An application to introduce two moths, *Wheeleria spilodactylus* and *Chamaesphecia mysiniformis,* as biological control agents for the weed horehound (*Marrubium vulgare*).

Responses to pre-application consultation with Regional Councils and other stakeholders

Responses to consultation with Te Herenga

The following message was sent to Te Herenga via the newsletter in February 2018. No responses were received.

"The Horehound Biocontrol Group wishes to introduce two insects from Australia as biological control agents for the weed horehound. The group is a collective of affected landowners, including Ngai Tahu, supported by the Sustainable Farming Fund. They want to identify issues of particular importance to Māori so these can be addressed in the application. The application will be submitted in March. Landcare Research is providing the scientific input for this project. Any comments or information you provide can be accepted at any time and passed to EPA for consideration, even after the application has been submitted.

If you would like to discuss this, please call Richard Hill on 021 1376919, or email him at hillr@landcareresearch.co.nz**.**

Horehound, *Marrubium vulgare*, is an aromatic herb native to temperate parts of wider Europe. It is widespread in low rainfall parts of New Zealand, especially in the high country of the South Island.

The weed is not palatable to stock, and taints the meat of animals that are forced to graze on it. The weed displaces preferred forage plants, reducing productivity. It is an increasing issue in lucerne crops. Horehound produces hooked burrs (seed capsules) that stick to the wool of sheep and this downgrades the quality of the fleece.

Negative economic impacts to farmers are currently estimated at $29m to $39m annually. On the other hand, some in New Zealand value horehound as a medicinal herb. There is a small industry involved in harvesting horehound from the wild. The plant has also been studied for its potential to rehabilitate soils from salinity and heavy metal contamination, as a pesticide, as an improver for cereal crops, as a food preservative, as an ingredient in beer brewing, and for inhibiting corrosion.

The two insects proposed for introduction have previously been introduced to Australia, resulting in successfully control in many farming habitats. Before introduction to Australia was approved, both insects were subjected to careful safety testing to prove that no other plants, including the many related culinary herbs, would be at risk there. There are five NZ native plants in the same family as horehound, but tests of close relatives in Australia show that these are not risk of attack from either moth. No adverse effects resulting from the introduction of these insects have been recorded in Australia since their release the late 1990s.

The application will discuss all of the likely risks, costs and benefits associated with the introduction of these two insects, including any impacts on Māori values.

More information on horehound and on the agents proposed for introduction can be found at www.landcareresearch.co.nz/science/plants-animals-fungi/plants/weeds/biocontrol/approvals/current-applications/horehound

Responses to consultation with Hapu

On 21 February 2018, the following email about the proposed biological control programme, plus a one page summary, was provided to the HSNO komiti of Ngāi Tahu. It was also provided to the 8 iwi and hapū of Te Tau Ihu with a request to get in touch if further dialogue was desirable. Information was also provided to the Ngapuhi HSNO komiti. No responses were received.

"Consultation on an EPA application to introduce two biological control agents to attack horehound

In March 2018, the Horehound Biocontrol Group will apply to the Environmental Protection Authority to introduce two biological control agents for horehound (*Marrubium vulgare*). Horehound displaces forage grasses and lucerne in dryland farming systems, and its burs can downgrade fleece quality. The group is a collective of stakeholders, mainly from the dry regions of Canterbury, supported by the Sustainable Farming Fund. The control agents are two Lepidoptera. *Wheeleria spilodactyla* (Pterophoridae) larvae feed on the foliage while the larvae of *Chamaesphecia mysiniformis* (Sesiidae) feed in the roots. Attack by these two agents is leading to improved horehound control in Australia.

I have been asked by the applicant to consult with the public to gather views on this proposal. We want to record and address these as the application is written. Horehound is a developing issue for farming in the Marlborough region, and so I am contacting iwi in Te Tau Ihu (and Ngāi Tahu) to seek input.

I attach a one pager summarising the proposal, and more information can be found at

www.landcareresearch.co.nz/science/plants-animals-fungi/plants/weeds/biocontrol/approvals/current-applications/horehound

This webpage contains information on the problems caused by horehound. It lists the risks and benefits already selected for discussion in the application, and a summary of the results of host range testing that concludes that no non-target plants will be at risk. Are there any other issues that your iwi would like to add? The application will also highlight the value of horehound as a medicinal herb.

As usual, the application will be available for public submission once it is submitted. If you need any further information or you would like to discuss this further, please contact me at hillr@landcareresearch.co.nz or call me on 021 1376 919. I would appreciate receiving any initial contact by 19 March 2018, but input at any stage is welcome. "

Relevant responses to consultation on applications to introduce biological control agents for weeds submitted in the last 8 years

The comments by Māori correspondents have been categorised under the following headings:

- Direct effects on native plant species
- Indirect effects on native flora and fauna, and other valued species
- The need to monitor future effects
- Effects on cultural and spiritual values
- Specific benefits to Maori
- Predictability of effects
- Integration of control methods, and indigenous solutions
- Herbicides and biological control
- Aversion to the introduction of new organisms
- Lack of capacity precludes comment

Other comments can be found in the Cultural Impact Assessments prepared in response to past applications to introduce control agents for broom and woolly nightshade.

Direct effects on native plant species

- …whether these beetles could switch to our softer-leaved native understorey plants

Indirect effects on native flora and fauna, and other valued species

- What level of confidence is there re: …..little/no overlaps between weetaa, native beetles, and Tradescantia leaf beetle ecology
- Any comments we have would be similar to those we expressed for the dung beetle application
- Are there human health concerns involved?
- All introduced species have impact on the native flora and fauna.
- On a personal level I don't mind that biological controls are used to combat such as these.
- My reservations will be what potential impacts will they have on our native fauna/flora.
- …does not oppose these applications...but urges caution when introducing foreign organisms; blackberry/gorse, weasels/rabbits etc. come to mind
- We are aware these organisms are put through rigorous tests but sometimes many years pass before these things break out of their natural cycle and become further pests and equally as bad as their host plant….predator switching…

Predictability, effectiveness and the need to monitor future effects

- What is the contingency should the population / if the agent looks for other prey?
- What is the history and success rate of biocontrols?
- How will the potential toxic effects in the food chain be monitored and/or mitigated
- …request for reports on monitoring and analysis of this biocontrol
- If you don't have the money to monitor post - release, then you don't have the money for th e project.
- What happens if at some point in the future we have to bring something else in to control the insects we are introducing?
- TRONT will continue to advocate for the inclusion of monitoring provisions….
- …rigorously monitored throughout….
- Is the agent safe and effective enough?
- Impossible to predict future impacts.

Effects on cultural and spiritual values

- How do potential ecosystem changes affect the mauri of the ngahere?
- Effects on ongoing management of cultural and natural resources by Maori – kaitiakitanga.... we need all the information in order to make an informed decision.
- What happens to the new organism's whakapapa when it is taken from its home, where it is
- a native species?
- …protocol to relocate the mauri of an agent
- If Maori resources are affected so are the people – loss of flora and fauna, loss of cultural identity, loss of clothing for Papatuanuku, loss of native vegetation, and increase of runoff if not filtered.'

- Te Taiao ki au, ki au te Taiao'
- Ongoing management by Maori of our cultural and natural resources relies on
- kaitiakitanga/protection. ...We must be certain of the potential impacts on our resources.'
- ….Iwi have responsibilities in other rohe…

Specific benefits to Maori

- Will there be employment opportunities in the introduction?
- We would like to be included in any development
- While we did not bring (the weed) here, it is here now. So we have to address it. We have to think about what is best.
- We see that both of these plant pests pose a threat to our native ecosystems and are happy for the release to go ahead. Containment or eradication in the north is preferable to actions later in the south.'
- ..threat to our plants in all stages and forms..
- We would like to participate…
- We would like to be involved in…

Integration of control methods and indigenous solutions

- Are there native species that could fill the role?
- How will Maori be able to peer - review this work?
- Have other forms of intervention been investigated?
- The benefits of (the target weed) on the landscape must be taken into account.
- Are there such already in our indigenous arsenal and if so can we bolster their numbers?
- The best approach to controlling these weeds is a multi-faceted approach that incorporates
- a range of methods
- That's the trouble, we get rid of one nuisance and another is there.

Herbicides and biological control

- What is the impact of not intervening?
- I do not have a problem with your proposal; there are much worse things happening that I am dealing with.
- Health issue if herbicides were used…

Aversion to the introduction of new organisms

- I would rather nothing like this was brought into the country
- We have grave concerns regarding the importing of any exotic insects
- No, because of the unknown impacts that could occur, not now, but perhaps later.

Lack of capacity precludes comment

- We appreciate your communication on this matter; however, due to capacity issues we are unable to engage further with you on this issue.'