



Department of  
Primary Industries

Invasive Species Biosecurity

## NSW Mouse-ear Hawkweed Strategic Plan

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**More information**

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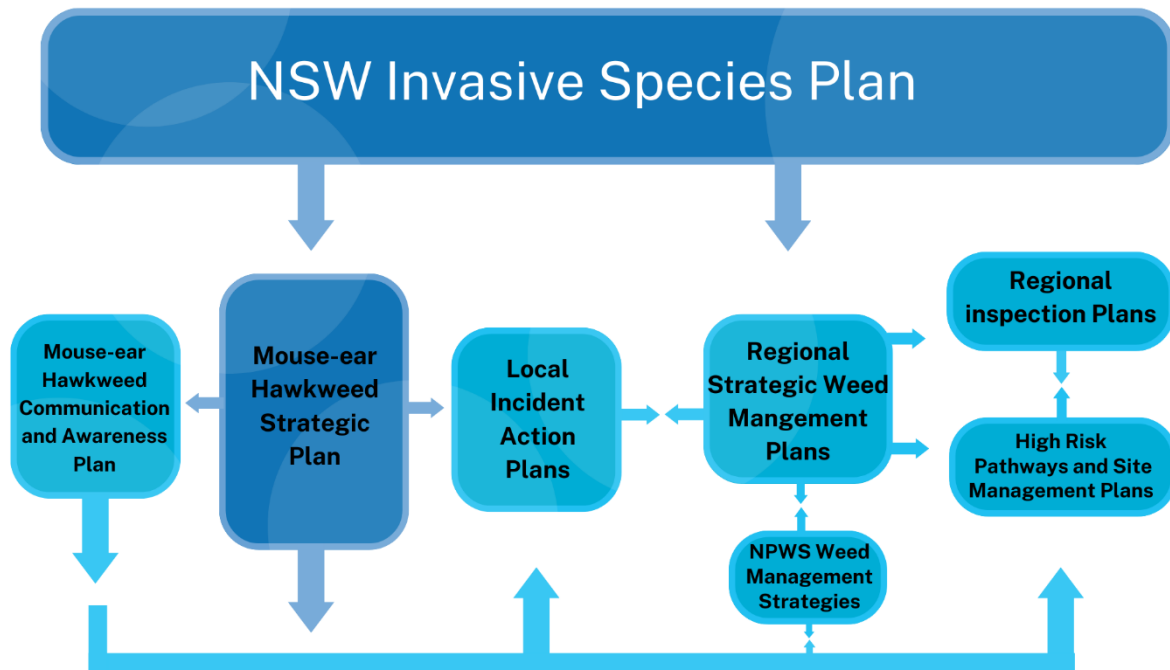
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## Planning hierarchy



## Mission

### To keep New South Wales free of mouse-ear hawkweed.

This will be achieved by preventing new incursions in New South Wales (NSW) and rapidly detecting and eradicating any populations from within NSW. This includes intercepting propagules travelling along high-risk pathways, improving awareness and identification skills, and treating all new infestations as quickly as possible after detection.

Mouse-ear hawkweed (*Pilosella officinarum*) will be managed in accordance with the requirements of the NSW *Biosecurity Act 2015*, with the aim to eradicate infestations in NSW, by preventing future seeding and removing all plants. Progress towards eradication and this plan will be reviewed annually.

## Biosecurity duties

Section of Act	Statutory requirement
Schedule 2	Mouse-ear hawkweed weed is prohibited matter throughout NSW.
s.28(1)	A person who deals with biosecurity matter that is prohibited matter throughout NSW is guilty of an offence.
s.30(1) s.31	A person who becomes aware of, or suspects, the presence or introduction of mouse-ear hawkweed has a biosecurity duty to immediately notify an authorised officer.
36(1)	A person who becomes aware of, or suspects, the presence of mouse-ear hawkweed in NSW has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk posed or likely to be posed by the prohibited matter is prevented, eliminated, or minimised.

## Risk and impact

Mouse-ear hawkweed is a plant native to Europe and Asia. Mouse-ear hawkweed is a prolific invader with widespread infestations in New Zealand, Europe, North America (the USA and Canada), South America, and North Africa. Within 15 years of initial detection, it had spread over 5,000 km<sup>2</sup> in South America (Cipriotti et al. 2010). On the South Island of New Zealand, hawkweed species dominate over 6 million hectares of tussock grassland, with mouse-ear hawkweed one of the two hawkweed species that are the most widespread and problematic, causing detrimental pressure to the grazing industry (Espie 2001, Popay et al. 2010, Espie 2013). Hawkweed infestations in New Zealand have reduced stocking rates by as much as 30% and in extreme cases infestations have led to farm abandonment (Espie 2001).

It is unclear how mouse-ear hawkweed was first introduced into Australia. Historically it has been used as a garden plant in Australia. Infestations found in Tasmania (Williams and Holland 2007) and the Australian Capital Territory appear to have been eradicated. There is a known naturalised infestation in the Bogong High Plains in Victoria which is under management for eradication.

In NSW mouse-ear hawkweed is Prohibited Matter under the *Biosecurity Act 2015* and is an eradication target, as it has the potential to spread across a large area of NSW, including under future climate scenarios. Mouse-ear hawkweed is known from only two locations in NSW, Strzelecki Creek (found in December 2014) and nearby Mount Twynam (found in March 2017), on the Main Range within Kosciuszko National Park (KNP).

The NSW Government has undertaken sustained control and surveillance of hawkweed infestations since detection, with the aim of eradication. The 2023 Review of the NSW

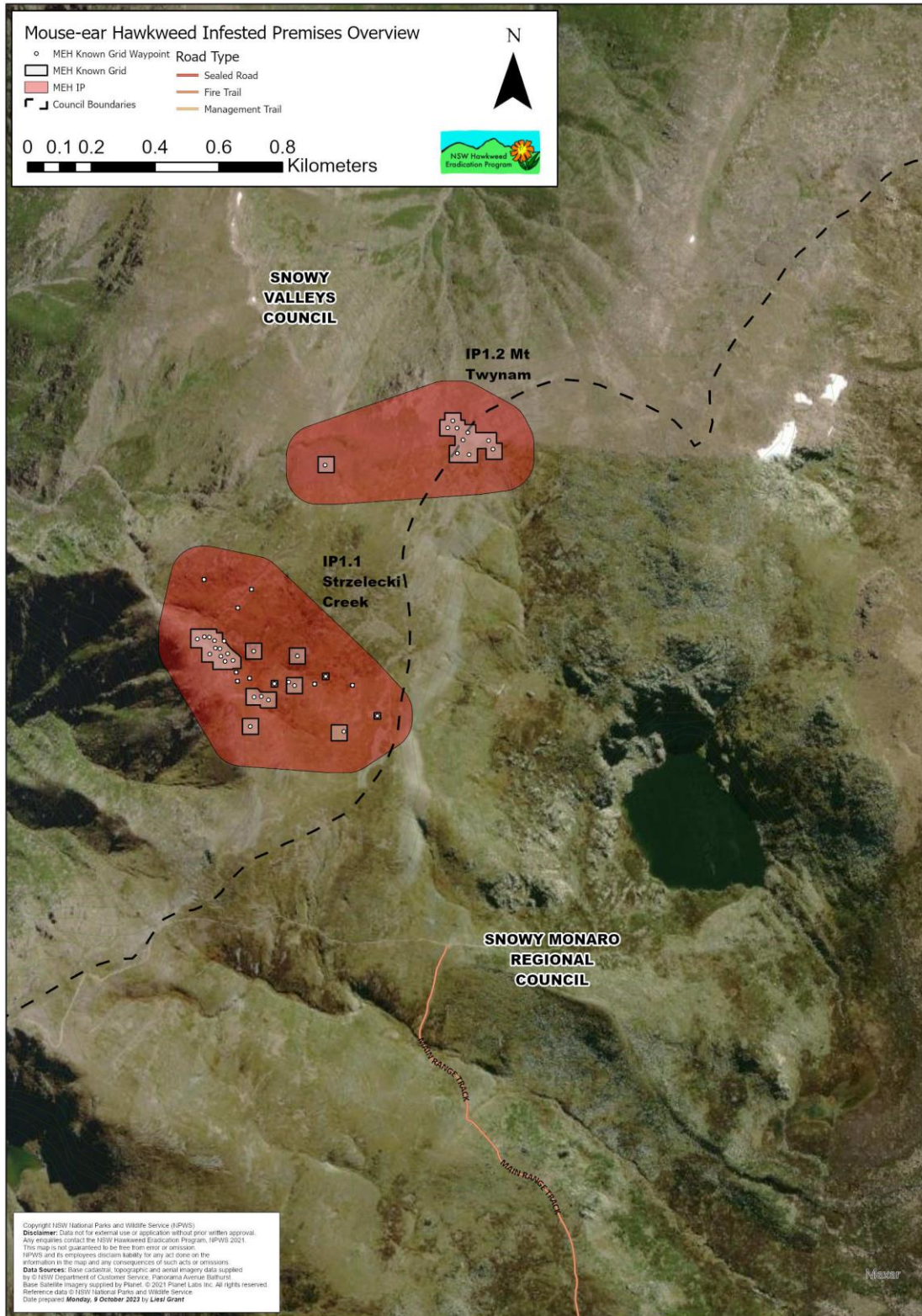
Mouse-ear and Orange Hawkweed Eradication Programs (Charles et al. 2023), indicated that the Mouse-ear Hawkweed Eradication Program is tracking steadily to achieve extirpation. In the 2022-23 season, 296 hectares were surveyed for mouse-ear hawkweed, with a total of only 0.16 m<sup>2</sup> found and treated.

Mouse-ear hawkweed is a biosecurity risk because it:

- produces up to 40,000 seeds per m<sup>2</sup> each year
- reproduces vegetatively, from expanding stolons underground and on top of the soil
- causes health problems in livestock
- grows in most soil types
- outcompetes other plants
- all plant parts produce allelopathic chemicals which suppresses the growth of other desirable plants

## Current extent in NSW

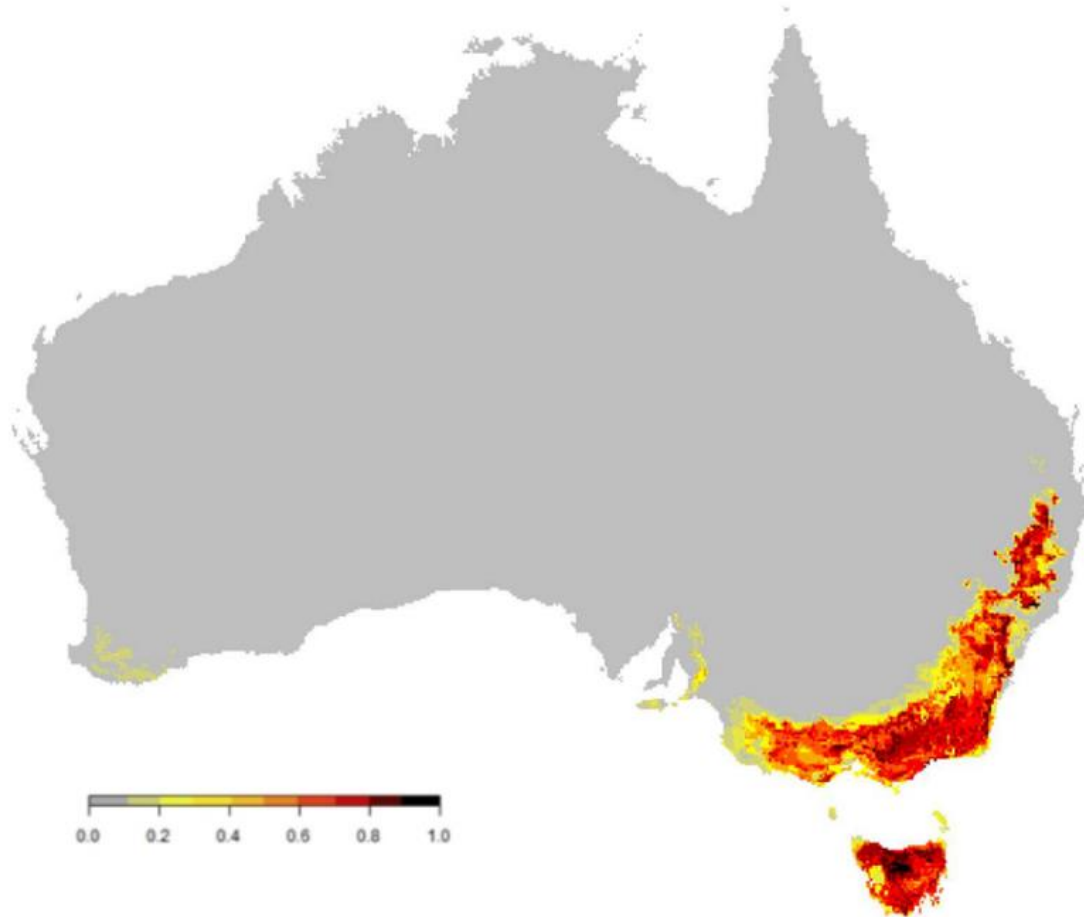
All known mouse-ear hawkweed plants in NSW occur within Kosciuszko National Park (Figure 1).



**Figure 1. Mouse-ear hawkweed historical and current infestations within Kosciuszko National Park, with one Infested Premises (two locations), on or near the Main Range.**

## Current suitable habitat in Australia

The extent of suitable habitat for mouse-ear hawkweed in Australia is shown in Figure 2. The potential risk for population establishment and expansion is highest in the dark red areas.



**Figure 2. Potential distribution of mouse-ear hawkweed in Australia ([www.weedfutures.net](http://www.weedfutures.net)).**

## Management Objectives

1. Coordinated governance
2. Prevent the introduction of propagules
3. Delimitation of existing infestations
4. Timely response to detections
5. Biosecurity duties are met

## Objective 1 Coordinated governance

### Key Performance Indicators

Success	Performance indicator	Basis for comparison
NSW Hawkweed Taskforce operate effectively and in accordance with the NSW Hawkweed Taskforce Terms of Reference	Mouse-ear Hawkweed Strategic Plan is implemented, and progress is reviewed annually	No self-sustaining populations of mouse-ear hawkweed in NSW  NSW Hawkweed Taskforce member activities align with the Mouse-ear Hawkweed Strategic Plan

### Strategies and Deliverables

	How	By when	Who	Output/Activity
1.1	Convene a multi-stakeholder NSW Hawkweed Taskforce	Two meetings held per annum	DPI, NSW Hawkweed Taskforce	A minimum of 80% of NSW Hawkweed Taskforce members attend meetings  Members complete all agreed actions from meetings  Taskforce members endorse Terms of Reference
1.2	Six-monthly Situation Reports (SitReps) are prepared	May and September  Annually  As required	DPI  LCAs  LCAs	Six-monthly SitReps provided to the State Weeds Committee and Taskforce  BIS records for individual hawkweed species entered for all inspections and control activities  Voucher specimens provided to NSW herbarium for all new infestation sites outside of known extent
1.3	Review and report on this Plan within the scope of the NSW Invasive Species Plan	Annually commencing May 2025	DPI	Mouse-ear Hawkweed Strategic Plan is reviewed and reported on (to the State Weeds Committee) annually and updated as required



## Objective 2 Prevent the introduction of propagules

### Key Performance Indicators

Success	Performance indicator	Basis for comparison
Preventing the introduction of propagules stops incursions	No introductions from known pathways	No further introductions

### Strategies and Deliverables

	How	By when	Who	Output/Activity
2.1	Identify and assess new invasion pathways Inspect high-risk pathways and monitor online for dealings	Ongoing	DPI, LLS  LLS, LCAs, DPI  LCAs  LCAs, DPI	New invasion pathways identified, and risk assessed  Mouse-ear hawkweed high-risk sites and pathways are included in regional inspection plans  Inspect high-risk pathways and sites  Monitoring of social media and online sales platforms occurs monthly  New detections are traced forward and back
2.2	Hygiene practices are followed to prevent spread	Ongoing	LCAs  NPWS	Using a risk-based approach, implement hygiene practices where applicable  Provide guidance to NPWS staff and National Park users and contractors on best practice hygiene measures; such as boot brushing and signage

	How	By when	Who	Output/Activity
2.3	Review existing invasion pathways	As required	DPI	Existing pathways reviewed as required
2.4	Develop and implement an awareness and communications plan (as guided by social research and DPI policies)	Working draft by August 2024	DPI, NSW Hawkweed Taskforce	An awareness and communications plan is developed and implemented
2.5	Communicate with National Hawkweed Working Group and other cross border contacts for information exchange and collaboration	Prior to each NSW Hawkweed Taskforce meeting	DPI/NPWS	Cross border contacts exchange information and collaborate  Key NSW stakeholders attend National Hawkweed Working Group meetings
2.6	Develop tools and training to assist field-based personnel to recognise mouse-ear hawkweed	December 2023	DPI	Virtual 3D model available  One and two day prohibited matter training courses available  Physical model available  NSW WeedWise profile current

### Objective 3 Delimitation of existing infestations

#### Key Performance Indicators

Success	Performance indicator	Basis for comparison
Delimitation ensures that eradication succeeds	Existing infestations (Figure 1) are delimited	Surveillance 500 m around existing infestations (Figure 1) occurs by 1 April 2025

#### Strategies and Deliverables

	How	By when	Who	Output/Activity
3.1	Maintain and implement Mouse-ear Hawkweed Delimitation Plan	Ongoing	NPWS	Plan implemented, reviewed and updated annually
3.2	Undertake field surveys to delimit existing IPs (Figure 1)	November to May annually (weather and terrain permitting)	Staff from NPWS (lead), LCAs, DPI, LLS, and volunteers  LCAs  DPI  NPWS, LLS	Surveillance of 500 m around the historic location of plants (Figure 1) occurs by 1 April 2025  Undertake and record inspection records in BIS  Engage LCAs, LLS, DPI and other agency staff to assist with field surveys  Engage volunteers to assist with field surveys
3.3	Lead multi-agency response to new IPs	As required	DPI	Thorough search of IPs and neighbouring properties and pathways when new IPs are discovered
3.4	Use detector dogs	Annually for up to six weeks during the field season	NPWS	Detector dogs available to find isolated and small mouse-ear hawkweed plants at known IPs, survey high-risk pathways

	How	By when	Who	Output/Activity
				and determine proof of freedom
3.5	Research	As required	DPI and other research organisations	The NSW Hawkweed Taskforce guides research and increases the efficiency and/or efficacy to improve eradication

## Objective 4 Timely response to detections

### Key Performance Indicators

Success	Performance indicator	Basis for comparison
Timely response to incursions reduces time until eradication	Incursions treated within 7 days of discovery (or shorter to prevent seeding)	Improvement over time

### Strategies and Deliverables

	How	By when	Who	Output/Activity
4.1	Report suspected new infestations	Immediately  Within 24 hours  Within 7 days of notification	Everyone  LCA  LCA	100% of new infestations reported to relevant LCA  DPI notified  Undertake inspection which is then lodged as a BIS record
4.2	Treat all detected plants to prevent future seeding	Within 7 days of discovery (if reasonably practicable)	LCA and land managers	100% of plants detected are treated within 7 days of discovery  Future seeding prevented at all sites
4.3	Undertake delimiting surveys (500 m) within 8 weeks of the discovery of new IPs	Within 8 weeks of DPI/herbarium verification (if reasonably practicable)	DPI, NPWS, LCA, LLS	100% of delimitation surveys are completed within 8 weeks of DPI/herbarium verification
4.4	Re-visit IPs at least every 14 days between 1 Dec to 31 March to prevent seeding (weather permitting)	Ongoing until eradication (5 years from last seeding plant found)	NPWS/LCA	No plants set seed

4.5	Use NSW <i>Biosecurity Act 2015</i> management tools to aid eradication	As soon as possible	LCA	Management tool applied to 100% of incursion sites
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## Objective 5 Biosecurity duties are met

### Key Performance Indicators

Success	Performance indicator	Basis for comparison
Stakeholders discharge prohibited matter biosecurity duties	Proportion of stakeholders meeting prohibited matter biosecurity duties: <ul style="list-style-type: none"> <li>- voluntarily</li> <li>- after receiving a direction</li> <li>- after receiving a penalty infringement notice or prosecution</li> </ul>	Voluntary compliance reaches or is maintained at 100%

### Strategies and Deliverables

	How	By When	Who	Output/Activity
5.1	Support individuals and agencies to understand their biosecurity duties	As required	LCA, DPI	Stakeholders are adequately supported to discharge their biosecurity duties
5.2	Permits are issued for management and research	As required	DPI	Stakeholders follow their permit conditions to ensure that seed set and propagule release does not occur
5.3	Develop Incident Action Plan for new large IPs (as defined by DPI)	As required	DPI	An Incident Action Plan is developed and implemented for each new large IPs and included in SitReps

## Monitoring, evaluation and reporting

The NSW Hawkweed Taskforce will evaluate stakeholder progress against this strategy. A report card against this strategy will be completed annually (commencing May 2025) and provided to the NSW Taskforce and State Weed Committee. This strategy will be reviewed annually (commencing June 2025) and revised on a needs basis.

## Acronyms and definitions

BIS – Biosecurity Information System  
DPI – New South Wales Department of Primary Industries  
IPs – Infested Premises  
KNP – Kosciuszko National Park  
LCA – Local Control Authority  
LLS – Local Land Services  
NPWS – National Parks and Wildlife Service  
NSW – New South Wales  
SitReps – Situation Reports

## Additional information

### NSW Invasive Species Plan:

<https://www.dpi.nsw.gov.au/biosecurity/weeds/strategy/strategies/nsw-invasive-species-plan-2023-2028>

### Local Land Services:

<https://www.lls.nsw.gov.au/>

### National Parks and Wildlife Service

<https://www.environment.nsw.gov.au/topics/animals-and-plants/pest-animals-and-weeds/weeds/new-and-emerging-weeds/mouse-ear-hawkweed>

### NSW *Biosecurity Act 2015*:

[www.dpi.nsw.gov.au/about-us/legislation/list/biosecurity-act-2015](http://www.dpi.nsw.gov.au/about-us/legislation/list/biosecurity-act-2015)

### NSW WeedWise profile:

<https://weeds.dpi.nsw.gov.au/Weeds/Hawkweeds>

### Weed risk assessments and Biosecurity Information System records in WIDX (for weeds professionals on the DPI Weeds Extranet):

[widx.nsw.gov.au](http://widx.nsw.gov.au)

### Regional inspection plans (for weeds professionals on the DPI Weeds Extranet):

<https://extranet.dpi.nsw.gov.au/weeds/contacts/rwac>

### NSW Hawkweed Taskforce terms of reference (for weeds professionals on the DPI Weeds Extranet):

[link to come]



## **2023 Review of the NSW Mouse-ear and Orange Hawkweed Eradication Programs (for weeds professionals on the DPI Weeds Extranet):**

[link to come]

## **References**

- Cipriotti, P.A., Rauber, R.B., Collantes, M.B., Braun, K. and Escartín, C. (2010). *Hieracium pilosella* invasion in the Tierra del Fuego steppe, Southern Patagonia. *Biological Invasions* 12, 2523-35.
- Duursma, D.E., Gallagher, R.V., Roger, E., Hughes, L., Downey, P.O., Leishman, M.R. (2013) Next-Generation Invaders? Hotspots for Naturalised Sleeper Weeds in Australia under Future Climates. *PLoS ONE* 8(12): e84222. doi:10.1371/journal.pone.0084222
- Espie, P.R. (2001). *Hieracium* in New Zealand: ecology and management. AgResearch Ltd. Mosgiel, New Zealand. 66 pp.
- Espie, P. (2013). New Zealand hawkweed overview and current research results. Proceedings of the 17th Biennial NSW weeds conference, ed. H. Wu, pp. 207-14. (Weed Society of New South Wales, Corowa).
- Popay, I., Champion, P. and James, T. (2010). An illustrated guide to common weeds of New Zealand, Third edition. New Zealand Plant Protection Society, Christchurch. 416 pp.
- USDA NRCS, United States Department of Agriculture Natural Resources Conservation Service (2017). *Hieracium pilosella* L. Mouse ear hawkweed. Plants Database. <https://plants.usda.gov/core/profile?symbol=HIPI> (accessed 24 October 2017).
- Williams, N.S.G. and Holland, K.D. (2007). The ecology and invasion history of hawkweeds (*Hieracium* species) in Australia. *Plant Protection Quarterly* 22, 76-80