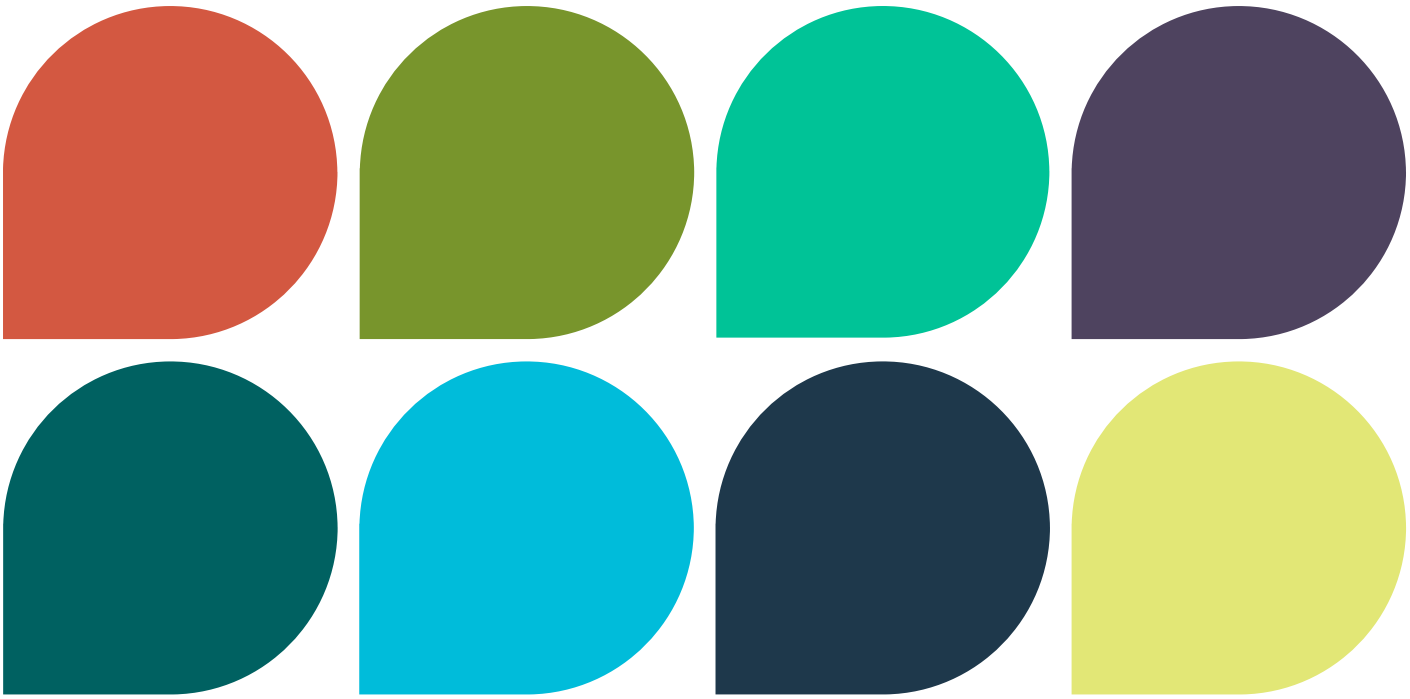

Tasmania's Varroa Mite Action Plan 2024-2034

Department of Natural Resources and Environment Tasmania

Tasmanian Government

Contents

Introduction

Varroa mite (*Varroa destructor*) is regarded as the world's worst pest of honeybees. Until recently, Australia was the last country in the world free of this pest. Varroa is not present in Tasmania but with future spread likely on mainland Australia, the risk to Tasmania will increase over time.

If varroa mite were to enter and establish in Tasmania, the impacts would be significant to beekeepers (commercial and recreational), pollination dependent horticultural and agricultural industries, exports of honey and bee related products, and home gardeners.

In commercial and recreational hives, varroa mite requires management using integrated pest management (IPM) strategies[1] based on understanding of the mite's lifecycle, rigorous monitoring, appropriate use of chemical control and implementing other control techniques such as cultural and mechanical controls. These management efforts would significantly increase costs and the complexity of beekeeping, and production of honey without chemical control would be very difficult. Changes to hive management would also threaten Tasmania's natural advantage of clean, green production and have the potential to eliminate or significantly reduce organic honey production. As a result, many commercial and recreational beekeepers may exit the industry.

Establishment of varroa mite in Tasmania would also have a devastating impact on wild honeybee colonies throughout the state with the potential to reduce wild populations by around 95% as has been observed in other countries. This would practically eliminate the free pollination services provided to horticultural/agricultural industries and home gardeners from wild honeybees. The reduced free pollination services from wild honeybees combined with a potential reduction in availability of pollination services from beekeepers, will likely result in reduced availability of pollination services, increased costs of pollination services and reduced yields of many crops. This will directly threaten some pollination dependent horticultural and agricultural industries.

With a sea border, Tasmania has a natural biosecurity advantage, however, there remain significant risks. Through a strong collaborative effort between the Department of Natural Resources Tasmania (NRE Tas), beekeeping industries, recreational beekeepers, pollination dependent cropping sectors, the Tasmanian community and national varroa mite transition to management partners[2], this action plan aims to:

1. reduce the risk of varroa mite entering, establishing and spreading in Tasmania (Plan A), and
2. minimise impacts if varroa mite were to establish in Tasmania (Plan B).

This action plan was finalised following extensive consultation with key state and national stakeholders.

[1] See current Australian IPM recommendations: Management — National Varroa Mite Management Program

[2] Overview of the national eradication efforts and transition to management provided at The National Varroa Mite Management Program — National Varroa Mite Management Program

Case study 1: The New South Wales experience

Australia remained free of varroa mite for many years as spread occurred across the world, including to New Zealand. Isolated incidents of varroa mite were at times detected at the nation's borders (such as at Port of Melbourne, Victoria in June 2018), and Australia had successfully eradicated several incursions of *Varroa jacobsoni* (a close relative of *V. destructor* that is parasitic on Asian honey bees) in Queensland between 2016 and 2021. That is until a confirmed detection of varroa mite occurred at the Port of Newcastle, New South Wales, in June 2022. This detection commenced the largest national eradication effort under the Emergency Plant Pest Response Deed (EPPRD) in terms of scale and cost, lasting just over 18 months before national government authorities and industry organisations collectively determined that eradication was no longer feasible. The response entered a 'transition to management' phase in February 2024.

Prior to the detection in NSW, preparedness work undertaken in NSW (informed by national preparedness activities) had resulted in a pre-established and socialised response strategy which then informed the development of the specific national eradication response plan.

Key aspects of the eradication response plan involved:

- an initial state-wide standstill of hives
- extensive tracing of movement of hives from a known Infected Premises (IP)
- destruction of all hives within 10 km and surveillance in hives out to 25 km from an IP
- baiting of wild bee populations.

The considered focus of the transition to management phase was to increase resilience and minimise ongoing impacts of varroa mite naturalisation across Australia's bee and pollination-dependent industries.

Since the stand down of eradication efforts, varroa mite has slowly spread in NSW, with a discrete number of detections in Victoria near the NSW border. As varroa continues to spread, the risk to Tasmania will increase. NSW and Victorian beekeepers are learning to manage their hives in the presence of varroa, with the full impact on beekeeping and pollination services across Australia yet to be realised.

There are learning opportunities for Tasmania from the NSW experience, that will inform many activities under the Varroa Mite Action Plan, not least, the desired aim of the response strategy which is being developed to support readiness and response to a detection of varroa mite in Tasmania. Many stakeholders in the development of this action plan have reflected on the significant impacts shouldered by beekeepers and growers of pollination reliant crops in the NSW scenario, expressing a desire for a measured response that focuses on minimising the impact to Tasmanians.

Case study 2: The New Zealand experience

The first confirmed detection of varroa mite in New Zealand was in Auckland during April 2000. Subsequent surveillance and testing determined that the mite was present in clusters in nearby areas of the North Island (Hauraki Plains, Pukekohe and Helensville) and its presence in Auckland could have resulted from an introduction of varroa three to four years earlier.

Actions implemented to control varroa included declaration of a controlled area, movement restrictions, delimiting surveillance and management activities. Although spread was slowed, varroa had spread to most of the North Island by 2004. In 2004, varroa was detected in Canterbury on the South Island, and local eradication was undertaken. In 2006 there was an incursion of varroa in the Nelson area of the South Island and a control zone was established. By 2009, varroa was detected in beekeeping operations outside of this control zone and movement controls on the South Island were revoked. By 2015, varroa was distributed across most of New Zealand.

The impacts of varroa to New Zealand includes increased costs of management to beekeepers, increased colony losses, reduction of free pollination services from feral bees and increased costs of pollination. An additional impact is reduced pollination of the clover component of pastures resulting in reduced seed set and nitrogen fixation of clover in pastures, leading to reduced pasture production and/or increased fertiliser costs. These impacts are not immediate and slowly kick in over 2-3 years as varroa populations build. Also contributing are the impacts of viruses. Varroa and increased virus levels, particularly deformed wing virus, lag the impacts of varroa and have a snowball effect over time in combination with varroa impacting bee colonies such as increasing colony losses in managed hives over winter.

Managing bees in New Zealand with varroa now requires significantly increased running costs and labour inputs. For example, a New Zealand company that manages hives for seed production of crops like carrots, estimates that running costs have increased by approximately $NZ50 per hive on inputs such as varroa treatments. Labour inputs prior to varroa involved one beekeeper managing about 800-1000 hives. They are now operating 500-600 hives per beekeeper following varroa establishment due to the increased effort required in hive management particularly mite monitoring and controls.

These increased management costs are coupled with reduced hive performance, reduced pollination performance, reduced wild honeybee population (collapse of wild colonies occurs approximately 2 years following varroa arrival in an area) and pressure to raise pollination fees. In New Zealand, life goes on with varroa mite, but it is a lot harder for the beekeeper and pollination communities.

Case study 3: The Isle of Man, an example of a region maintaining freedom from Varroa mite

Despite the spread of varroa mite across the world, there are some small varroa free pockets remaining, including the Isle of Man.

The Isle of Man is a self-governing British Crown Dependency in the Irish Sea, located between Great Britain and Ireland. It has an area of 574 km^2, a population of 84,069 (2021) and a temperate oceanic climate, with cool summers and mild winters. In 2015, the Isle of Man had over 800 beehives and about 200 registered beekeepers.

Varroa mite has been present in the neighbouring United Kingdom and Ireland since 1992. To maintain varroa freedom in the Isle of Man, the *Bees Act 1989* led to introduction of the *Bee Diseases and Pest Control (Isle of Man) Order 2008* and further protection measures came with a European Union decision in 2015 to accept the Isle of Man as free of varroa. These factors provided justification for the prohibition of bee imports and any pre-used beekeeping equipment. There are also requirements for beekeepers to support the legislation by registering hives, maintaining up to date details with the Department of Environment, Food and Agriculture (DEFA), record keeping, hive inspections regularly for pests and diseases, and reporting any detections.

In comparison to the Isle of Man, Tasmania is larger in size (area of 68,401 km^2) and population (571,200; 2021 figures). Tasmania also has more hives and registered beekeepers (43,102 registered hives and 1,983 registered beekeepers, 2024 figures). Due to these factors, Tasmania likely has increased levels of agricultural production, shipping, air traffic, trade and therefore a likely increased risk of human mediated varroa movement.

Although there are differences between Tasmania and the Isle of Man, varroa mite has been successfully kept out of the Isle of Man since its arrival in the UK in 1992. Tasmania's approach for varroa prevention has similarities to the Isle of Man, and upon further reflection may provide learning opportunities for Tasmania's efforts to limit the risk of varroa entry.

Plan A - Keeping Tasmania free of varroa mite

Plan A is structured around the three core areas of prevention (section 1), detection (section 2) and response (section 3). It also acknowledges that there are actions that may contribute to multiple areas (section 4).

1 Prevention

Objective: Maintain and improve activities to reduce the risk of varroa mite entry into Tasmania.

Tasmania has a strong biosecurity system with preventative measures in place such as strong import requirements, risk assessment capability and participation in decision making at a national level. With an evolving threat level from varroa, these activities will also need to evolve.

Identified actions to reduce the risk of entry of varroa mite into Tasmania

Actions	Responsibility
1.1 Review and improve import requirements, including: a. moving from the current General Biosecurity Direction (Emergency) to permanent import requirements that balance risk with least trade restrictive controls, and b. assessing the need for and consider actions to enable safe trade in queen bees, noting this may reduce the risk of illegal imports.	• Biosecurity Tasmania • National T2M partners
1.2 Undertake risk assessments to guide decision making (such as the varroa import risk analysis and other relevant assessments).	• Biosecurity Tasmania • National T2M partners
1.3 Review varroa entry pathways into Tasmania as part of the Import Risk Analysis including: • shipping, shipping containers and vehicles • air transport • postage services • bees and bee products • cut flowers and flowering nursery stock.	• Biosecurity Tasmania
1.4 Participate in Transition to Management decision making at the national level through the Consultative Committee on Emergency Plant Pests, National Management Group and Plant Health Committee (including subcommittees).	• Biosecurity Tasmania • National T2M partners
1.5 Ensure/enforce compliance with import requirements and other biosecurity obligations.	• Biosecurity Tasmania
1.6 Maintain currency in current and emerging queen bee technologies.	• Beekeepers

2 Detection

Objective: Assess and upgrade varroa mite detection capabilities in border inspection and surveillance activities.

Tasmania has robust detection systems in place through border inspections and post border surveillance. As the threat levels change over time, Tasmania will need to assess these changes and upgrade our detection systems to suit.

Identified actions to improve detection capabilities for varroa mite in Tasmania

Actions	Responsibility
2.1 Review barrier inspections and consider improvements, including: a. imprint detector dogs on bees to better detect bees at the border, b. consider methods to detect bee colonies on ships and shipping containers such as trialling thermal imaging cameras, and c. consider prioritisation of checking shipments from high risk areas.	• Biosecurity Tasmania
2.2 Improve post border varroa surveillance activities, including: a. review current varroa surveillance activities, b. develop and implement short and long-term surveillance plans, c. develop and maintain a robust apiary industry and recreational beekeeper surveillance program, d. provide training and extension for beekeepers in checking hives, e. improve the capacity for rapid reporting of surveillance results and suspect detections, f. promote BeeTAS to facilitate self-reporting, and g. investigate facilitating traceability of hive movements.	• Biosecurity Tasmania • Varroa mite task force • Beekeepers (commercial and recreational) • National T2M partners
2.3 Improve diagnostics and detection methods, including: a. maintain and build diagnostic capability for varroa mite, and b. investigate rapid methods of varroa detection (e.g. molecular testing,eDNA, visual recognition technology, remote sensing technology).	• Biosecurity Tasmania • National T2M partners
2.4 Improve the capacity of Biosecurity Tasmania internal reporting, BeeTAS and Laboratory Information Management System.	• Biosecurity Tasmania

3 Response preparedness

Objective: Build enhanced preparedness to respond to varroa mite detections.

Tasmania has the capacity to respond to biosecurity incursions. However, the significant threat of varroa requires Biosecurity Tasmania to build a specific response capacity and capability in collaboration with commercial and recreational beekeepers, pollination dependent industries and T2M partners.

Identified actions to enhance response preparedness to a varroa mite detection in Tasmania

Actions	Responsibility
3.1 Review response preparedness mechanisms, including: a. reporting process for incursions, and	• Biosecurity Tasmania

Actions	Responsibility
b. support mechanisms for impacted beekeepers in the event of a response.	• Varroa mite task force
3.2 Develop a Tasmanian specific response strategy for varroa mite.	• Biosecurity Tasmania • Beekeeper industry bodies • Pollination dependent industry bodies • Varroa mite task force
3.3 Pre-establish a list of trained Industry Liaison Officers and people trained in handling bees.	• Biosecurity Tasmania • Beekeeper industry bodies • Pollination dependent industry bodies
3.4 Undertake a scenario analysis to pre-plan different scenarios in the event of a varroa detection in Tasmania.	• Biosecurity Tasmania • Beekeeper industry bodies • Pollination dependent industry bodies • Varroa mite task force
3.5 Undertake preparedness activities (e.g. simulation exercises)	• Biosecurity Tasmania • Beekeeper industry bodies • Pollination dependent industry bodies • Varroa mite task force
3.6 Investigate optimising traceability of hive movements.	• Biosecurity Tasmania • Beekeeper industry bodies • Varroa mite task force

4 Combined actions

Objective: Develop actions that contribute to at least two of the core actions of prevention, detection or response.

Identified actions that collectively enhance prevention, detection and response preparedness.

Actions	Responsibility
4.1 Develop a communication plan incorporating: a. increased awareness of varroa and beekeeper self-surveillance and reporting through BeeTAS, b. industry and recreational beekeeper involvement in the development of strategy / action plan, c. industry / beekeeper involvement in surveillance, and d. develop a client management information system.	• Biosecurity Tasmania • Beekeepers (commercial and recreational) • Pollination dependent industry bodies • Varroa mite task force
4.2 Undertake stakeholder engagement including: a. create a Tasmanian Varroa Mite Task Force to advance and	• Biosecurity Tasmania

Actions	Responsibility
promote industry surveillance activities (membership to include at a minimum representatives from Biosecurity Tasmania, beekeeper and pollination dependent industry organisations), b. engagement of maritime stakeholders, shipping and transport industries in education and awareness on bee biosecurity including aspect of detection and reporting of swarms, c. engagement with stakeholders to educate on responsibilities under the *Biosecurity Act 2019*, including beekeepers and shipping companies, d. engagement of Australia Post and courier companies regarding live bee imports, f. enhance stakeholder contact information management, and g. survey to update Bee Futures data incorporating analysis of who pollinates what, where and when. Industry sector growth trajectory over next 35 years will be undertaken to quantify size of impact and market implications analysis.	• AgriGrowth Tasmania • Varroa mite task force
4.3 Identification of market access opportunities (domestic or export) for maintaining varroa free production (e.g. Queen bee exports).	• Biosecurity Tasmania • Beekeeper industry bodies • Pollination dependent industry bodies
4.4 Investigate mechanisms to establish volunteer engagement including determining the best mechanisms for bringing experienced beekeepers into a response.	• Biosecurity Tasmania • Beekeeper industry bodies • Pollination dependent industry bodies • Varroa mite task force

Plan B – Minimising the impact of varroa mite in Tasmania

In the event of varroa mite establishment in Tasmania, the Plan B (section 5) objective is to minimise impacts.

Identified actions to mitigate the impact of varroa mite if it becomes established in Tasmania

Actions	Responsibility
5.1 Action area based on the National Varroa Mite Transition to Management Plan, including: • building industry resilience, • slowing the spread of varroa mite, and • future ready industries.	• Biosecurity Tasmania • AgriGrowth Tasmania • National T2M partners • Beekeepers (commercial and recreational)
5.2 Encourage continued training and extension of varroa IPM.	

Actions	Responsibility
5.3 Consider bee biosecurity restrictions after the establishment of varroa to prevent other pathogen incursions.	• Pollination dependent industry bodies • Varroa mite task force • Tasmanian Institute of Agriculture (and other research organisations)
5.4 Work with stakeholders to develop a more detailed plan for pollination security before varroa mite establishes. For example, can native bees, bumble bees and hover flies fill any resulting pollinator shortfall.	
5.5 Encourage research to build industry resilience including the following: a. Estimation of the contribution of feral bees has not been undertaken in Tasmania (this information would be useful to understanding the potential impacts on Tasmanian producers). b. Estimation of the economic contribution of non-honey pollinators in Tasmanian horticulture (such as native bees, bumble bee, hover flies, moths and butterflies).	

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