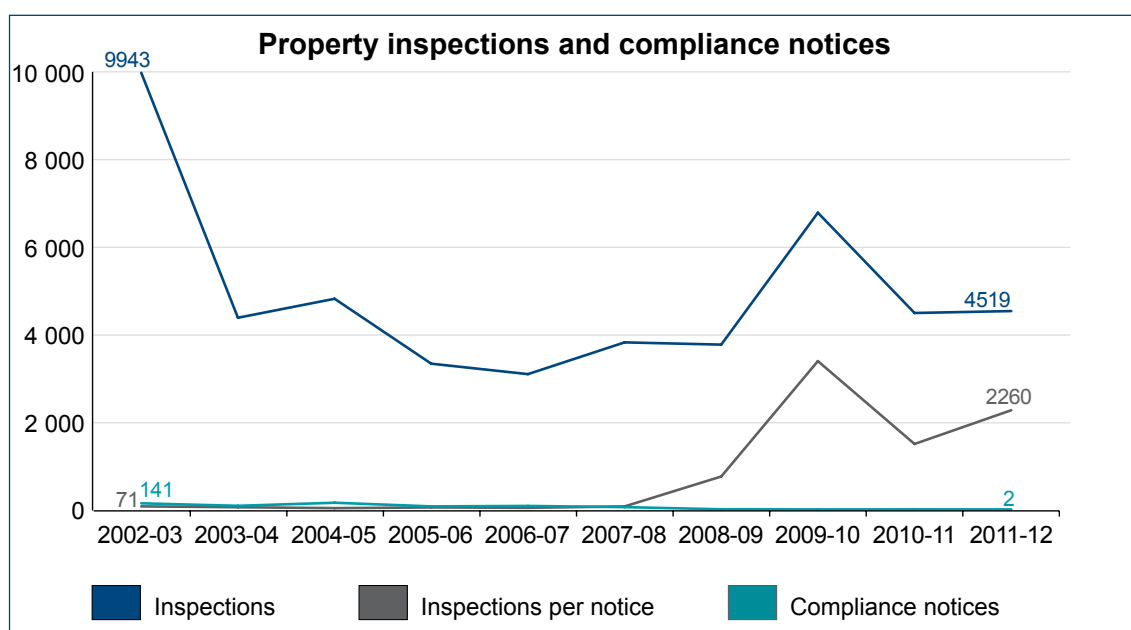


Figure 3: Inspections and pest control notices issued 2002-03 to 2011-12

DAFWA could make more effective use of control mechanisms to manage established pests

We asked why the number of inspection and control notices had gone down. DAFWA informed us that reductions in its overall resourcing meant that it has not had staff on the ground to conduct enforcement. However, it also advised that it intends to enforce compliance as a part of a community coordinated approach for widespread and established pests where it is feasible and effective to do so.

One of DAFWA's key roles in managing pests is to be the regulator. Effective regulation relies, in part, on a credible and equal risk or threat of getting caught and sanctioned for non-compliance. Not enforcing compliance within this regulatory framework increases the risk that landholders will not take effective control measures. It also increases a perception of inequality of treatment between landholders. This can result in some landholders who have been controlling pests reducing their activities or giving up.

According to 301 respondents to our survey, repeat incursions from neighbouring properties limited the effectiveness of their actions to manage pests. The respondents frequently expressed the view that compliance and enforcement activities were needed to ensure landholders control pests on their properties.

"I always manage those on my property but my neighbour doesn't which makes me wonder why I bother"

"Landholders are more likely to be active in managing declared species when the government agencies do the same. It is not only the landholder's responsibility, particularly when reserves/crown land etc are no longer managed and maintained where some species thrive"

"... But get very disappointed when neighbours around me don't do their part in controlling weeds. I spend so much wasted time doing weed control when I have other things to do. All because neighbours won't control Narrow Leaf Cotton Bush. There are other lesser invasive weeds that I would like to control but spend all my time on cotton bush because it blows in from the neighbours"

"Repeat incursions of cotton bush are having a severe adverse impact on the viability of my business, my livelihood and land values. This is grossly unfair. Control of incursions from an infested neighbouring property with cotton bush have cost me \$30 000 in the last 12 months"

"No compliance notices have been sent by DAFWA for a number of years. They have inadequate funding for this role. Consequently neighbouring properties are infested causing ongoing and sustained economic damage to my business"

DAFWA could make more effective use of control mechanisms to manage established pests

Cotton bush was one of the established pests that survey respondents highlighted as having an increasing impact. DAFWA advised that cotton bush is not a priority agricultural weed and that effective control is based on a community coordinated approach and that enforcement is the last resort.

Case Study – Narrow Leaf Cotton Bush



Narrow Leaf Cotton Bush (*Gomphocarpus fruticosus*) was introduced as a garden plant from Africa but has subsequently spread to much of the south west of Western Australia. It is particularly prevalent in the eastern parts of the Swan coastal plain between Gingin and Bunbury especially, adjacent to the Darling Scarp. It invades run down or low fertility pastures where it displaces useful species such as clover. It is a declared plant in Western Australia, categorised as C3 and is toxic to humans and livestock.

Control options include hand pulling, chemical spraying, slashing and burning. It flowers from October to April, which corresponds to the seasonal strong easterly winds that sweep down off the scarp carrying the cotton bush seed.

Appendix 1: Summary of survey results

An online survey conducted in May 2013 invited participation from landholders across the state. Only one response per computer was permitted and respondents were not required to identify themselves.

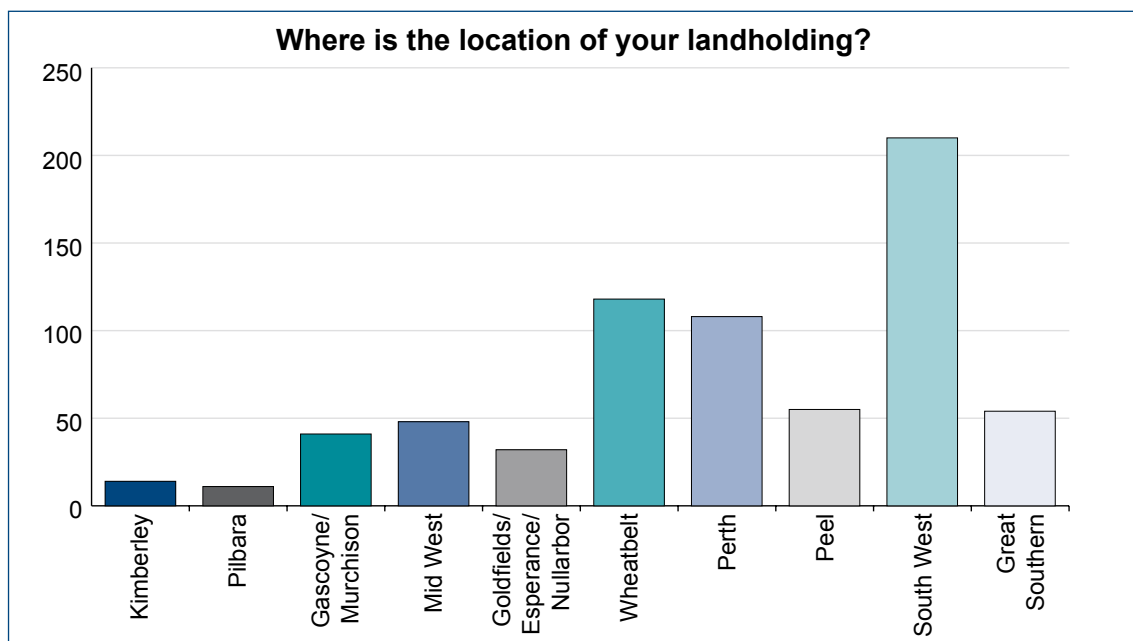
The objective of the survey was to:

- see whether landholders understood their responsibilities
- gauge landholders' knowledge of declared plants and animals
- understand landholders' thoughts, views and opinions
- see whether landholders understood the role of DAFWA
- understand landholders' issues in managing pests.

A total of 692 responses were received with state-wide coverage reflecting many different land uses. In addition, 12 property owners who completed the survey also contacted the survey team to express their views. One landowner expressed his views on regional ABC radio, urging landholders to complete the survey.

Landholding

The graph below shows that a high proportion of survey respondents were from the south west which is probably attributable to population and smaller property sizes. It is probably also the region most impacted by lifestyle and absentee owners which can contribute to frustration by landholders in this region.



Appendix 1: Summary of survey results

The table below shows that almost 14 per cent of responses were from property holders of less than one hectare, reflecting Perth city and town site responses. However, small property owners have the same responsibilities to control pests as larger landholders. The number of responses from landholders with properties sizes greater than 100 000 hectares reflects pastoral properties in the Kimberley, Pilbara, Gascoyne/Murchison and Goldfields/Esperance/Nullarbor.

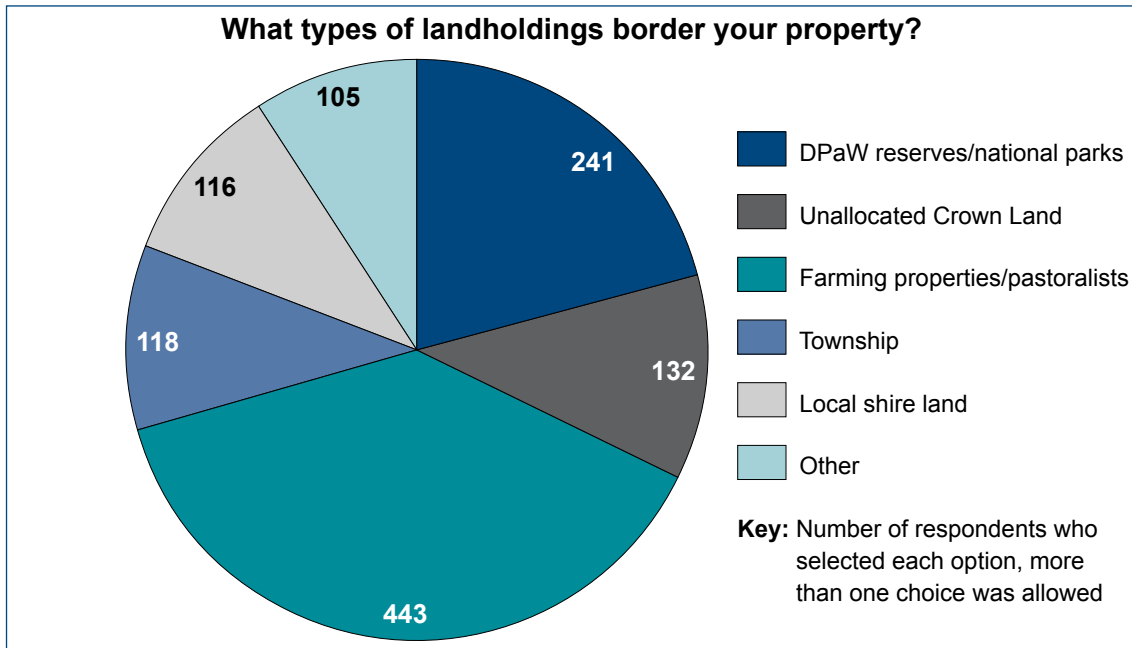
What is the size of your landholding?	
Size (in ha)	Per cent of respondents (%)
Less than 1	14.0
1–100	36.2
101–500	15.5
501–1 000	5.9
1 001–10 000	15.8
10 001–100 000	5.1
> 100 000 ha	7.5

The table below reflects the diversity in land uses of survey respondents and shows the high proportion of respondents who used their land for lifestyle (hobby farmers) or held the land for conservation purposes. The ‘other’ uses were primarily tree farming, orchardists, residential, shire land or equine purposes.

What type is your landholding?	
Type of land holding	Per cent of respondents (%)
Lifestyle	23.0
Conservation purposes	6.9
Farming – mixed farming	18.0
Farming – mainly cropping	5.3
Farming – mainly livestock – sheep	4.2
Farming – mainly livestock – cattle	14.7
Farming – mainly livestock – other	1.4
Pastoralist/rangeland	6.7
Horticulturalist	7.8
Other	12.0

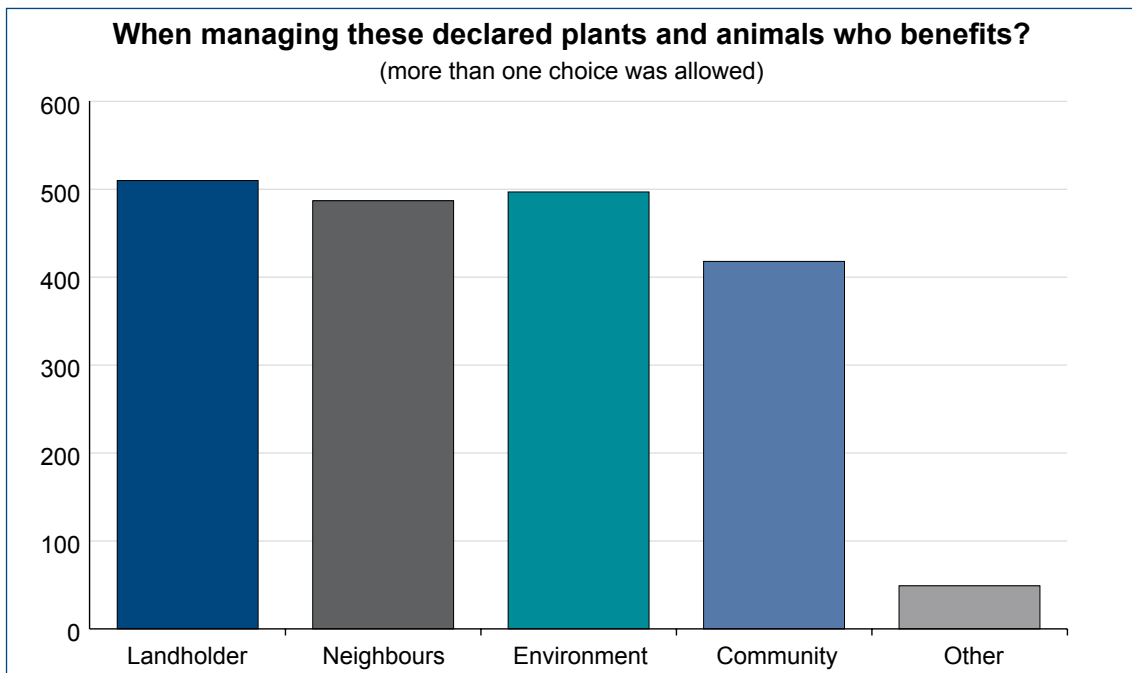
Appendix 1: Summary of survey results

The chart below shows that most of the survey respondents have either farming or pastoral holdings bordering their properties. However, a large number also border government land.



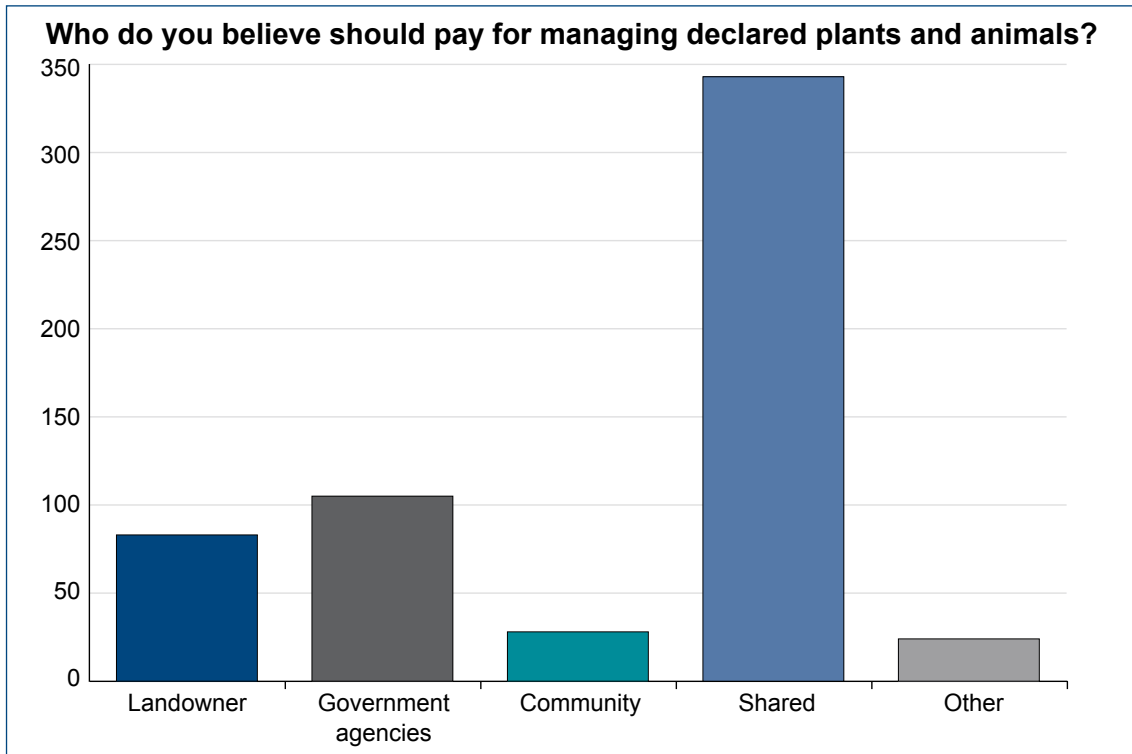
Managing declared plants and animals

The graph below shows the respondents view that managing declared plants and animals results in benefits for the individual, neighbours, the community and the environment – it's a shared benefit.



Appendix 1: Summary of survey results

The graph below reflects the beliefs in the previous graph, that shared benefits should mean shared costs.

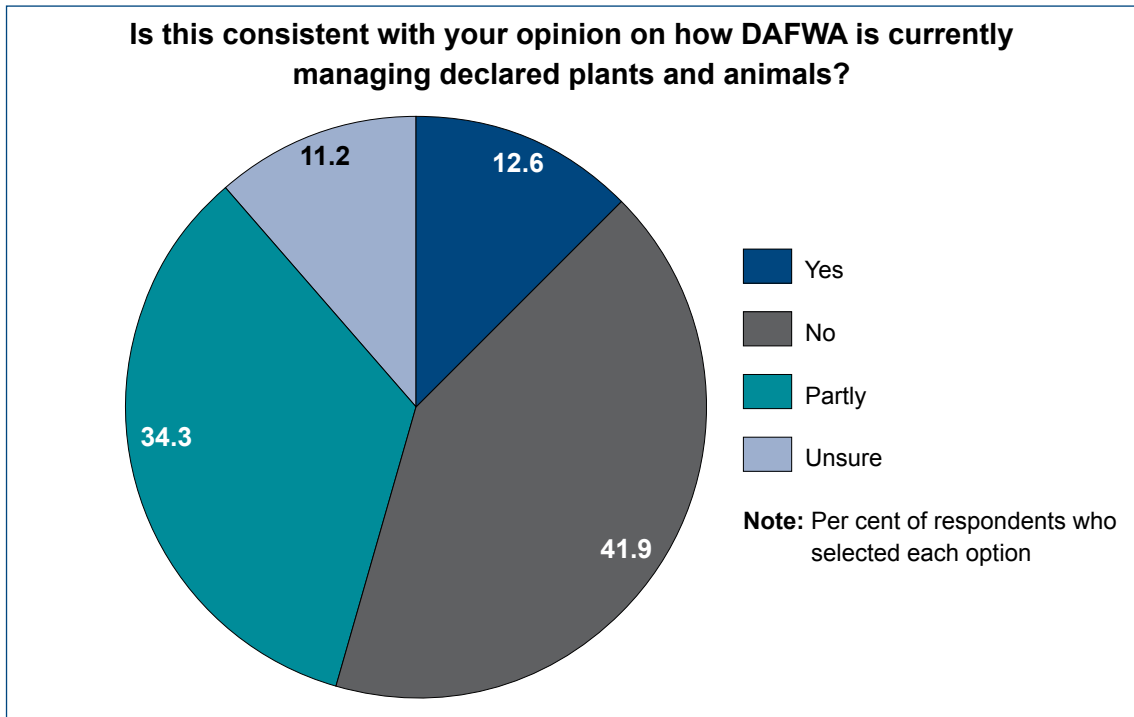


The table below shows respondents agree that DAFWA's role in managing pests is broad. These activities are consistent with DAFWA strategies and the responsibilities of DAFWA under the BAM Act.

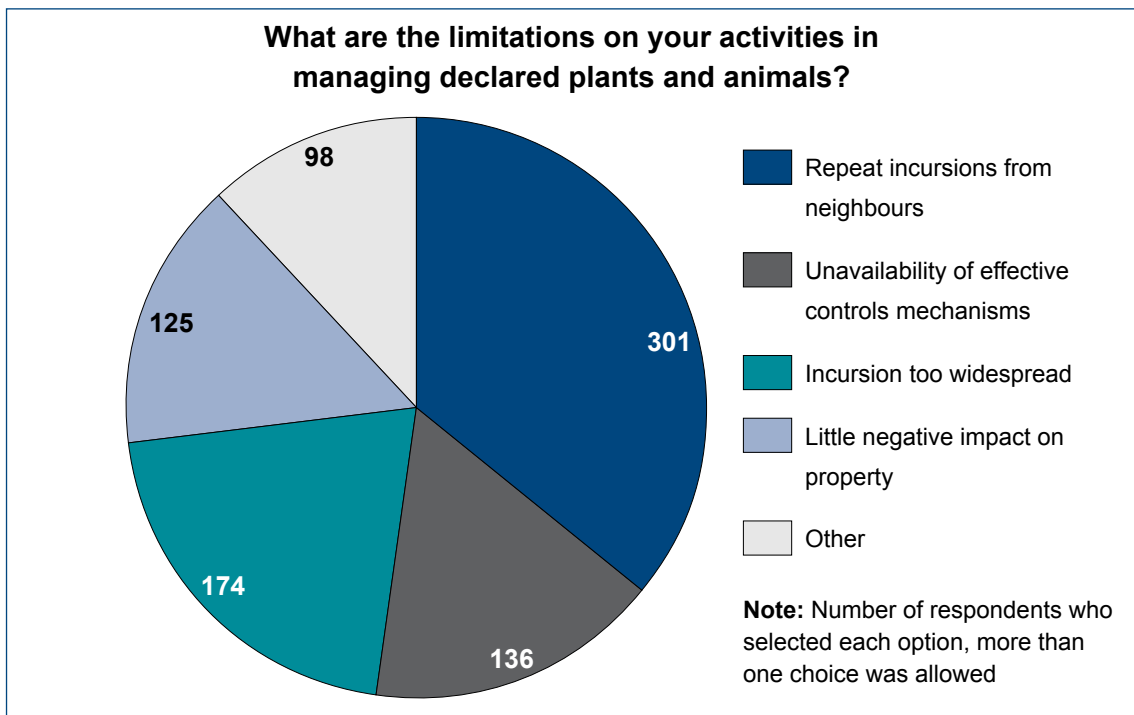
What do you see the role of the Department of Agriculture and Food WA (DAFWA) to be in the management of declared plants and animals? (more than one choice was allowed)	
What is DAFWA's Role?	Number of respondents
State border quarantine activities	482
Preventing new pest incursions	496
Undertaking pest eradication/containment/management activities	449
Administering pest control operational activities undertaken by landowners/community and industry groups	390
Provision of information and training community groups	460
Compliance inspections and enforcement of legislation	437
Other	58

Appendix 1: Summary of survey results

The chart below shows that respondents were overwhelmingly of the view that DAFWA was not fulfilling its role or was only partly performing its role.

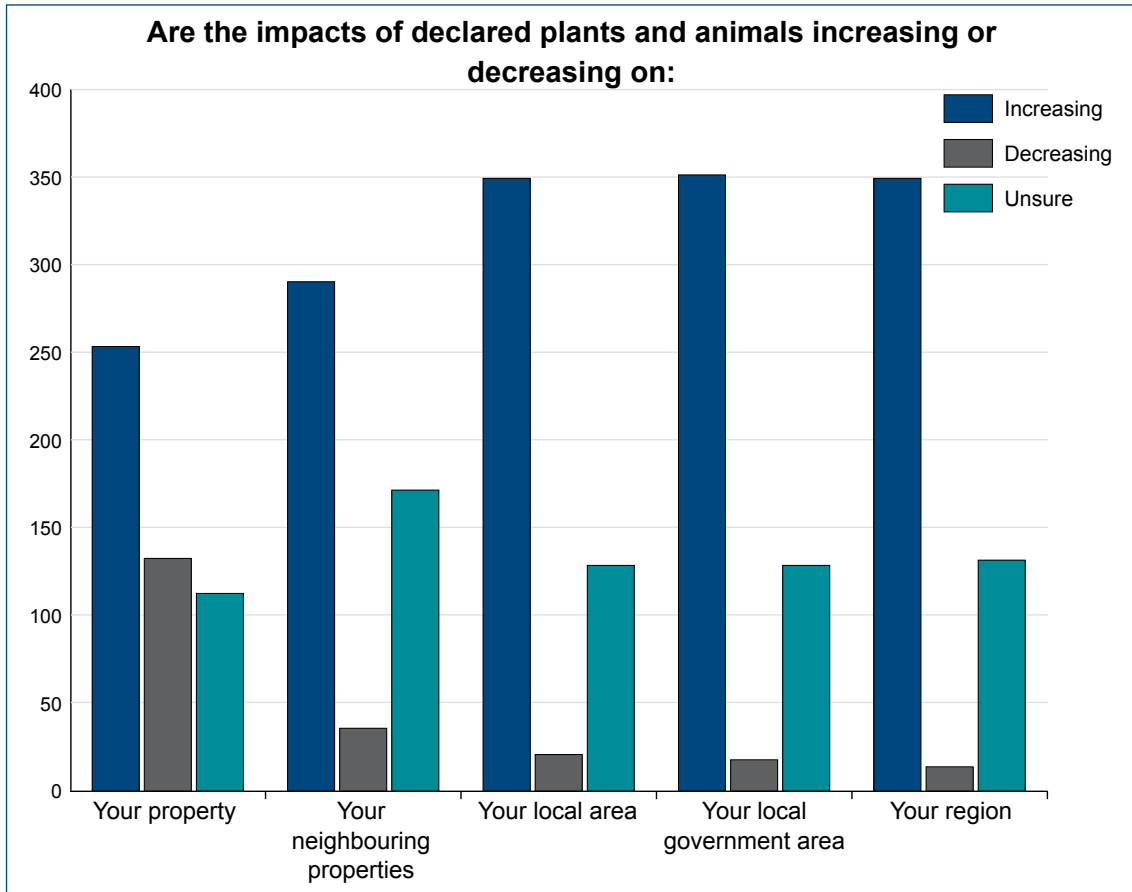


The chart below shows that landholders consider that the effectiveness of their work to control pests is limited by their neighbours not managing pests.



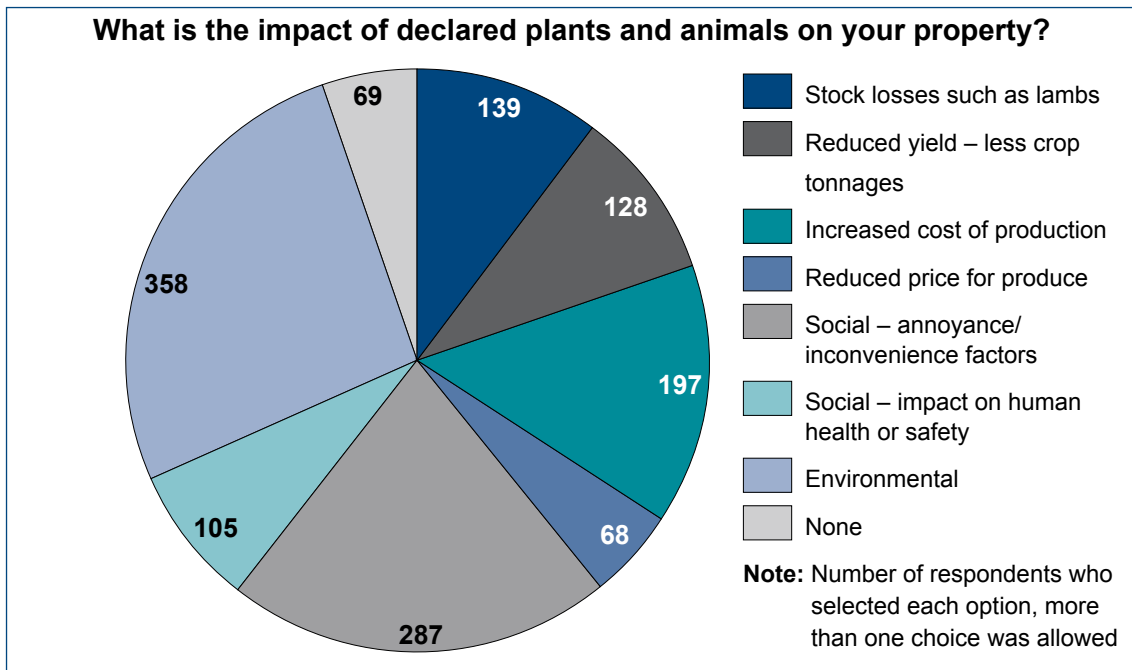
Impact of declared plants and animals

The graph below shows that survey respondents were strongly of the view that the impact of pests is increasing on their property, in their area and in their region.



Appendix 1: Summary of survey results

The chart below shows the impacts that were the most commonly reported by survey respondents.



Auditor General's Reports

REPORT NUMBER	2013 REPORTS	DATE TABLED
17	Western Power's Management of its Wood Pole Assets	20 November 2013
16	Opinions on Ministerial Notifications	13 November 2013
15	Audit Results Report – Annual 2012-13 Assurance Audits	13 November 2013
14	Public Trustee: Administration of the Financial Affairs of Vulnerable People	18 September 2013
13	Sustainable Funding and Contracting with the Not-For-Profit Sector – Component I	18 September 2013
12	The Banksia Hill Detention Centre Redevelopment Project	7 August 2013
11	Information Systems Audit Report	27 June 2013
10	Supply and Sale of Western Australia's Native Forest Products	26 June 2013
9	Administration of the Patient Assisted Travel Scheme	26 June 2013
8	Follow-up Performance Audit of Behind the Evidence: Forensic Services	19 June 2013
7	Fraud Prevention and Detection in the Public Sector	19 June 2013
6	Records Management in the Public Sector	19 June 2013
5	Delivering Western Australia's Ambulance Services	12 June 2013
4	Audit Results Report – Annual Assurance Audits: Universities and state training providers and Other audits completed since 29 October 2012 – and Across Government Benchmarking Audits: Recording, custody and disposal of portable and attractive assets and Control of funds held for specific purposes	15 May 2013
3	Management of Injured Workers in the Public Sector	8 May 2013
2	Follow-on Performance Audit to 'Room to Move: Improving the Cost Efficiency of Government Office Space'	17 April 2013
1	Management of the Rail Freight Network Lease: Twelve Years Down the Track	3 January 2013

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