
Information for Submitters – APP203875

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

Introduction

Tasman District Council has submitted an application to the EPA to introduce a wasp-nest beetle, *Metoecus paradoxus*, and a hoverfly, *Volucella inanis*, as biological control agents (BCAs) for the invasive German and common wasps, *Vespula germanica* and *V. vulgaris*. The application will be processed by the EPA through a publicly notified pathway. Manaaki Whenua Landcare Research provided the science support for the application.

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.

What is the application for?

The application seeks approval to release a wasp-nest beetle, *Metoecus paradoxus*, and a hoverfly, *Volucella inanis* as biological control agents for German and common wasps, *Vespula germanica* and *V. vulgaris*. An abridged version of the summary in the application form follows below. Further, we performed a preliminary assessment of the risks and costs to the environment from the proposed release of the wasp-nest beetle and the hoverfly after conducting an initial literature review and analysis of the information in the application (see the Appendix). We invite submitters to comment on our preliminary analysis and provide information that would support our full assessment to be published in the EPA staff assessment report (expected 3 December 2020).

Background and aims of introducing *M. paradoxus* and *V. inanis* in New Zealand.

German and common wasps are widely distributed in New Zealand and are a significant threat to conservation values and primary industries. In New Zealand, the lack of natural enemies, mild winters and abundant food resources enable these social wasps to reach extremely high population densities (mean of 10,000 workers per hectare in New Zealand beech forests).

These social wasps are currently mainly controlled by pesticides. However, these methods are limited in their efficacy when infestations are either inaccessible or inconspicuous and by the lack of workforce. In addition, pesticides are expensive, labour intensive and potentially hazardous to non-target organisms and treated areas are quickly recolonised by queen wasps from non-treated areas. Biological control is the only sustainable option to reach these out of range populations and mitigate the damage caused by these social wasps.

Introduced natural enemies must be safe to import if this wasp management tactic is to be environmentally acceptable. Significant adverse environmental or economic effects would occur if the BCAs larvae caused significant damage to valued non-target species, whether native or introduced.

Metoecus paradoxus and *V. inanis* are obligate parasitoids that attack social wasps belonging to the genus *Vespula*. The wasp-nest beetle and the hoverfly's chemical mimicry mechanisms and oviposition behaviours preclude expansion of the host range for these species beyond social wasps. Non-target species potentially susceptible to these BCAs, such as social Hymenoptera, including bees and ants, solitary bees and wasps, are considered incompatible by the applicant. Honeybee and bumblebee nests

have never been targeted by these insects in their native range. The small size of ant larvae would not enable the development of the BCA larvae. The nest entrances of solitary bees and wasps are considered too small and impenetrable for the parasitoids as the majority are sealed.

Successful control by the hoverfly and the wasp-nest beetle would benefit the New Zealand environment by reduced predation of native and beneficial exotic invertebrates, improved ecosystem and food-web health and reduced insecticide usage); human health (i.e. reduced risk of injuries and death); and the economy (increasing pollinators, reducing predation on honeybees). The applicant considered the potential adverse effects of the release on the New Zealand environment and market economy to be through non-target attacks on native and valuable species such as honeybees, alteration of food-web interactions, increase competition with pollinators and reduction of income for some businesses and contractors.

The applicant concluded that the wasp-nest beetle, *M. paradoxus*, and the hoverfly, *V. inanis*, are sufficiently host-specific for release in the New Zealand environment, and that the potential cumulative benefits outweigh the potential cumulative risks.

Where to find the application

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

You can also contact the applicant representative directly if you have questions about the technical information in the application. The applicant's representative is Bob Brown who can be contacted by email (brownb@landcareresearch.co.nz) or phone (03 321 9605).

You can contact the EPA if you have any questions about the application process, making submissions, or the hearing process. The application leader is Aubanie Raynal, who can be contacted by email (Aubanie.Raynal@epa.govt.nz) or phone (04 474 5494).

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	14 September 2020
Public submission period	28 September – 10 November 2020
EPA Staff Assessment Report release	Expected 3 December 2020
Public Hearing (open to the public, applicant and submitters can present)	Expected to take place in the third week of December 2020
Consideration of application (not open to the public)	Expected to take place in the third week of December 2020
Decision released	Prior to 26 February 2021

Who considers the application?

The application is considered by a sub-committee of the EPA's HSNO Committee. The HSNO Committee currently consists of seven 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 the 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 *M. paradoxus* and *V. inanis* to establish an undesirable self-sustaining population, and the potential for eradication of an undesirable population of the wasp-nest beetle and the hoverfly.

The Decision-making Committee is interested in any information about a situation where a population of *M. paradoxus* and *V. inanis* 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 *M. paradoxus* and *V. inanis* cannot be approved for release if they are 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 *M. paradoxus* and *V. inanis* meet the minimum standards.

Adverse and beneficial effects

The Decision-making Committee is required to weigh the potential beneficial effects against the potential adverse effects of releasing *M. paradoxus* and *V. inanis* into the New Zealand environment.

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

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

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 (28 September 2020 – 10 November 2020). 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 submissions for an application is available from the EPA website using 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, Aubanie Raynal, can be contacted by e-mail (Aubanie.Raynal@epa.govt.nz).

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

We summarised the benefits, costs and risks in the application and made a preliminary assessment of the risks and costs, based on the information presented in the application form and by doing an initial literature survey. We will complete a comprehensive literature review and incorporate information obtained from the public, as well as a Māori Perspectives Report in our full staff assessment report expected to be made available on or before 3 December 2020. The staff assessment report will include a complete risk assessment, together with information obtained from public submitters, other government departments, cultural perspectives and mātauranga, which would inform the consideration by the decision-making committee after a public hearing (should one take place).

Benefits from the release of the BCAs

The applicant claims that the introduction of the wasp-nest beetle, *Metoecus paradoxus*, and the hoverfly, *Volucella inanis*, to control German and common wasps (*Vespula germanica* and *V. vulgaris*) would benefit the environment, human health, market economy, and society and communities in New Zealand by:

- reducing predation of invertebrates by pest social wasps, leading to greater prey resources for native birds
- improvement to, or restoration of, normal ecosystem functions of beech forests, with more honeydew available for native species
- reducing contamination from insecticides in the environment and adverse effects on non-target species
- reducing risk of injuries and death caused by wasp stings
- increasing pollination services by honeybees
- increasing profitability of the apiculture industry by reduced predation and hive robbing by wasps
- reducing control costs for occupiers, regional councils, the Department of Conservation (DOC), and other affected groups
- improving mental wellbeing of people working in areas infested by social wasps

Risks and costs from the release of the BCAs

The applicant notes the release of the wasp-nest beetle and the hoverfly could adversely affect the New Zealand environment, market economy or human health. The BCAs could be hazardous to the environment if their larvae feed on non-target native or economically important species. This could have adverse effects on ecological systems by displacing native species or altering food-webs.

Preliminary assessment of risks and costs to the environment from the introduction of the BCAs

We performed a preliminary analysis of the potential adverse effects to non-target species, ecosystems and interactions between species following the introduction of *M. paradoxus* and *V. inanis* if they were approved for release in New Zealand.

Could the BCAs damage native or valued exotic species in New Zealand?

New Zealand has a few thousand native wasp species, however, a large majority are tiny, parasitic and solitary species (Early 2007). Furthermore, none of the native or valued exotic wasp species are in the family Vespidae. Studies have shown that the wasp-nest beetle and the hoverfly have only been found parasitizing insects in the family Vespidae, and more specifically in the genus *Vespula* (Rupp 1989; Heitmans & Peeters 1996; Blythe 2009; Van Oystaeyen et al. 2015).

Could the two BCAs displace native species, cross-breed with endemic species, or cause adverse effects in ecosystems?

We assessed whether the release of the wasp-nest beetle or the hoverfly would generate increased pressures on native species from parasitism or predation. Populations of general predators and parasitoids that are in our environment may increase substantially if they attack *M. paradoxus* or *V. inanis* which, in turn, could increase attack rates on native or exotic beneficial species. However, due to the absence of closely related species to the BCAs in New Zealand we considered the probability of having specific parasitoids or predators targeting the BCAs in New Zealand to be low.

In New Zealand, the genera to which the wasp-nest beetle and the hoverfly belong (*Metoecus* and *Volucella*) are not represented. Therefore, if the BCAs are approved for release, they won't be able to cross-breed successfully with endemic beetles or hoverflies in New Zealand and thus would not adversely affect our inherent genetic diversity.

At this initial stage of our assessment we consider that the introduction of the wasp-nest beetle and the hoverfly would not cause increased rates of attack on valued species in New Zealand but instead will reduce the pressure on invertebrate species due to the decrease of social wasps. Further, we expect the wasp-nest beetle and the hoverfly to be limited to their target-hosts (German and common wasps) in New Zealand based on information from the native range of the wasps and BCAs and what we know about valued hymenoptera species in New Zealand. Any effects on the ecosystem should occur in or close vicinity to social wasp infestations. Given the lack of wasp predators in New Zealand, we do not expect that there would be significant adverse effects on ecosystems from the release of these two BCAs.

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Heitmans WR, Peeters TM 1996. *Metoecus paradoxus* in The Netherlands (Coleoptera: Rhipiphoridae). Entomologische berichten-nederlandsche entomologische vereniging 56: 109-117.

Rupp L 1989. The central European species of the genus *Volucella* (Diptera, Syrphidae) as commensals and parasitoids in the nests of bees and social wasps: studies on host-finding, larval biology and mimicry. Albert-Ludwigs University, Freiburg-im-Breisgau, Germany. Inaugural Dissertation.

Van Oystaeyen A, van Zweden JS, Huyghe H, Drijfhout F, Bonckaert W, Wenseleers T 2015. Chemical Strategies of the Beetle *Metoecus Paradoxus*, Social Parasite of the Wasp *Vespula Vulgaris*. Journal of chemical ecology 41(12): 1137.