Murray Region
Forestry Hub

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Blackberry Impacts Project | Report

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Prepared by

The Regional Development Company

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Prepared for: Murray Region Forestry Hub
E: info@murrayregionforestryhub.com.au

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Prepared by: Susan Benedyka, Managing Director
The Regional Development Company
PO Box 25, WANGARATTA VIC 3676
Email: susan@susanbenedyka.com

Contents

Purpose of Report

This report, commissioned by the Murray Region Forestry Hub, presents the findings from Stage 1 of a project aimed at understanding the impacts and challenges of managing blackberries across various land tenures, and to explore the potential to develop a collaborative strategy.

The Murray Region Forestry Hub sought to identify and work with key stakeholders (researchers, industries impacted, agencies, landholder groups and organisations) to understand the challenge and the impacts of blackberry infestations.

As the Murray Region Forestry Hub covers the plantation areas located from Gundagai (NSW) in the north to Mt Buller (Vic) in the south, this report outlines the strategic and policy context at a National level and for NSW and Victoria, describes what is currently known about the size and impact of blackberries for those areas, and gives an overview of the current controls and research. Stakeholder input has been used to shape the findings in this report, particularly the ideal scenario, gaps and opportunities, and a proposed way forward.

Summary of Findings

The following findings are a summary of stakeholder insights on blackberry management and the challenges that need to be addressed to improve future management strategies.

Gaps and challenges identified:

Perception of intractability:

- Blackberry management is often seen as a 'too hard' problem due to its complexity and the extensive infestation, which makes coordination and comprehensive management challenging.
- Although listed as a Weed of National Significance, many state and regional plans have identified blackberry as a widespread and invasive species abundant in its potential range, and therefore efforts are targeted at asset protection (rather than eradication).

Lack of coordinated effort:

- The Murray Region Forestry Hub area, spanning across NSW and Victoria, faces challenges due to a lack of a unified approach between the states, forestry managers, and various agencies. This results in duplicated efforts and inefficient resource use. However, the Victorian Blackberry Taskforce has made strides in coordinating a state-wide approach, working collaboratively across various agencies and landowners.
- Different stakeholders have varied interests and impacts, making it challenging to align efforts and approaches across different habitats and management objectives.
- Additionally, control efforts are generally conducted over specific land tenures by different organisations including private forest management, different government agencies, and community and private landholders.

Funding is limited:

- Funding for blackberry management and research is inconsistent across different jurisdictions, and not coordinated, which limits the ability to implement long-term, effective control strategies.

Climate change impacts:

- The changing climate poses additional challenges to blackberry management, extending the range of blackberries and affecting growth patterns and control strategy effectiveness.

Biocontrol effectiveness:

- The specific challenges in finding effective biological control agents that can operate under forest canopies or in diverse ecosystems without harming native species. This requires long term research and funding.

Economic Impact Data:

- There is a gap in updated and precise information regarding the costs and broader economic impacts of blackberries, particularly data specific to the Murray Region Forestry Hub area.

On the positive side:

Broad support for collaborative efforts:

- Stakeholders across various sectors and organisations expressed strong support for a collaborative approach to blackberry management. There's a consensus on the need for partnerships that span different tenures and organisational boundaries.

Recognition of long-term strategy:

- There is a shared understanding among stakeholders that managing blackberry infestations requires a long-term, coordinated strategy.

Unified effort across levels:

- The engagement highlighted the necessity for involvement from all tiers of management—local land managers, decision-makers at regional and national levels, and regulatory authorities—to participate actively in a unified effort.

Importance of biological control development:

- Many stakeholders pointed out the potential benefits of developing and implementing biological control measures, suggesting a focus on further research into specific biocontrol agents that could be effective against blackberries. It was acknowledged that this research has a long time frame.

Integrated control methods:

- There was a consensus on the necessity to integrate various control methods (biological, mechanical, and chemical) to manage blackberries effectively. This integration should be part of a collective, tenure-neutral approach.

Building on existing initiatives:

- Stakeholders noted the importance of leveraging successful past initiatives, such as efforts by the Weeds CRC and Victorian Blackberry Taskforce. Previously there was a National Blackberry Taskforce – this no longer exist, however was referenced by several interviewees. Stakeholders recommended enhancing these programs to create more impactful outcomes, and building on what has worked.

Ecological impact awareness:

- There is a significant recognition of the ecological impacts of blackberries. Stakeholders acknowledge that effective suppression of blackberries could lead to substantial biodiversity benefits.

Coordination:

- A major concern among stakeholders is the need for ongoing funding and resources to support sustained blackberry management efforts. They expressed the need for a ongoing work in advocacy, policy, funding and on-ground operations. It was suggested that there needs tobackbone organisation to coordinate these efforts.

Background

Methodology

Stage 1 of the Blackberry Project was about Discovery. The purpose of this stage was to understand:

- what is happening
- what has already happened
- who is doing what
- size and impact of the issue
- gap identification

It was acknowledged that much has already been done, and there are people and organisations with considerable knowledge and expertise. This stage was considered critical to identify the key stakeholders and understand the need and appetite for working at an accelerated rate in a collaborative way to address the issue.

Steps:

1. Stakeholder map and development of stakeholder contact database
2. Background reading/research
3. Interviews with key stakeholders
4. Gap analysis/report
5. Next steps recommendations

Outputs:

- Identification of key stakeholders
- Report with findings and gap analysis
- Recommendations

Interviewees

44 interviews were conducted for this element of the project during the period September-December 2022. A full list of interviewees is provided in Appendix One.

The interviewees were initially identified with the assistance of Murray Region Forestry Hub, then a snowball technique used whereby interviewees identified other key people with specific complementary knowledge and experience.

Interviewees included research scientists, research organisations, producer organisations, state government agencies and taskforces (NSW and Victoria), forestry organisations (private and public), land managers (private and public), Landcare groups, and those who have designed and implemented various blackberry management strategies.

Stakeholder input has been used to shape the findings, particularly the ideal scenario, gaps and opportunities, and the proposed way forward.

Blackberry Species

European Blackberry (*Rubus fruticosus* aggregate) is a declared Weed of National Significance[1], a highly invasive weed that has significant impact on Australian ecosystems, agriculture and forestry. It is widespread across Australia and causes serious environmental and economic damage.

It is described in the Weeds Australia profiles as an aggregate of up to 20 micro-species which all look very similar but react differently to herbicides and control measures. European Blackberry is an introduced species that is spread by both seeds (dispersed by birds, mammals and water) and cane tips (which reach to the ground where they root and produce new plants.) Flowering occurs between November to February with fruiting from January to April. Fruits only occur on second year canes. New canes commence growing in spring. New daughter plants develop from tips of first year canes. Germination of seeds take place during spring and early summer. It prefers wetter areas of Australia where rainfall exceeds 700mm per annum.

There are also introduced American Blackberry species that are cultivated for fruit production.

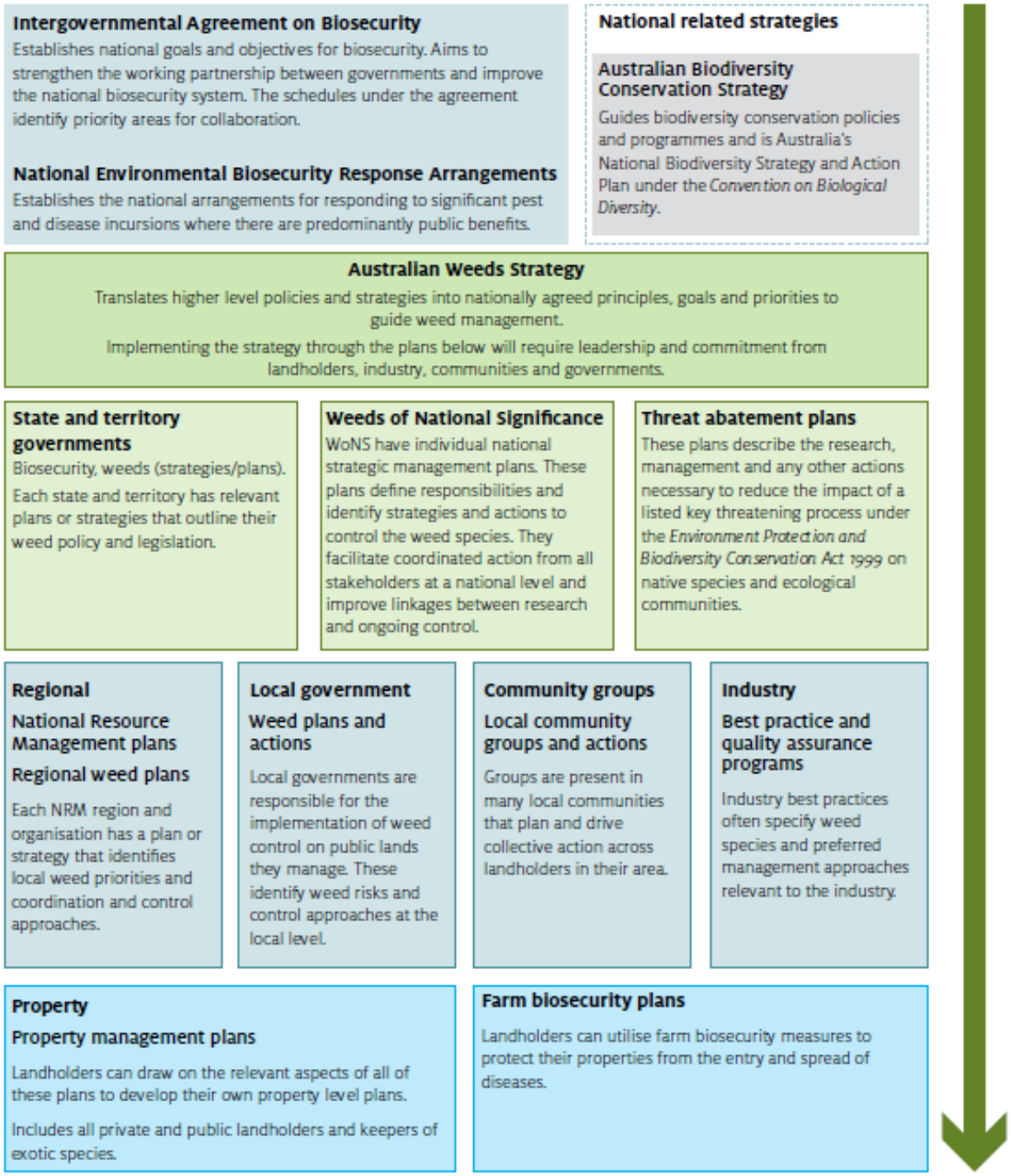
[1] Blackberry | NSW Environment and Heritage

Policy, Strategies, and Organisations

Context

All three levels of government have specific roles related to biosecurity and weed management, as outlined in the Australian Weeds Strategy (2017-2027):
[2]

FIGURE 2 Context for the Australian Weeds Strategy



[2] *Source: Australian Weeds Strategy, Figure 2 – p12*

Biosecurity

The management of invasive species such as blackberries in Australia is a collaborative effort involving multiple levels of government and community participation. The Australian Government primarily focuses on national pre-border and border biosecurity, providing strategic leadership and managing international biosecurity and trade agreements to prevent the entry and establishment of invasive species like blackberries. State and territory governments are responsible for managing invasive species within their jurisdictions.

Biosecurity – Victoria

In Victoria, the state government oversees biosecurity within its borders, supporting national efforts in international trade and market access negotiations. This includes conducting surveillance programs for pests like blackberries and regulating activities that could lead to biosecurity incidents.

Victoria's Catchment and Land Protection Act 1994 mandates local governments to implement weed and pest animal management plans along roadsides, and landholders are responsible for preventing the spread of pests and diseases on their land.

Traditional Owner groups, local government authorities, and private landowners collaborate in LandCare and Caring for Country initiatives, while community members assist in detecting and reporting new pest infestations. The Victorian Blackberry Taskforce plays a lead role in coordinating blackberry management across the state and is an important link between government and community groups.

This integrated approach to biosecurity emphasizes the importance of partnerships and shared responsibilities across all levels of government and the community, ensuring a collective effort in managing and controlling invasive species like blackberries.

Biosecurity - NSW

The NSW Biosecurity Act 2015 replaced 14 previous acts (including the Noxious Weeds Act 1993) and NSW DPI introduced the NSW Biosecurity and Food Safety Strategy 2022-2030. The legislation and strategy aims to provide a cohesive approach to protecting the state's agriculture, natural landscapes, and community health from various biosecurity threats.

Under the Biosecurity Act 2015, landholders or those in possession of land have a legal obligation to manage any Priority Weeds (formerly known as Noxious Weeds) found on their properties, aligning with their General Biosecurity Duty.

The NSW Biosecurity and Food Safety (2022-2030) has four objectives:

> *Preparation and Prevention:* Adopting cutting-edge solutions for the effective management of new and upcoming biosecurity threats by enhancing prediction, early detection, and a deeper comprehension of risk factors.
>
> *Timely and Measured Responses:* Ensuring decisions are informed and proportionate to biosecurity and food safety risks, which includes the dissemination of information across governmental bodies, industries, and communities to minimize social and economic impacts through swift action, effective traceability, and coordinated outbreak management.
>
> *Quick and Effective Containment:* Aiming to safeguard the state's reputation for trade and maintain market access by boosting abilities to contain and manage risks efficiently, utilizing multi-agency collaboration and technology like AI for early detection and intervention.

Partnerships and Collaboration: Strengthening alliances with government agencies, the private sector, research institutions, and industry groups to enhance the sharing of information, reduce management costs, and improve economic, environmental, and social benefits for the NSW community.

National Weeds Strategies

High level national plans and strategies include:

- *The National Framework for the Management of Established Pests and Diseases of National Significance (2017)*
- *Australian Weeds Strategy (2017-2027)*
- *Weeds of National Significance (WoNS)*
- *National Established Weed Priority Framework (Wild Matters, June 2023)*
- *Weed Issues of National Significance (WINS)*
- *National Established Weed Action List (NEWAL)*

The Invasive Plants and Animals Committee (IPAC) has oversight of the Australian Weeds Strategy and the development of its annual work plan.

The National Established Weed Priorities (NEWP) Framework (June 2023) is reinvigorating the Weeds of National Significance (WoNS) concept; introducing a broader approach to tackling priority established weed issues (Weed Issues of National Significance - WINS); and outlines a process to consolidate and achieve short-term, high benefit weed management actions (National Established Weed Action List - NEWAL). A national information and communications portal (Virtual Weed Information Hub) will maintain and support information, resources and networks.

The philosophy of the NEWP Framework is collaboration and co-leadership among stakeholders in industry, community and government. The Framework describes and guides the development of a long-term, national program for established weeds that is shaped by and developed for land managers of established weeds. It establishes governance and support to work together to determine and act upon Australia's established weed priorities.

The National Framework for the Management of Established Pests and Diseases of National Significance[3] (the framework) is designed to deliver better and more sustainable outcomes for government and the community. The framework focuses on the role of government and the decision making necessary to drive more effective national, regional and local cooperation and action.

The framework:

- establishes policy principles to guide government decision making and cooperation to better manage the consequences of EPDNS
- clarifies the role of government, industry, community, landholders and risk creators in managing EPDNS
- establishes criteria to help determine which established pests and diseases should be deemed 'nationally significant.'

[3] *EPDNS*

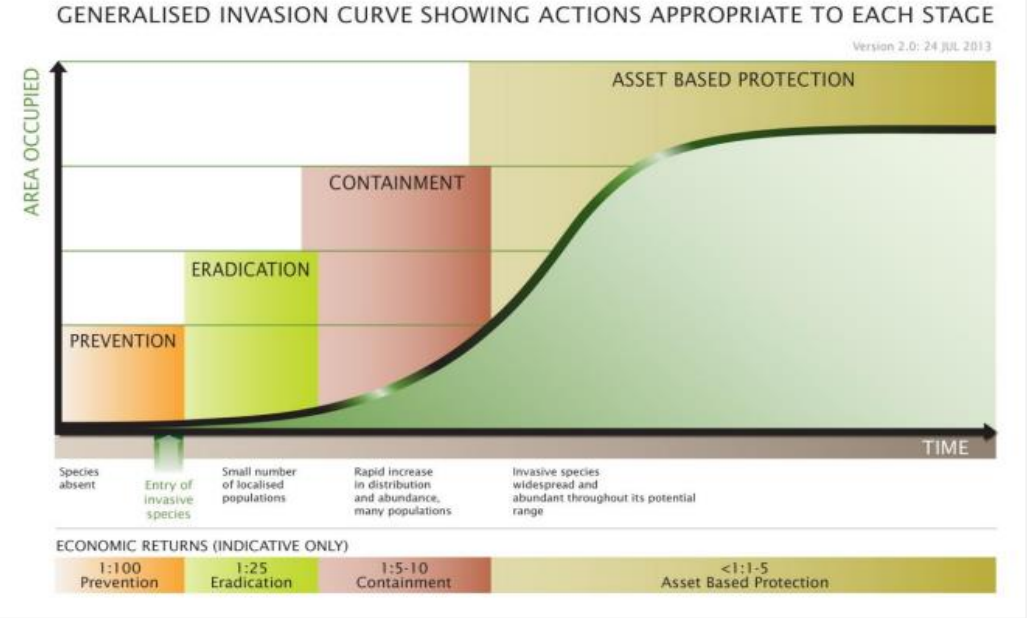
In the Framework, it states:

"Targeted government investment, such as research and development for established pest or disease control techniques, e.g. biological or chemical control, or integrated pest management, can have good benefit: cost ratios, but the funding sources for research and development needs to reflect to whom most benefits flow.

"The Generalised Invasion Curve (Error! Reference source not found.) provides a way to demonstrate the invasion continuum and the associated gradient in return on investment along the continuum, based on the stage of invasion of a high risk species."

[4]

Figure 1 Generalised Invasion Curve



Key roles and responsibilities of government and other stakeholders outlined in the National Framework are:

Government

- provide support where there is sustained collective action to manage an established pest or disease by an industry or community
- undertake enforcement actions and regulatory interventions with respect to individual landholders only when necessary to support sustained collective action by an industry or community
- when necessary for containment of an established pest or disease, apply nationally consistent regulatory measures only to the minimum extent necessary to manage unacceptable risks
- promote the development of partnerships between government, industry and community
- facilitate coordinated policy across jurisdictions for the management of EPDNS when in the national interest to do so
- work with risk creators where possible to assist adoption of risk management measures as part of normal business practices
- support research into improved EPDNS control or management when there is a strong public interest to do so
- meet roles and responsibilities as a landholder (public land and waters) to protect assets of high public value.

[4] *Source: Generalised Invasion Curve, National Framework Established Pests and Diseases of National Significance*

Industry and community groups

- promote and undertake collective action based on industry or community needs at a local, regional or national level to mitigate impacts of EPDNS on industry or community assets
- build risk mitigation (including where applicable containment) measures into normal industry practices
- support and promote industry-driven or market-driven approaches to established pest and disease management or containment where practical and applicable
- support research into established pest and disease management or control that provides industry benefit.

Landholders

Landholders are individual owners or lessors of assets including public and private land, linear reserves, marine and freshwater areas/holdings and built structures.

- control and manage established pests and diseases to mitigate as necessary the impacts on the landholders assets or as required by regulation
- take reasonable steps to minimise the impacts of established pests and diseases on other landholders and assets (both public and private), particularly when part of a programme of collective industry-led or community-led action.

Risk creators

Risk creators include government, industry and community groups, landholders, land developers, operators of earth-moving equipment, contractors engaging multiple landholdings, linear reserve managers (roads, railways), plant nurseries and vessel operators.

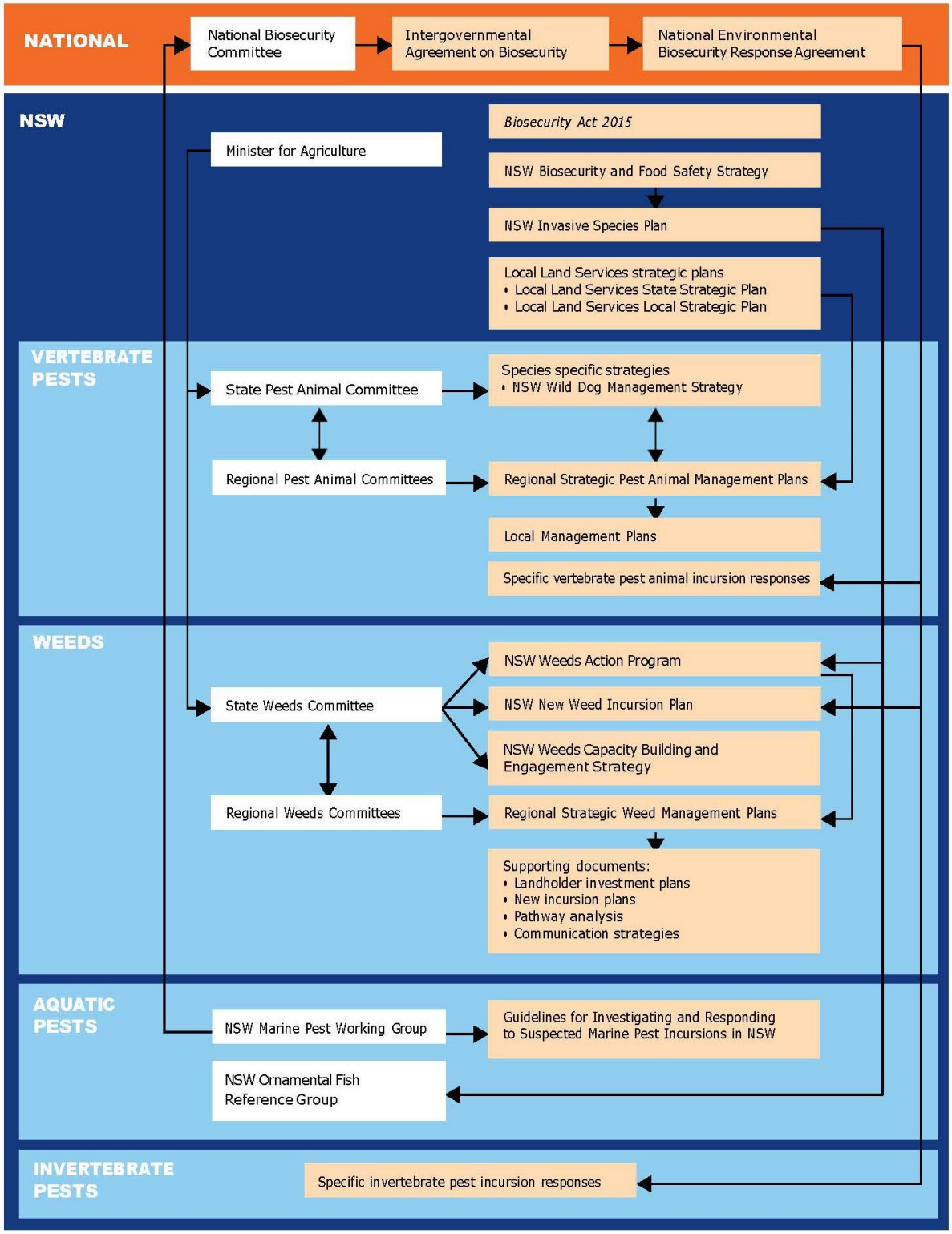
- control and manage established pests and diseases to mitigate as necessary effects on public and private assets or as required by regulation
- participate as necessary in industry-led or community-led actions to manage or contain established pests and diseases
- identify risk-creating activities and build risk mitigation measures into normal business practices

For Blackberry specifically, the Weeds Australia portal (www.weeds.org.au/profiles/blackberry-european) provides access to documents including:

- Blackberry National Strategic Plan 2012-2017
- Blackberry Best Practice Management Manual 2009
- Blackberry Best Practice Management Manual Addendum 2023

NSW

Governance and guiding documents for invasive species management in NSW[5]



[5] *Source: The NSW Invasive Species Plan 2023–2028, Figure 1 – page 4*

This is an update of the NSW Invasive Species Plan 2018–2021. The Plan supports the NSW Biosecurity and Food Safety Strategy 2022-2030 and identifies key strategies to help prevent new incursions, eliminate or contain existing populations and effectively manage already widespread invasive species. It is a high level document and does not outline species specific approaches.

NSW State Weeds Committee

The State Weeds Committee (SWC) sets out to reduce the impact of weeds on the community, primary industries and environment by providing consistent and transparent state level leadership, coordination and accountability for weed management throughout NSW.

The State Weeds Committee has a role to support regional weed committees to ensure they operate on a tenure-neutral basis and develop/implement regional plans that are effective, risk-based and inclusive of all major stakeholders in the landscape.

The Committee is also accountable for:

- advising on regional and state weed management policy and strategy
- overseeing the implementation of the weeds component of the NSW Invasive Species Plan
- overseeing the implementation of, and reporting on, the NSW Government endorsed recommendations from the NSW Weed Review
- undertaking transparent, evidence-based evaluations of weed declarations
- developing and communicating service delivery standards for NSW weeds management
- establishing priorities for grant projects and evaluating performance of the Weed Action Program
- commissioning audits of DPI, LLS and local control authorities weed functions where appropriate - Local Land Services, Local Government NSW, NSW Department of Primary Industries, Office of Environment and Heritage, Nature Conservation Council NSW, Farmers NSW, Weeds Officers Association, Nursery and Garden Industry of NSW
- commissioning audits of Weed Action Program lead organisations where appropriate
- providing a forum for information from Regional Weeds Committees
- evaluating the performance of Regional Weeds Committees
- promoting best practice in strategy development and planning for weed control
- undertaking timely communication with member organisations
- developing a 3 year action plan to guide the Committee.

NSW Weed Biocontrol Taskforce (Department of Primary Industries)

This taskforce funds and promotes biocontrol research as well as cultivating, release and monitoring programs. It is funded through a shared investment commitment of 'like-minded" NSW agencies responsible for managing weeds. The Taskforce holds bi-annual meetings that set priorities and pool resources linking local, state and national collaborators. It is a pilot initiative "laying the groundwork for further co-investment in a coordinated collaborative effort."[6]

[6] *www.dpi.nsw.gov.au/nswweedbiocontroltaskforce*

NSW Natural Resources Commission

The NSW Natural Resources Commission (NRC) is an independent body that is charged to provide robust, evidence-based advice to help the NSW Government to secure the best environmental, social and economic outcomes in natural resource management. Two of their strategic priorities are to provide independent advice on complex issues, and improved evidence base for decisions on forest management.

Currently, the NRC are undertaking the NSW Invasive species management review, with the report due to be presented to the NSW government in June 2024.

Several research inputs have been developed to inform the review including Pest Animal and Weed Management Survey 2016/2019/2022: NSW Land Manager custom survey results (ABARES), and an Interjurisdictional analysis of Integrated Species Management for the New South Wales (NSW) Natural Resources Commission (NRC) to identify contemporary strategies and highlight innovative practices across Australia and globally.

Two findings from these reports are relevant to blackberries:

- The Land Manager survey found that Blackberry was the ranked as the most widespread problematic WoNS for NSW land managers. In 2022, more land managers reported either major or minor problems with Blackberry (reported by 29% of respondents) compared to any other weed – down from 31% in 2019 (but still ranked number 1).
- The Interjurisdictional Analysis recommended that "Collective impact should be promoted - a concerted effort across organisations and other groups that have national impact, which together will accomplish much more than operating on their own. Working together for collective impact means our efforts can go further, faster."

NSW Weeds Risk Management System[7]

The NSW WRM system uses a series of questions to arrive at a score for weed risk and feasibility of coordinated control. The weed risk section is broken down into three subsections, these being:

- Invasiveness
- Impacts
- Potential distribution.

The feasibility of coordinated control section is also broken down into three subsections:

- Control costs
- Persistence
- Current distribution.

Once scores are determined for weed risk and feasibility of coordinated control, a table comparing these scores directs the assessor to what management actions may be needed for the weed. These scores are an estimate not an absolute score. The range of scores for weed risk and feasibility of coordinated control that determine any management action are reflected in the matrix.

The NSW WRM system is used in parallel with the current NSW noxious weed declaration for a short time. After this time the NSW WRM system will be the sole system used to evaluate declaration requests and changes. An entirely different process is used for the prioritisation and allocation of any grant funding.

[7] *From: https://www.dpi.nsw.gov.au/biosecurity/weeds/strategy/nsw-weed-risk-management-system/background-information*

Local Land Services

Local Land Services is a regionally-focused NSW Government agency delivering customer services to farmers, landholders and the wider community, specifically providing information and resources to:

- improve agricultural productivity
- control declared pests and enable landholders to meet legal obligations
- manage and improve natural resources.

Each LLS produces a Regional Strategic Weed Management Plan which provides the basis for a co-operative and coordinated approach to weed management. The Plan identifies regional priorities for weed management and outlines how government agencies, community groups and individual landholders will share responsibility and work together across land tenures to prevent, eradicate, contain and manage the impacts of weeds.

The Riverina LLS covers much of the NSW area of the Murray Region Forestry Hub. Whilst Blackberry is listed as a State priority weed, it is not identified as a Riverina region priority weed.

Victoria

The Victorian Government is responsible for:

- administrating Victoria's main legislation for invasive plants and animals, the Catchment and Land Protection Act 1994 (CaLP Act)
- setting statewide strategic policy for invasive species
- enforcing the provisions of the CaLP Act.

The Victorian Government is also responsible for the management of invasive species as a land manager under the CaLP Act and other relevant laws. This involves taking all reasonable steps to:

- eradicate state prohibited weeds (such as water hyacinth, alligator weed and perennial ragweed) from the state
- control restricted pest animals (all those other than established pest animals) on any land in the state.

The Victorian Government's roles and responsibilities for managing invasive species are mainly delivered by Agriculture Victoria, with the management of parks and reserves directed through Parks Victoria.

Victorian Catchment and Land Protection Act

In Victoria, the Catchment and Land Protection Act (1994) defines the roles and responsibilities and regulates the management of noxious weeds and pest animals. Under the CaLP Act all landowners (including the Crown, public authorities and licensees of Crown lands) are legally required to manage declared noxious weeds and pest animals on their land by taking steps to eradicate regionally prohibited weeds and prevent the growth and spread of regionally prohibited weeds.

There are 4 categories of noxious weeds defined under the CaLP Act:

- state prohibited weeds
- regionally prohibited weeds
- regionally controlled weeds
- restricted weeds

The regulations under the Act (2012) also specify four control measures: application of an herbicide; cultivation of the soil; physical removal; mulching.

European Blackberry is 'regionally controlled' in all catchment areas of Victoria except for the Mallee catchment where it is 'restricted'.

The Invasive Plants and Animals Policy Framework (Victoria)

The general principle of government involvement in invasive species management will be that government invests to maximise public benefit. This investment may be necessary due to market failure or to the role of government as manager of public land and waters. Intervention will only occur where the benefits outweigh the costs.

There are six areas of intervention and actions listed in the Invasive Plants and Animals Policy Framework[8]:

- prevention and preparedness
- eradication
- containment
- asset based protection
- monitoring, evaluation and reporting
- research and development

The framework notes that:

- Determining relative benefits and costs requires risk assessment and the application of a risk management approach to biosecurity.
- Government needs to apply the precautionary principle – proposed introductions of new species will not be allowed until the risks have been assessed and determined to be acceptable.
- Management will be directed by sufficient evidence to make informed decisions and, where necessary evidence is not available, further research and development will be conducted to provide it.
- Invasive species management is an integral part of Victoria's approach to biosecurity and to integrated natural resource management.
- Early intervention to prevent introductions of new high-risk species, or to ensure eradication as soon as possible, will generally be much more cost effective than trying to manage invasive species once they have become widely established. This focus on risk management, prevention and early intervention is consistent with national priorities outlined in documents such as the Australian Weeds and Australian Pest Animal Strategies.
- It is not possible or desirable for government to provide for control of all invasive species. Nor is it appropriate for all invasive species to be declared as pests using legislation. Criteria for government intervention need to be established and widely accepted.
- Government intervention is only warranted to protect high-value assets (whether at the stage of early intervention or once an invasive species has become well-established). For established pests, government investment for invasive species management needs to be part of an integrated approach to protect high-value assets. (Assets are defined under 'Asset-based protection' later in this document).

[8] *Source: https://agriculture.vic.gov.au/biosecurity/protecting-victoria/legislation-policy-and-permits/invasive-plants-and-animals-policy-framework:*

- Government partnerships with community, industry and key stakeholder groups are essential to maximise the benefits of government intervention.
- Invasive species management operations will be carried out in ways that are consistent with the aims of other policies, such as those concerned with animal welfare, protection of native species and communities, river health and Aboriginal cultural heritage.

Victorian Blackberry Taskforce

The Victorian Blackberry Taskforce (VBT) was established in 2001 to work with Victorian communities and government agencies to provide a collaborative effort to control blackberry. It has an advisory role to the Victorian government and a community focus. The Taskforce's community partnership program covers over 280,000 hectares of public and private land infested by blackberry.

The Taskforce has three main roles:

- It represents and advocates community interests to government on blackberry across the various catchments. This representation is generally through the community representatives on the board from across the various catchments in Victoria.
- It is operational through the delivery of the Community Partnership Program, working with communities to assist them to develop their own response to controlling blackberry in their area. The operational focus also assists the group in representing the various community concerns.
- It is strategic - with a 5-year strategy which outlines goals, objectives and accompanying strategic actions. The VBT states "This ensures that we remain relevant and our investment and decisions support a wider strategic plan for the management of blackberry across the State."

The vision of the Victorian Blackberry Taskforce is a future where the community understands the impact of blackberry on biodiversity and land productivity and takes action.

The 2020-2025 Strategic Plan objectives are to:

1. Provide effective state-wide leadership on blackberry management
2. Maximise community engagement in blackberry management across Victoria
3. Support and enhance community capacity to effectively manage blackberry
4. Support the development and demonstration of innovative and cost-effective solutions for blackberry management
5. Reduce the local impact of blackberry on agricultural, environmental and social values through coordinated action by engaged communities
6. Demonstrate and share achievements through effective monitoring, reporting and evaluation

The VBT has been instrumental in motivating, inspiring and supporting local communities to see that they can make a difference. The background to the strategic plan states that as a result of collaborative action, land that had been overrun by blackberry is now becoming productive and this is motivating communities to undertake long-term control that will see blackberry diminish as a threat to agricultural land and environmental and social values.

Key achievements cited by VBT include:

- Securing funding for an Executive Officer responsible to the Taskforce for project management and administration tasks;
- Supporting a state-wide network of blackberry control groups, including funding local project officers to facilitate community engagement activities and visiting a number of local community action groups;
- Building partnerships with Local and State Government and key organisations.
- Engaging land managers and local communities was central to the Victorian Blackberry Strategy (2014-2019).
- Using websites and social media to engage community members. This includes a successful Facebook campaign, and over 5,000 views to the Victorian Blackberry Taskforce website annually;
- Supporting local groups through the Community Partnership Program.
- Delivering a range of training events across the state including demonstration days and Invasive Species Forums;
- Developing lasting resources for landholders including case studies, management guides and demonstration videos for the Victorian Blackberry Taskforce YouTube channel. Innovative solutions for cost-effective blackberry management
- Development of a decision-support tool to increase awareness of the economics of blackberry management, focused on costs and benefits for agricultural productivity;
- Demonstration of new drone technology to improve spatial mapping and the application of herbicide in hard-to-reach areas.
- Reducing the impact of blackberry. Between 2014-2019, over 690 landholders signed up to 3-year voluntary management agreements to control blackberry since 2014 with hundreds of hectares of blackberry infestation treated by landowners and local groups through the Community Partnerships Program.

Impact of the Blackberry Issue

Whilst the physical impacts of blackberry infestation have been documented and supported, the spread and economic impact were more difficult to source. This section contains estimates of impact, however the quantitative impacts need to be further defined.

The Weeds of National Significance Blackberry Control Manual (2009) identifies several challenges presented by blackberry infestation.

Blackberry can infest large areas quickly as they grow rapidly, propagate through abundant seeds and daughter plants, and is relatively unpalatable to livestock. The plant can smother other vegetation under dense canopy. The Weeds Australia profile states that *"it is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts."*

Impact on land used for production

Blackberry has an impact on land use resulting in reduced productivity for industries – forestry, grazing and cropping – through competition for soil moisture, light, and nutrients and:

- Restricted access to land
- Habitat for vermin (eg rabbits, foxes)
- Restricted stock access to pasture and water
- Competition with amenity tree plantings
- Fire hazard
- Reduced road safety and access
- Spread to other properties, public land, or high conservation areas

The Blackberry Control Manual states:

> *"In plantation forestry, blackberry can prevent the regeneration of natural hardwood forests and reduce the capacity of softwood and hardwood seedlings to establish and grow. The plant can also hinder forest operations, particularly where infestations are heavy and walking access is required."*

Natural ecosystems and amenity areas

- Degradation of habitats
- Threat to adjoining land including productive areas, and areas of high biodiversity value
- Restricted access to land or waterways for management purposes (eg fire trails) or recreations (eg bush walking, fishing)
- Increased bushfire risk
- Habitat for vermin that impact native species

National

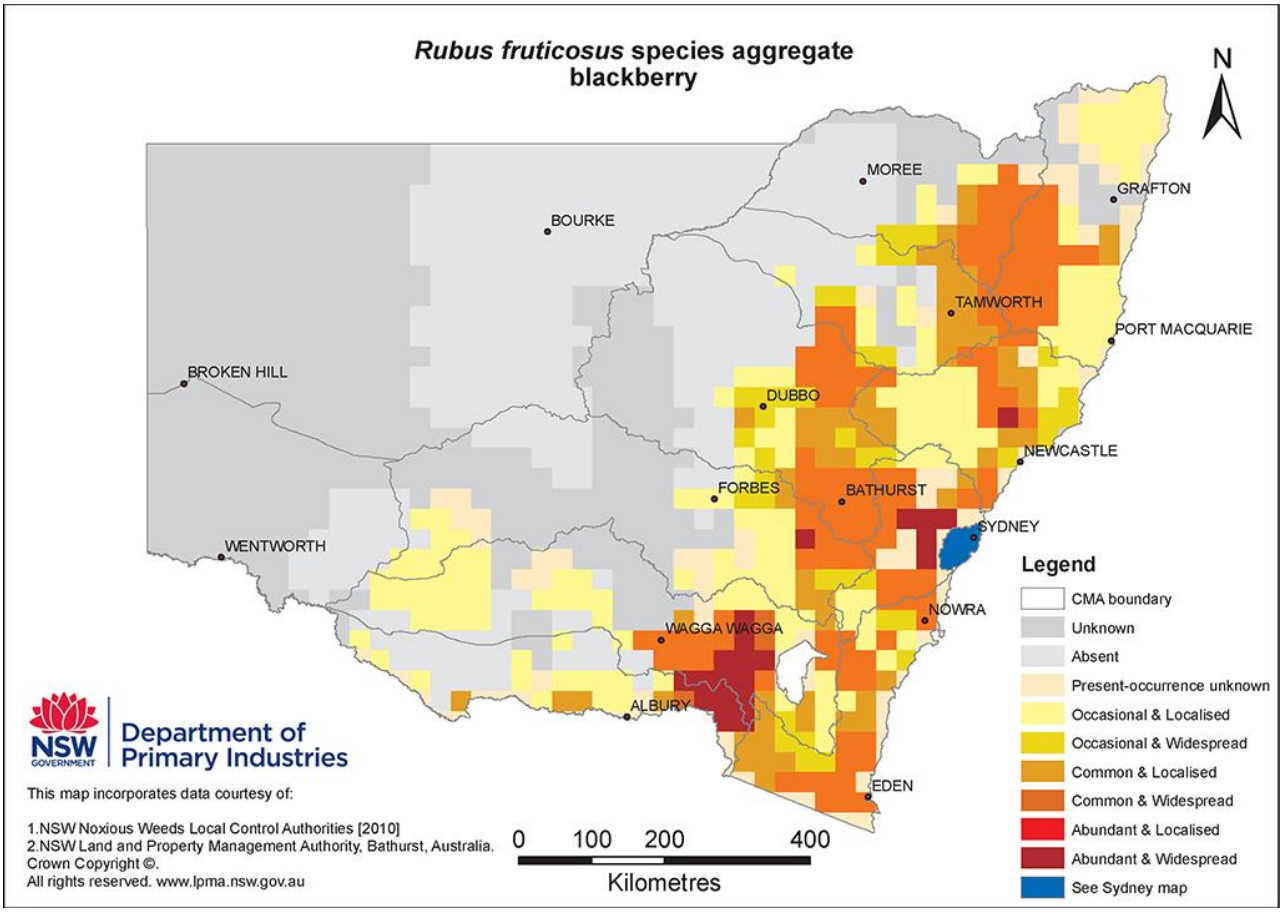
Weeds Australia profile (updated 2021) estimates that European Blackberries infest about 9 million hectares of land in Australia. This data is now out of date, and it can be considered an underestimate of the current infestation.

NSW

NSW DPI (2019)[9] estimates the cost of control and lost production at around $200m – although no methodology for this estimate was shown in this document.

In NSW, there are two maps/official records of blackberry infestation:

- Recorded presence of blackberry during property inspections – made by authorised officers (local council officers) during property inspections under the *Biosecurity Act 2015.* This is provided to the NSW Department of Primary Industries. The records reflect the presence of the weed at the date of inspection[10]
- Estimated distribution of Blackberry in NSW 2010 – which shows the distribution and density estimated by local council weeds officers in 2010[11]



[9] *Source: https://weeds.dpi.nsw.gov.au/Weeds/Blackberry*

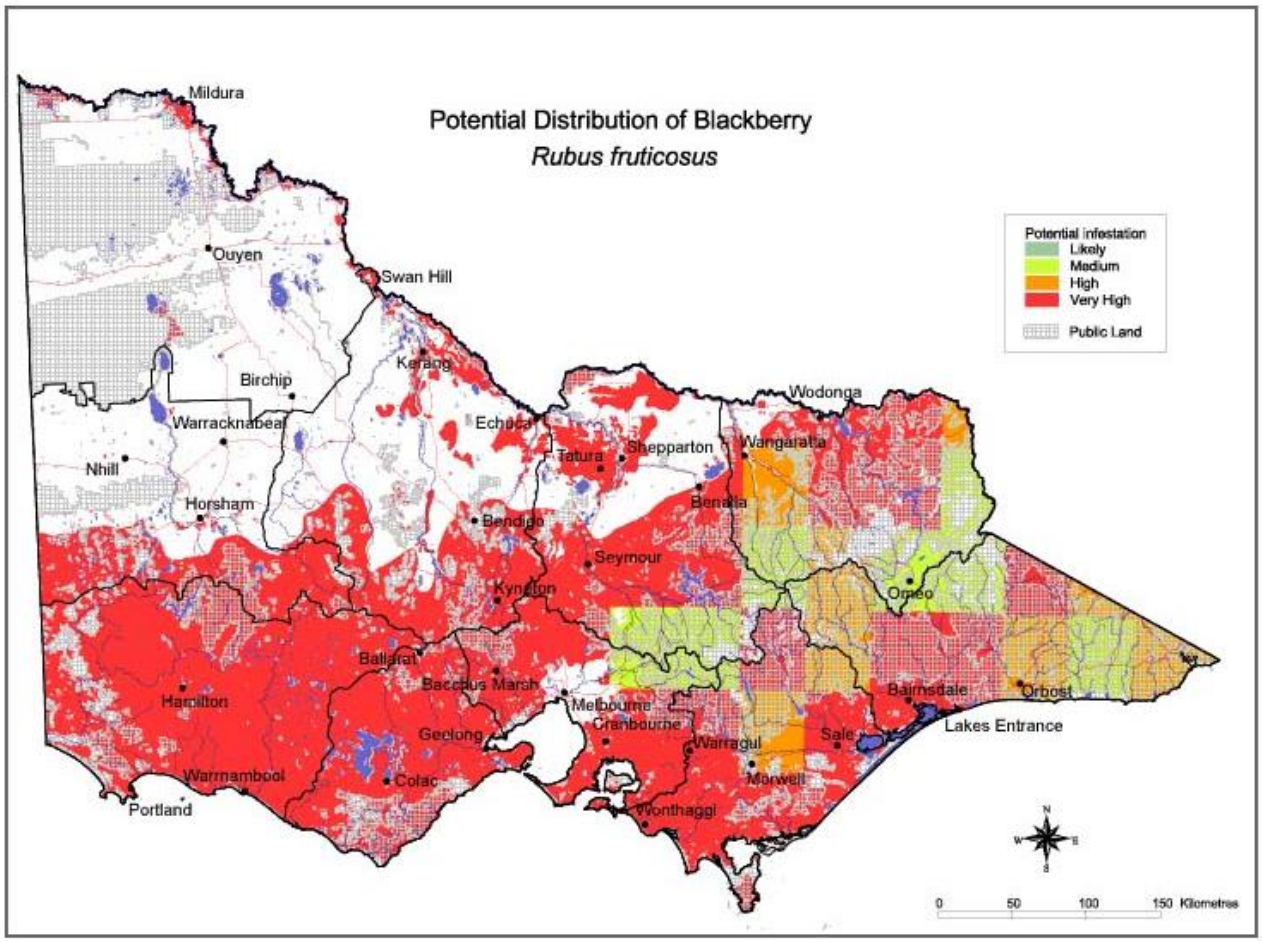
[10] *Recorded presence of Blackberry during property inspections (Map: Biosecurity Information System - Weeds, 2017-2023)*

[11] *(Source: https://weeds.dpi.nsw.gov.au/DistributionProfiles/*

Victoria

In 2006 it was estimated that blackberry cost Victoria approximately $100 million each year in control activities and lost production.

According to the Victorian Blackberry Taskforce, blackberry is found in areas with greater than 760mm annual rainfall mainly on fertile soils, and in irrigation areas. It states: "whilst the blackberry aggregate has probably reached its climatic limits (rainfall and temperature) of its potential range in Victoria, individual species have not."[12]



[13]

[12] *Quote from the introduction to the Victorian Blackberry Strategy 2020-2025.*

[13] *Source: Victorian Resources online https://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/pot_dist_blackberry*

Controls

Blackberry control is challenging due to various characteristics of the plant- the prickly canes make access difficult, and the waxy leaf surface impedes herbicide effectiveness. Blackberries can propagate through several means and grow in a wide range of climatic zones. Their secondary root system forms buds that can lay dormant and emerge years after herbicide spraying. Furthermore, blackberry seeds are easily spread by birds and animals feeding on the berries[14]

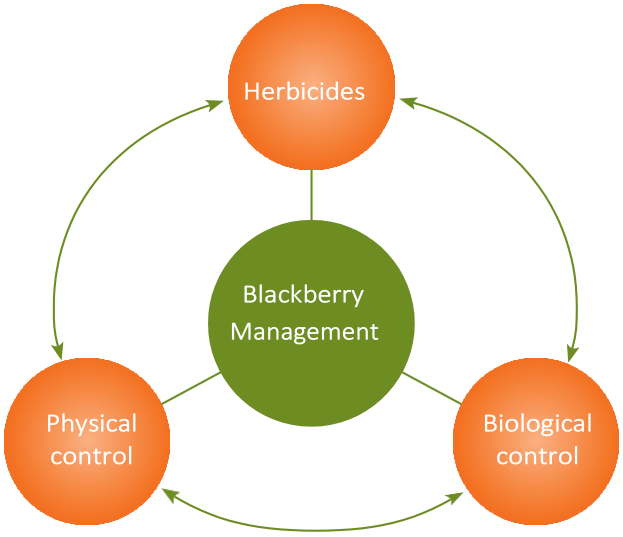
The Blackberry Best Practice Management Manual and its addendum (2023) describe control activities that are in place: Biological, Chemical, and Mechanical.

Stakeholders interviewed for this report favoured a multipronged integrated weed management approach and more research into biological controls for the long-term.

Other methods raised were Grazing (eg GrazeAway goat trials for Melbourne Water and other authorities), use of drones (UAV – unmanned aerial vehicles) and remote controlled mulchers.

Integrated Weed Management Approach

Integrated Weed Management (IWM) is an approach to managing weeds that involves the coordinated use of multiple control tactics. This approach aims to reduce reliance on herbicides alone, thereby increasing the chances of successful weed control or eradication. Key elements of IWM include long-term planning and a thorough understanding of the weed's biology and ecology, along with the appropriate application of various weed control methods.



— Indicates integration between control options in a long-term management plan.[15]

The most effective approach often depends on the size and location of the infestation. Each blackberry species responds differently to control methods, so identifying the specific species is crucial. Control programs consider several factors, such as the timing of control measures, location, potential impacts on non-target vegetation, and the need for follow-up treatments over several years.

[14] Source: https://riversofcarbon.org.au/riparian-real-estate-guide-managing-blackberries-around-waterways).

[15] *Source: Blackberry Control Manual, p39 Figure 4.1 Overview of long-term management techniques for blackberry.*

Herbicide use (chemical control)

Herbicide spraying is most effective when the plant is actively growing and not under stress. The application of herbicides requires careful consideration of environmental factors, especially when near waterways, to avoid contamination. Training and advice are recommended for those undertaking herbicide application.

Aerial spraying works but is very costly, with helicopter spraying effective for seedling areas.

Research into chemical controls is generally undertaken by large chemical companies (eg Dow).

Aerial Applications – Drones

The 2023 addendum to the Blackberry Best Practice Management Manual states that there has been a growing interest in the use of unmanned aerial vehicles (UAVs or drones) in aerial spraying programs. Recent drone technology using a rotary atomising spraying system may enable more precise spraying and reduced drift. Drone technology enables highly targeted treatment of weeds in disturbed or inaccessible areas, and has been shown to significantly reduce the amount of chemicals and water used compared with ground-based herbicide application. Regulation requires pilots maintain a line of sight with the drone, which may not always be achievable in hard-to-access areas.

Recent studies and trials, such as those run by Victorian Blackberry Taskforce, have shown that drones are a cost-effective and efficient method for controlling weeds, with some models able to cover approximately two acres per flight and averaging 10 minutes of flight time. Drone use, in addition to complying with the same legal requirements as regular aircraft, requires completion of training in preparation, applying, transporting and storing chemicals. This technology should not be implemented where native vegetation or sensitive horticultural crops cannot be avoided.

Mechanical Controls

This involves the physical removal of plants and biomass. Graders, and mulchers are most commonly used.

Biological Controls

Biological control measures include the use of natural predators such as insects and fungi. In the past rusts have been effective, although they are species specific eliminating a single species whilst leaving room for others to grow and expand. The focus of research is on biological controls.

Work on Paterson's Curse control has used a successful combination of around 7 different biological controls.

Research

Research has been conducted into the control of blackberry infestation in Australia. This research has included studies on the effectiveness of control measures, the impact of blackberry on ecosystems and agriculture, and the potential for biological control measures. Current research is focused on developing more effective control measures, such as new herbicides and improved biological control methods. Proposed research includes further investigation into the impact of blackberry on ecosystems and agriculture and the development of new control measures.

Typically, a research program is at least 10 years in the development phase and another 10 years in releasing the biocontrol throughout the distribution of the weed.

Past Research

Past research has been extensively documented in the national Blackberry Manual (2009), including.

- Ecology and control of blackberry (*Rubus fruticosus L. agg*.)
- Blackberry leaf rust fungus (*Phragmidium violaceum*)
- Integrating biological control with chemical control methods

Current Research

- Dr Raelene Kwong - determining whether the French strain of sawfly can attack the Australian population of *Rubus anglocandicans* as well as it does on *Rubus ulmifolius* (its natural host in Southern France). Host specificity work to be completed
- Dr Sonia Graham – collaborative weed management and metrics
- Andrew Busseau (Forester at Shelley, HVP) – impact of blackberry management on productivity
- Preston Roe Patterson, valuers in Albury – Ag Productivity Tool

Proposed Research

- NSW Forestry Corporation, Rebel Talbert – impact of blackberry on fuel models and fire models (NB may now be current)
- Dr Robin Adair – biocontrols including purple blotch disease (which produces collar rot affecting new primer canes so that they collapse and rot away)

Potential investigations

- Jewel beetles that attack the crown
- More host-specific strains of rust

Stakeholder Engagement

Based on the comprehensive input from 44 stakeholders, the following ideas emerged:

Ideal Scenarios

- Emphasis on partnerships and collaborative efforts spanning various organisations and tenures.
- Adoption of a long-term, coordinated strategy for weed management, based on scientific knowledge and the plant's biology.
- Involvement of various tiers (land managers, decision-makers, regulatory authorities) in a unified effort.
- Biocontrol development, leveraging research on specific agents.
- Building upon successful past initiatives like the Weeds CRC, National Blackberry Taskforce and Victorian Blackberry Taskforce.
- Recognising the ecological impact of blackberry and its suppression benefits on biodiversity.
- Integration of different control methods (biological, mechanical, chemical) and a collective, tenure-blind approach.
- The need for ongoing funding, commitment, and a backbone coordinating organisation.

Gaps and Challenges

- Prevailing perception of blackberry management as a 'too hard' or intractable problem.
- Lack of leadership and coordinated approach.
- Funding challenges.
- Difficulties in stakeholder alignment and addressing the diverse impacts of blackberry across different habitats.
- Climate considerations.
- Specific challenges of finding effective bio-controls for under forest canopies.
- Gap - updated information on the costs and economic impacts of blackberry – including data specific to the Murray Region Forestry Hub area.

Opportunities

- Learning from and enhancing existing initiatives like the Victorian Blackberry Taskforce.
- Leveraging technology (drones, LIDAR) for better targeting and understanding of the problem.
- Engaging diverse stakeholders, including community groups, in collaborative management approaches.
- Utilising a multi-faceted approach to weed management, integrating various control methods.

Considerations for the Future

1. Establish a Long-Term, Collaborative Strategy:

    - Formulate a long-term plan focusing on integrated weed management, considering biological, mechanical, and chemical controls.
    - Foster partnerships across various organisations, including state agencies, commercial foresters, and community groups.

2. Develop and Implement Biocontrol Measures:

    - Invest in research to identify and evaluate specific biological control agents.
    - Consider a suite of biocontrols targeting different aspects of the blackberry lifecycle.

3. Leverage Technology and Data:

    - Utilise drones and LIDAR for accurate mapping and monitoring of blackberry infestations.
    - Implement GPS and aerial photography to record efforts and progress.

4. Strengthen Community and Stakeholder Engagement:

    - Enhance programs like the Good Neighbours Program for coordinated management across public and private lands.
    - Facilitate local working groups and provide monetary assistance, specialised staff, and expertise.
    - Explore diverse funding sources, including government grants and private investments.
    - Advocate for consistent, long-term funding to support the strategy.
    - Secure long-term funding and resources.

5. Enhance Education and Training:

    - Invest in community education on weed management techniques.
    - Develop TAFE traineeships for training in weed management.

6. Implement Best Practices and Innovations:

    - Adopt an integrated approach combining different control methods.
    - Experiment with new technologies eg remote-controlled mulchers and sophisticated drone applications.

7. Regular Monitoring and Adaptation:

    - Conduct regular assessments to measure the health of ecosystems and the effectiveness of control measures.
    - Be adaptable to changing conditions and feedback from ongoing efforts.

Collective Impact Approach

Applying a 'collective impact' approach to the blackberry challenge could provide a way forward. Collective impact is a structured form of collaboration that brings together different sectors for a common agenda to solve complex social and environmental issues. The approach involves:

1. Common Agenda:
   All participants need a shared vision for change, including a common understanding of the problem and a joint approach to solving it through agreed-upon actions. This could involve defining a clear goal, such as significantly reducing the spread and impact of blackberries across different regions in Australia, or a specific targeted region (eg Murry Region Forestry Hub area).

2. Shared Measurement Systems:
   Collecting data and measuring results consistently across all participants ensures efforts remain aligned and participants hold each other accountable. This could involve setting up a monitoring system to track the spread of blackberries, the effectiveness of different control methods, and the impact on biodiversity and agricultural productivity.

3. Mutually Reinforcing Activities:
   Participant activities must be differentiated while still being coordinated through a mutually reinforcing plan of action. This means that while different groups (e.g., government agencies, local communities, environmental groups, and research institutions) might undertake different activities (such as research, direct action, community engagement, and policy development), these activities should all support a common set of objectives.

4. Continuous Communication:
   Consistent and open communication is needed across the many players to build trust, assure mutual objectives, and appreciate common motivation. Regular meetings, updates, and information sharing can help maintain momentum and alignment.

5. Backbone Support:
   Creating and managing collective impact requires a separate organisation with staff and a specific set of skills (eg Murry Region Forestry Hub) to serve as the backbone for the entire initiative and coordinate participating organisations and agencies. This organisation could take on tasks like data management, coordination of activities, stakeholder engagement, and project management.

6. Involving a Broad Cross-Section of Stakeholders:
   This includes engaging stakeholders from different sectors such as government, non-profits, community groups, and the private sector. Each stakeholder brings unique perspectives, resources, and capabilities to the table.

7. Long-Term Commitment:
   Given the complexity of the blackberry problem and the need for a sustained effort over many years, a long-term commitment from all stakeholders is crucial.

In practice, this approach could involve setting up a dedicated task force or consortium that includes representatives from different stakeholder groups. This body would be responsible for developing a shared plan of action, coordinating efforts across different groups, monitoring progress against agreed-upon metrics, and adapting strategies based on what is learned.

Applying a collective impact approach to the blackberry challenge in the Murray Region Forestry Hub area could lead to more coordinated, efficient, and effective efforts, ultimately resulting in greater success in managing this pervasive environmental and agricultural problem.

Recommendations

Based on the findings of the extensive consultation, the following recommendations are offered:

1. Circulate an Executive Summary:

   Distribute a summary of the findings from the report to all interviewees, along with a thank you note, after obtaining approval from the Murray Region Forestry Hub.

2. Host a Key Stakeholder Forum:

   Organise a forum specifically focused on the potential for a collective impact blackberry control project in the Murray Forestry Hub region. This forum should:
   - Feature brief presentations on current blackberry control efforts in NSW, Victoria, and federally.
   - Include updates on ongoing biological control research, identifying existing barriers and gaps.
   - Highlight insights on collective impact in weed management by experts like Dr Sonia Graham.
   - Aim to secure commitments from key stakeholders for support, resources, and funding towards a collective impact approach.
   - Identify a suitable 'backbone' organisation to coordinate and manage the collective impact initiative.
   - Establish key milestones for the project.

3. Implement Recommendations for Collective Impact Approach:

   - Establish a common agenda: Agree on specific, measurable goals for blackberry control across various regions and sectors.
   - Form a backbone organisation: Set up a central body responsible for coordinating the collective impact initiative.
   - Develop shared measurement systems: Implement a system to track progress and measure outcomes.
   - Encourage mutually reinforcing activities: Ensure activities of different stakeholders complement each other.
   - Foster continuous communication: Establish regular communication channels among stakeholders.
   - Engage diverse stakeholders: Involve a broad range of participants, including government, communities, and private sectors.
   - Secure sustained funding: Obtain long-term funding commitments from various sources.
   - Promote training and education: Develop educational programs on effective blackberry management practices.
   - Integrate with existing policies and programs: Align with regional and national strategies for invasive species management.
   - Incorporate adaptability and learning: Adapt strategies based on outcomes and new research findings.

4. Fine-Tune Recommendations:

   Continuously refine these recommendations as the report is completed and more insights are gathered.

References

Here is a selection of references, the full set has been provided to Murray Region Forestry Hub:

Blackberry Control Manual – management and control options for blackberry (Rubus spp) in Australia (2009) Department of Primary Industries Victoria, NSW Department of Primary Industries, Blackberry Technical Reference Group, National Blackberry Taskforce

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Climate change and the potential distribution of an invasive alien plant: Acacia nilotica ssp. indica in Australia. Journal of applied ecology, 40(1), 111-124.Kriticos, D. J., Sutherst, R. W., Brown, J. R., Adkins, S. W., & Maywald, G. F. (2003).

Blackberry control using biological and integrated control techniques. Plant Protection Quarterly, 25(1), 24-31. Csurhes, S., & Edwards, R. (2010).

Appendices

Appendix One: Stakeholders

	Date	Format	Person	Classification	Location	Parties/Organisation
1	25-Oct-22	Face to face meeting	Lyn Coulston	Other organisations	Shelley/Corryong	Chair, Victorian Blackberry Taskforce
2	10-Nov-22	Face to face meeting	Towong Plantations Committee	Agencies and Land Managers	Shelley	Andrew Bussau, HVP
3		Face to face meeting				Hugh Dunshue, Agriwealth
4						Jenny Pena, DJPR
5						Stephen Sjoberg, Towong Council
6						John Silins, ParksVic
7						Barton Roberts, VBT and AgVic
8	15-Nov-22	Phone call	Mel Wilkerson	Agencies and Land Managers	Murrumbidgee	Murrumbidgee LLS
9	15-Nov-22	Teams meeting	Dr Rae Kwong	Researcher	Vic	AgVic
10	16-Nov-22	Phone call	Robin Adair	Researcher	Vic	Australis Biological
11	16-Nov-22	Zoom meeting	Cameron Allan	Agencies and Land Managers	National	Meat and Livestock Australia
12	29-Nov-22	Phone call	Dr Sonia Graham	Researcher		University of Wollongong - re measures for collaborative projects
13	30-Nov-22	Phone call	Jo Luck	Other Organisation	National	Horticulture Innovation - collaboration in biosecurity
14	02-Dec-22	Phone call	Hillary Cherry	Agencies and Land Managers	NSW	National Parks and Wildlife Service
15	02-Dec-22	Phone call	Steve Bowmaker	Agencies and Land Managers	Vic	Regional Roads Victoria
16	02-Dec-22	Phone call	Frank Galluzzo	Other Organisation	NSW	NSW Farmers
17	05-Dec-22	Phone call	Araz Solomon	Other Organisation	National	Horticulture Innovation
18	05-Dec-22	Phone call	Anthony Evans	Agencies and Land Managers	NSW	National Parks and Wildlife Service
19	05-Dec-22	Phone call	Jake Tanner	Agencies and Land Managers	NSW	Local Land Services
20	06-Dec-22	Phone call	Joanna Kowalczyk	Agencies and Land Managers	Vic	Regional Roads
21	13-Dec-22	Phone call	Mick Evans	Agencies and Land Managers	Vic	HVP Plantations
22	13-Dec-22	Phone call	Matt White	Agencies and Land Managers	NSW	National Parks and Wildlife Service

	Date	Format	Person	Classification	Location	Parties/Organisation
23	13-Dec-22	Phone call	Barton Roberts	Agencies and Land Managers	Vic	AgVic and VBT
24	13-Dec-22	Phone call	David McPherson	Agencies and Land Managers	NSW	Department Primary Industries
25	13-Dec-22	Phone call	Brittany Evans	Agencies and Land Managers	Vic	Forest, Fire and Regions, DEWLP
26	13-Dec-22	Phone call	Colin Arnold	Other Organisation	Vic	GrazeAway
27	13-Dec-22	Phone call	Hugh Dunshue	Agencies and Land Managers	NSW/Vic	Agriwealth
28	13-Dec-22	Phone call	Matt Sheehan	Individuals		Wild Matters
29	14-Dec-22	Phone call	Chris Dewhurst	Agencies and Land Managers	NSW	NSW Weeds Officers Association/Hawkesbury River County Council
30	16-Dec-22	Phone call	David Morallis	Agencies and Land Managers	Vic	DEWLP
31	19-Dec-22	Phone call	Andrew McConnachie	Other Organisation	NSW	NSW Weeds Research Unit
32	19-Dec-22	Phone call	Pete Turner	Agencies and Land Managers	NSW	NSW DPI and Biocontrol Taskforce
33	19-Dec-22	Phone call	Jodie Mason	Other Organisation	National	Forest and Wood Products Assocation
34	19-Dec-22	Phone call	Rebel Talbert	Agencies and Land Managers	NSW	Forestry Corporation NSW
35	20-Dec-22	Phone call	Dr Angela Atkinson	Other Organisation	National	Rubus Growers
36	20-Dec-22	Phone call	Mike Sutton	Agencies and Land Managers	NSW	Forestry Corporation NSW
37	20-Dec-22	Phone call	Duncan Watt	Agencies and Land Managers	NSW	Forestry Corporation NSW
38	21-Dec-22	Phone call	Dean Anderson	Agencies and Land Managers	NSW	Forestry Corporation NSW
39	21-Dec-22	Phone call	Roger Davies	Agencies and Land Managers	NSW	Forestry Corporation NSW
40	22-Dec-22	Phone call	Arthur Scholz	Agencies and Land Managers	Vic	DEWLP
41	23-Dec-22	Phone call	Lee Blessington	Agencies and Land Managers	NSW	Forestry Corporation NSW
42	23-Dec-22	Phone call	Doris Razeng	Other Organisations	Vic	Murray to Mitta Landcare Inc
43	23-Dec-22	Phone call	Paula Sheehan	Other Organisations	NSW	Holbrook Landcare Network
44	09-Jan-23	Phone call	Lachlan Campbell	Agencies and Land Managers	Vic	North East CMA