Environmental Protection Authority
Te Mana Rauhī Taiao

Information for Submitters – APP203314

Have your say on an application submitted under section 34 of the HSNO Act (1996)

Introduction

Marlborough District Council has submitted an application to the Environmental Protection Authority (EPA) seeking approval under the Hazardous Substances and New Organisms Act (HSNO Act) to import and release the rust fungus *Uromyces pencanus* to control the weed Chilean needle grass (CNG) or *Nassella neesiana*. The application will be processed by the EPA through a publicly notified pathway.

This document provides information to help you understand the application, the HSNO Act process for considering the application, and how you can participate in that process.

Marlborough District Council obtained approval to release *U. pencanus* in June 2011 from the EPA's predecessor, the Environmental Risk Management Authority (ERMA). Marlborough District Council could not exercise the approval within the five year limit stipulated by the HSNO Act. Approval ERMA200754 expired in June 2016. This new application is based on information that was submitted to ERMA in the 2011 application process with updated information regarding the impacts and distribution of CNG in New Zealand and further testing performed on *U. pencanus*.

Manaaki Whenua Landcare Research and research partners in Argentina provided the research data described in the application.

What is the application for?

The background and aims of the application include a truncated summary taken from the application form.

Background and aims of introducing *U. pencanus* in New Zealand

Chilean needle grass is a hardy, tussock-forming grass. It is originally from South America. As the name suggests, the seeds are sharply pointed, and disperse by attaching to stock, in mud on machinery, or in hay. Seeds can penetrate the skin of passing animals, sometimes causing severe pain, infection, and even blindness of livestock and dogs. Apart from animal welfare issues, CNG damage downgrades the value of animal pelts and carcasses.

Chilean needle grass can grow in dense stands and directly reduces farm productivity by displacing more productive grasses. CNG is expensive to manage because it is hard to distinguish from other grasses, including natives, except when flowering. Farms are often destocked for the 3-month period when seeds are present to avoid the adverse effects of CNG. Chilean needle grass is widespread in Australia and is known to reduce the biodiversity values of native grasslands there.

The distribution of CNG in New Zealand is currently limited to Auckland, Hawke's Bay, Marlborough and Canterbury. The number of sites affected by this weed has steadily increased since it was first monitored in the Marlborough region in the 1970s. There are 130 affected sites in Hawke's Bay and it is now present in 170 sites totalling 2,804 hectares (ha) in Marlborough. The weed was detected in North Canterbury in 2008 and now affects over 300 ha in Cheviot, Parnassus and Omihi. More than half the Canterbury region is at risk of invasion due to climatic suitability and the movement of seed by various dispersal methods. The area of New Zealand suitable for invasion by this weed is thought to be 15 million ha, of which much less than 1% is currently infested.

This application seeks to introduce the rust fungus *U. pencanus* as a biological control agent for CNG. Rusts such as this can reduce the productivity and competitiveness of their host plant, which is CNG in this case. Successful biological control would reduce the vigour and seed production of the weed on infested land, minimising its abundance, impact and rate of spread.

The applicant noted that potential adverse effects of the rust in New Zealand are:

- damage to native grasses or other valued grass species from the release of *U. pencanus*.
- adverse effects on other flora and fauna because of decline in the abundance of CNG.
- indirect adverse effects on native flora and fauna, especially native rusts, through non-target impacts of the biological control agent.

The key potential positive and negative effects are further considered in Appendix 1 and will be evaluated and reviewed in the EPA Staff Assessment Report that is expected to be released on 12 April 2018.

Where to find the application

The application can be found on the EPA website (www.epa.govt.nz).

You can also contact the applicant's representative directly if you have questions about the technical information in the application. The applicant's representative is Richard Hill who can be contacted by email (HillR@landcareresearch.co.nz) or phone (021 1376 919).

You can contact the EPA if you have any questions about the application process, making submissions, or the hearing process. The application leader is Clark Ehlers, who can be contacted by email (clark.ehlers@epa.govt.nz) or phone (04 474 5495).

The application process

The application process is set out in the HSNO Act, including timeframes within which steps of the process must occur. The main steps are set out below.

Stage of process	Date
Application formally submitted to EPA	16 January 2018
Public submission period	29 January to 13 March 2018
EPA Staff Assessment Report release	Expected 12 April 2018
Public hearing (open to the public, applicant and submitters can present), if a hearing is held	Expected to take place on 27 April 2018
Consideration of application (not open to the public)	Expected on 27 April 2018
Decision released	Prior to 12 June 2018

Who considers the application?

The application is considered by a sub-committee of the EPA's HSNO Committee. The HSNO Committee consists of eight members, appointed by the EPA Board, with delegated decision-making powers to consider certain applications made under the HSNO Act.

The Decision-making Committee for this application has not yet been appointed.

The role of EPA staff

EPA staff support the Decision-making Committee, and administer the consideration process including the submissions and hearing.

EPA staff also provide advice to the Decision-making Committee. Following the close of submissions, EPA staff will complete a full assessment of the matters to be considered, using the information in the application, from submitters and other readily available sources. This Staff Assessment Report will be published on the EPA website and will assist the Decision-making Committee with the consideration of the application.

Information the Decision-making Committee will take into account

Sources of information for the Decision-making Committee include, but are not limited to:

- the application form and supporting documents
- submissions
- EPA Staff Assessment Report
- information presented at a public hearing (if a hearing is held).

All written reports, submissions, the application, and decision will be available on the EPA website as they become available.

The statutory criteria for considering this application

In considering the application, the Decision-making Committee must take into account a range of matters set out in the HSNO Act.

Undesirable self-sustaining populations

The Decision-making Committee is required to consider the potential for the rust fungus *U. pencanus* to establish an undesirable self-sustaining population, and the potential for eradication of an undesirable population of the rust.

The Decision-making Committee is interested in any information about a situation where a population of *U. pencanus* might be considered undesirable.

Minimum standards

The HSNO Act sets out minimum standards that must be met in order for a new organism to be released. This means that the rust fungus *U. pencanus* cannot be approved for release if it is likely to:

- cause any significant displacement of any native species within its natural habitat
- cause any significant deterioration of natural habitats
- cause any significant adverse effects on human health and safety
- cause any significant adverse effect to New Zealand's inherent genetic diversity
- cause disease, be parasitic, or become a vector for human, animal, or plant disease, unless the purpose of that importation or release is to import or release an organism to cause disease, be parasitic, or a vector for disease.

The Decision-making Committee is interested in any information about whether *U. pencanus* meets the minimum standards.

Adverse and beneficial effects

The Decision-making Committee is required to weigh the potential beneficial (positive) effects against the potential adverse effects of releasing the rust fungus *U. pencanus* into the New Zealand environment.

If the adverse effects outweigh the beneficial effects, the organism cannot be released.

The Decision-making Committee is interested in any information about benefits or adverse effects that could result from the release of *U. pencanus*, in particular, any effects on the environment, human health and safety, the market economy, Māori culture and traditions, and society and communities.

We have provided a brief summary of the potential adverse effects and benefits of this application based on the information we currently have available. This can be found in Appendix 1 of this document.

You can participate in the process

Make a submission

Any person can make a submission on this application, provided it is submitted within the submission period (**29 January to 13 March 2018**). In a submission you can provide information, make comments and raise issues. In this way, you contribute to the EPA decision-making process on this application.

Further information on the purpose of submissions is available from the EPA website using the link below:
https://www.epa.govt.nz/public-consultations/

In your submission, you can also request a hearing if you would like to speak to your views in person before the Decision-making Committee. Further information on what to expect at a hearing can be found in the link below:
https://www.epa.govt.nz/public-consultations/what-to-expect-at-a-hearing/
The EPA website provides guidance and steps on how to make a submission. This is preferably done via the EPA submission form online, but may be sent as a letter or e-mail to the EPA. This information and the submission form can be accessed from the EPA website using the link below:
https://www.epa.govt.nz/public-consultations/how-to-make-a-submission/

Participate in the public hearing

A hearing may be held to enable submitters to speak to the Decision-making Committee about their submissions.

You are entitled to bring witnesses who may speak to your submission at a hearing. If you choose this option, you should provide the EPA with a list of the witnesses, their areas of expertise, and the elements of the submission or application they will talk to.

If you choose to speak at a hearing, you are entitled to speak in one of the three official languages of New Zealand: English, Māori, or New Zealand Sign Language. Please advise the application lead **at least two weeks prior to the hearing start date if you wish to speak to your submission in Māori or New Zealand Sign Language** in order for the EPA to organise for an interpreter. The application lead, Clark Ehlers, can be contacted by e-mail (Clark.Ehlers@epa.govt.nz) or by phone (04 474 5495).

Both the applicant and submitter(s) need to provide the EPA with copies of any information they intend to present at the hearing at least two weeks prior to the hearing.

Appendix 1: Summary of the risks and benefits of this application

To guide and inform submitters, EPA staff have summarised the risks and benefits identified in the application, and through a preliminary literature review.

The risks and benefits from the release of *U. pencanus* in the New Zealand environment would be associated with the establishment of self-sustaining populations of this rust and reducing vigour and densities of existing populations of the target plant, CNG. These activities will also have future outcomes in minimising CNG's potential dispersal and associated adverse effects on pastoral production and conservation values where the weed could establish due to favourable climatic conditions.

Potential benefits of releasing the Chilean needle grass rust *U. pencanus*

The applicant identified the following potential benefits from the release of *U. pencanus* for the control of CNG:

- Reducing the costs of managing CNG in pastures, improving farm productivity and reducing the devaluation of animal pelts and carcasses due to damage caused by CNG seeds (i.e. economic benefits).
- Improving the welfare of grazing stock and working animals by reducing CNG seed production (i.e. benefits to society and communities).
- Reducing the potential threats CNG poses to native tussock species and native habitats (i.e. environmental benefits).

Of the four regions in New Zealand where CNG populations are currently found, the highest number of infested sites is in Marlborough. Marlborough District Council spends $200,000 per annum on CNG containment and may spend upwards of $500,000 from 2018/19 if changes to the Regional Pest Management Plan currently under review take effect. Its distribution in Canterbury is smaller but this has increased from the one 80 ha site observed in 2008 to 16 sites in Northern Canterbury. Environment Canterbury spends approximately $225,000 per annum to contain CNG and land owners of mostly high-producing exotic pastures spend approximately $100,000 to 150,000 annually to control and minimise the impact of CNG in the Canterbury area. AgResearch weed scientist Dr Graeme Bourdôt modelled the potential distribution of CNG populations in New Zealand and globally considering its present distribution (Bourdôt 2010; Bourdôt et al. 2012; Bourdôt et al. 2015). Fifteen million hectares are climatically suitable in New Zealand of which 1 million ha of high-producing pastures in Canterbury alone could be infested. Due to the warming associated with climate change, the potential distribution of cold-limited plants can be expected to shift poleward in latitude and upward in elevation (Walther et al. 2002; Gerard et al. 2013). CLIMEX modelling has shown that, in the case of CNG under current and future scenarios, an increase in the potentially suitable area where CNG could grow in the future as a result of westward extension of suitable climate in the South Island (Bourdôt et al. 2012).

The future benefit-cost to contain CNG to its existing and any future sites in Canterbury based on the rate of spread in nearby Marlborough was modelled by Bourdôt and co-authors (Bourdôt et al. 2015). This model estimates the net benefit of a containment programme for the weed as the difference between the costs of

containment and costs incurred over time should the weed spread within sheep and beef pastoral systems. The Biosecurity Act requires that for each weed species the benefits of a weed management plan must outweigh the costs, after taking in to account the consequences of doing nothing or other courses of action. The researchers found that there would be a negative net benefit to attempt to contain CNG to current and future occupied areas in Canterbury over 100 years. They concluded that containment measures would therefore not be economically worthwhile for Environment Canterbury, at least for the conditions used in the model. When they tweaked the model using higher rates of CNG spread and lower discounting rates[1], a positive net benefit would eventuate. This study nonetheless indicates the potential significant costs CNG control could have on Environment Canterbury, other territorial authorities, the Department of Conservation, landowners and farmers by using conventional physical and herbicide control. Biocontrol by this rust could harbour important economic benefits reducing future costs to manage the plant not only on pasture land but also native habitats where it could eventually invade.

Although CNG has not had any known effects on native tussock grasses in New Zealand to-date, it is thought to pose a threat to native biodiversity if existing management measures are not successful. Chilean needle grass is now recognised as a serious threat to biodiversity in the endangered natural grasslands of south-east Australia. In a 2012 study, CNG was found to significantly reduce native plant diversity in grasslands where native plants were previously in poor ecological condition or under stress due to human activity, including soil disturbance and mowing (Faithfull 2012).

Potential risks of releasing *U. pencanus*

The applicant considers that the release of the biocontrol agent to control CNG in New Zealand may have adverse effects if:

- the rust causes significant decline in native plant populations by infecting non-target species.
- the rust expands its host range and infects native or valued plants in the future.
- significant suppression of native rust fungus species took place as a result of parasitic fungi called mycoparasites that occur in our environment and build large populations on *U. pencanus*. This may consequently lead to higher attack rates on native rusts from these mycoparasites.

The biology, suitability as biocontrol agent and host range of *U. pencanus* were extensively studied in Argentina, the native range of the rust (Anderson et al. 2010; Anderson et al. 2011; Anderson et al. 2017).

The foundation of host range experiments was based on surveys conducted in Argentina on CNG populations to find a promising fungal pathogen and testing it on populations of Australian and New Zealand CNG plants and on other plants closely related to increasingly distantly related species in containment. Chilean needle grass (*Nassella neesiana*) is in the grass or Poaceae family of plants and current knowledge regarding its phylogenetic relationship with other grasses was used to assemble a list of species for testing. There are no native *Nassella* species in New Zealand, but within the same tribe there are two endemic and one indigenous species (Edgar & Connor 2010). All other taxa in the tribe are exotic and naturalised in New

[1] The discounting rate is the rate used to determine the present value of future cash flows.

Zealand. The susceptibility of 66 species of plants that represent taxa most closely related to CNG as well as plants more distantly related because they are of economic importance (including rye, wheat and oats) to rust infection was tested in 2010 (Barton et al. 2010). Additional testing was completed since 2010 to clarify the observed off-target effects the rust showed to two native Australian *Austrostipa* species. *Uromyces pencanus* was able to complete life cycles on the two species, however, neither species grows in New Zealand.

Containment studies showed CNG rust has a narrow host range restricted to plants in the *Nassella* genus and only a small-subset of CNG plants collected from different locations in Australia and New Zealand are fully susceptible to rust infection. Two out of 19 *Austrostipa* species tested, which belong to the same tribe as CNG, were shown to be vulnerable to rust colonisation.

A survey of plant pathogen biocontrol programmes revealed 28 fungal pathogens were introduced globally between 1971 and 2009 targeting weeds or complexes of weeds in 38 biocontrol programmes (Barton 2012). Non-target damage in the field was reported for five of the 38 programmes. Two of the five cases were recorded where host range experiments were conducted in the field. The remaining three cases where disease symptoms were observed on non-targets in the environment were predicted by host testing performed in containment. The relevant authorities decided that the benefits of releasing these agents would outweigh the known risks of off-target effects predicted in the glass house. Results from this survey and a New Zealand-specific study (Waipara et al. 2009) demonstrate that many rusts are specific to their hosts or have a small host range that is demonstrable in quarantine testing and is unlikely to expand host range over time.

The EPA Staff Assessment Report will comprehensively consider the direct and indirect effects on our environment as well as the potential effects of the rust *U. pencanus* on our economy, society and communities, and Māori and their relationship with the environment.

References

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