



Environmental
Protection Authority
Te Mana Rauhi Taiao

Decision

May 2019

Date	13 May 2019
Application code	APP203667
Application type	To import for release and/or release from containment any new organism under section 34 of the Hazardous Substances and New Organisms Act 1996
Applicant	Waikato Regional Council
Date application received	17 January 2019
Date of Hearing	1 May 2019
Date of Consideration	1 May 2019
Considered by	A decision-making committee of the Environmental Protection Authority (the Committee) ¹ : <ul style="list-style-type: none">• Dr Kerry Laing (Chair)• Dr Louise Malone• Dr Ngaire Phillips
Purpose of the application	To release the moth plant beetle, <i>Freudeita cf cupripennis</i> , as a biological control agent for moth plant (<i>Araujia hortorum</i>)
The new organisms approved	<i>Freudeita confer cupripennis</i> (Lefèvre, 1877)

¹ The Committee referred to in this decision is the subcommittee that has made the decision on the application under delegated authority in accordance with section 18A of the Act.

Summary of decision

1. Application APP203667 to import for release the moth plant beetle, *Freudeita cf cupripennis*, was lodged under section 34 of the Hazardous Substances and New Organisms (HSNO) Act 1996 (the Act). The aim of the application is to enable the release of the beetle as a biological control agent for moth plant, *Araujia hortorum*.
2. The application was considered in accordance with the relevant provisions of the Act and of the HSNO (Methodology) Order 1998 (the Methodology).
3. The Committee has **approved** the application in accordance with section 38 of the Act.

Application process

Application receipt

4. The application was formally received for processing on 17 January 2019.

Purpose of the application

5. The applicant, Waikato Regional Council, applied to the Environmental Protection Authority to import for release the moth plant beetle, *Freudeita cf cupripennis*, as a biological control agent for moth plant (*Araujia hortorum*).

Public notification

6. Section 53(1)(ab) of the Act requires that an application under section 38 of the Act must be publicly notified by the Environmental Protection Authority (EPA) if the application has not been approved under section 35.
7. The application was publicly notified by placing a notice on the EPA website on 31 January 2019.
8. In accordance with section 53(4) of the Act, letters or emails were sent notifying the Minister for the Environment, the Ministry for Primary Industries (MPI), the Department of Conservation (DOC), and other government departments, crown entities, and local authorities who have expressed an interest in being notified about applications for non-genetically modified new organisms. Māori organisations, non-government organisations and stakeholders who have expressed an interest in being notified about applications for non-genetically modified new organisms were also directly notified. All these parties had an opportunity to comment on the application in accordance with section 58(1)(c) of the Act and clause 5 of the Methodology.
9. Section 59(1)(c) of the Act requires an application to be open for the receipt of submissions for 30 working days from the date of public notification. The submission period closed on 15 March 2019.

Submissions from members of the public

10. The EPA received 53 submissions during the public notification period.
11. Twenty-three submissions supported the application. Twenty-six submissions opposed the application and four submissions were neither for nor against the application.

Comments from MPI and DOC

12. In accordance with section 58(1)(c) of the Act, the Ministry for Primary Industries (MPI) and the Department of Conservation (DOC) were advised of and provided with the opportunity to comment on the application.

13. MPI did not make any comment or submission on the application.
14. DOC supported the release of *Freudeita cf cupripennis*. Rod Hitchmough (Scientific Officer, Biosecurity) noted that DOC has previously supported the release of a similar species for the same purpose and that the reasons for their support have not changed. They do not consider that concerns about *Tweedia (Oxypetalum caeruleum)* are a valid reason for denying approval to release the moth plant beetle.
15. The Committee is satisfied that the submission from DOC has been considered in making this decision.

Reports providing advice to the Committee

16. The EPA Staff Assessment Report was provided under section 58(1)(a) of the Act. It was published on the EPA website and the applicant and submitters were informed of its availability on 10 April 2019.
17. Ngā Kaihautū Tikanga Taiao (NKTT) elected not to prepare a report on the application.

Hearing

18. Section 60(c) of the Act requires that a hearing be held if a person who has made a submission stated in that submission that he or she wishes to be heard. Seven submitters indicated they wished to be heard.
19. Section 59(1)(d) of the Act requires that the hearing commence not more than 30 working days after the closing date for submissions. The hearing was held on 1 May 2019 at AREA Conference Centre, 1 O'Reilly Ave, Te Aro, Wellington.
20. Mr Gerry Te Kapa Coates (Te Runanga o Ngāi Tahu) and Dr David Eccles appeared at the hearing to speak to their individual submissions.
21. The Waikato Regional Council was represented by Hamish Hodgson and supported by Dr Quentin Paynter and Dr Ronny Groenteman of Manaaki Whenua Landcare Research (MWLR).

Information available for the consideration

22. The information available for the consideration comprised:
 - the application
 - the EPA Staff Assessment Report
 - submissions
 - comments received from DOC
 - information obtained during the hearing.
23. The Committee considered that it had sufficient information to assess the application, and waived any further legislative information requirements.

Matters for consideration

24. The Committee considered the application in accordance with section 38 of the Act, taking into account the matters specified in sections 36 and 37, relevant matters in Part 2 of the Act, and the Methodology.
25. Each point is addressed in the following sections of this decision.

26. Specific points raised by submitters (either in their submission or during the hearing) are addressed where appropriate throughout this decision.

Summary of appearances and information discussed at the hearing

Presentations from the applicant party at the hearing

Mr Hamish Hodgson, Waikato Regional Council

27. Hamish Hodgson described the characteristics of moth plant that have enabled it to become a problematic and invasive weed such as the large pods which contain up to 800 seeds, vines that climb to the canopy of native plants only to smother them and sticky white sap. Mr Hodgson noted that moth plant sap causes skin and eye irritations and clothing stains that cannot be removed.
28. Mr Hodgson highlighted that moth plant has environmentally expansive invasiveness with degradation occurring in residential properties, urban reserves, native bush, riparian areas, coastal islands, hedgerows and orchards.
29. Mr Hodgson discussed the various methods of controlling moth plant such as individual plant control, the cutting and pasting of stems with herbicide, spray application of broad spectrum herbicides such as glyphosate, hand pulling seedlings and collection of seed pods.
30. Mr Hodgson stated the best season to eradicate moth plant is during spring when moth plant produces flowers. This provides easier identification of individual plants and their distribution which facilitates easier removal.
31. Mr Hodgson acknowledged that individuals such as landowners can control moth plant on their own provided they are vigilant and persistent with removing moth plant from their properties. However, moth plant eradication is challenging due to the large production of seeds by individual plants and swift re-infestation of areas.

Moth plant in the Waikato region

32. Mr Hodgson provided a case study for moth plant in the Waikato region to emphasise the invasiveness of moth plant and illustrate the physical control efforts by the wider community.
33. The Waikato Regional Council (WRC) considers moth plant to be a progressive containment pest plant according to their regional pest management plan. Mr Hodgson noted that it is mandatory for residential landowners to control moth plant on their properties to curtail the dispersal and establishment of moth plant in wider, uninfested areas.
34. Mr Hodgson noted that moth plant is considered to be an urban pest plant in most of the Waikato region but acknowledged the extent of invasiveness is less than in Auckland and Northland.
35. Mr Hodgson highlighted that moth plant had invaded the Coromandel and hedgerows of Tuakau. He stated that he had singlehandedly counted and entered 700 sites of moth plant infestation into their database over the past six years. He estimated that the total amount of work he spent on controlling moth plant amounted to 1,400 hours of work over 35 weeks in the six years. He noted that this did not include effort and time spent by members of the public.
36. Mr Hodgson noted that members of the public, community groups and district councils had begun removing moth plant voluntarily. In addition, two students hired by the WRC completed research of riparian zones to ascertain the invasiveness of moth plant. The students discovered that moth

plant had spread beyond urban areas to distant, isolated coastal areas such as Ruapuke Beach which is approximately 25km southwest of Raglan on the west coast.

37. To illustrate the extent of moth plant invasiveness, Mr Hodgson showcased statistics from DOC. At least 108 sites have been positively identified with moth plant invasion where surveillance, control or eradication has taken place. DOC calculated that 3,000 staff hours were dedicated to controlling moth plant between 2014 and 2019 with some sites under management for more than 16 years. DOC noted that moth plant infestation had reached the summit of Rangitoto Island which has an elevation of 260m.

Invasiveness of moth plant in other regions

38. Mr Hodgson noted that moth plant had invaded the Aupouri Peninsula of Northland with dune lakes of high ecological significance under threat from the smothering nature of moth plant. In the Bay of Islands, a moth plant eradication project called Project Island Song Weedbusters amassed 1,352 hours dedicated to moth plant control and removal between 2012 and 2017 which encompassed 71 island water taxi trips between the mainland and infested islands.
39. Mr Hodgson noted that in relation to pest plant species, the Auckland Regional Council receives more enquiries on moth plant than any other pest plant species. Past community events to remove moth plant have included pod collecting competitions. One competition in particular had 50 students participating with a total of 32,926 moth plant seed pods collected with the winner recording 2600 seed pods. It was estimated that the total seed pods contained 29 million seeds.
40. In the Northwest Wildlink Corridor, an ecological corridor that stretches from the Hauraki Gulf to the Waitakare Ranges in Auckland, more than 130 community groups are currently involved in moth plant control and ecological restoration of native habitats.
41. Mr Hodgson concluded that moth plant is an invasive pest vine that is both an environmental and health risk with an increasing distribution that is difficult to control. Mr Hodgson stated that the existing control methods are insufficient to control the spread of moth plant and the addition of a biological control agent would be beneficial to New Zealand.

Dr Quentin Paynter, Manaaki Whenua Landcare Research (MWLR)

42. Quentin Paynter presented the scientific analysis underpinning the application to release the moth plant beetle, *Freudeita cf cupripennis*. Dr Paynter focused on four key aspects:
 - a. The direct risk of *Freudeita cf cupripennis* to non-target plants.
 - b. Is there a risk to organisms if they ingest *Freudeita cf cupripennis*?
 - c. Could moth plant seed production increase due to pollen transfer by *Freudeita cf cupripennis*?
 - d. Can *Freudeita cf cupripennis* successfully control moth plant?

The risk Freudeita cf cupripennis poses to non-target plant species

43. Dr Paynter stated that host-range testing followed modern, internationally recognised guidelines with a phylogenetic approach. The host-range testing involved highly conservative no-choice tests whereby larvae and adult beetles were only given the option of feeding on a specific plant they were presented with. Dr Paynter noted that the no-choice test provided researchers with observational evidence and confidence of plant-host specificity for *Freudeita cf cupripennis*. He stated that any beetles that did not consume the plants were likely to die due to starvation.
44. Dr Paynter mentioned that host-range testing comprised adult beetles being confined on test plants for 7-8 days with feeding damage subsequently assessed to ascertain host specificity.

45. Dr Paynter stated that for larval development, newly emerged first instar larvae were placed on soil containing potted test plants and were allowed to colonise roots naturally. The initial aim was to count emerging adults but when larvae reached the final instar, some plants began dying due to extensive root damage. These plants were removed and the number of larvae was counted.
46. Dr Paynter stated that host-range testing indicated that *Freudeita cf cupripennis* is only likely to attack plants within the sub-tribe Oxypetalinae, including garden ornamental Tweedia (*Oxypetalum caeruleum*). Two larvae were reared through to adult stage on *Hoya carnososa*, but adult beetles did not feed on *H. carnososa* foliage. Female beetles lay egg batches in the soil around the stems of host plants and it would be highly unlikely for them to oviposit beneath *Hoya* unless it was growing next to moth plant. Dr Paynter noted that *Hoya* is largely an indoor plant in New Zealand.
47. Dr Paynter noted that swan plant (*Gomphocarpus*) and milkweed (*Asclepias*) were not palatable to adult beetles and did not support larval development. Dr Paynter concluded that host-specificity test data is supported by field survey data from South America.

The risk of Freudeita cf cupripennis to organisms if ingested

48. Dr Paynter noted that the recognition of potentially dangerous prey is not innate and predators must learn to associate bad taste or illness with eating a species with memorable characteristics. In this instance, adult *Freudeita cf cupripennis* beetles appear to exhibit aposematic (warning) colouration giving the perception that they are toxic to consume. The bright red/purple warning colouration of adult *Freudeita cf cupripennis* individuals as a strategy for avoiding predation relies on the memory of the predator i.e. if a predator that attacks a brightly coloured prey item which it then considers distasteful, it is more likely to avoid a repetition of the experience due to the memory of the foul taste.
49. Dr Paynter noted that aposematic colours only work if the predator survives. He used an international example where blue jays in the United States periodically catch aposematic monarch butterflies which they usually spit out (often undamaged) due to their poor taste.
50. Dr Paynter stated that if adult *Freudeita cf cupripennis* beetles are poisonous/distasteful, predators will quickly learn to recognise and avoid them. He noted that *Freudeita cf cupripennis* larvae spend most of their life mining the roots where they are inaccessible to predators. The larvae are only potentially accessible if they migrate between roots e.g. if a plant is dying.
51. Dr Paynter noted that few native birds are likely to be capable of feeding on them but kiwi are a potential predator. He noted that published information on the foraging behaviour of kiwi (which feed mainly on earthworms, cicada grubs and beetle larvae that are bigger than *Freudeita cf cupripennis* beetle larvae) suggests that *Freudeita cf cupripennis* larvae would not fit the kiwi's prey profile. In addition, kiwi use smell to locate food not visual cues. Dr Paynter stated that kiwi would likely smell and avoid larvae or taste and spit out distasteful beetle larvae and therefore, subsequently avoid them.

Could pollen transfer by Freudeita cf cupripennis increase moth plant seed production?

52. Dr Paynter discussed the likelihood of *Freudeita cf cupripennis* transferring pollen between different moth plant specimens which could therefore facilitate an increase in moth plant seed production.
53. Dr Paynter noted that moth plant is pollinated by floral visitors that are large or strong enough to remove and transport pollinaria without getting stuck in the flowers. He noted that the main pollinators of moth plant are honeybees, bumblebees and wasps. Some butterflies and moths

also visit flowers but can get trapped. There are no reports on moth plant flower visitation by beetles.

54. Dr Paynter noted that *Freudeita cf cupripennis* has biting mouthparts, lacks a proboscis and feeds on moth plant foliage, not flowers.

Probability of successful moth plant biological control by Freudeita cf cupripennis

55. Dr Paynter discussed the historical record of successful biological control with approximately one third of programmes so successful that other control options are no longer required; approximately half of biological control agents are partially successful (e.g. biological control effective in some habitats, but not in others) and approximately one sixth of biological control releases are failures (no impact).
56. Dr Paynter stated that plant growth form does not influence success rate and he noted several previous examples of successful biological control agents against smothering vines e.g. rubber vine (*Cryptostegia grandiflora*); ivy gourd (*Coccinia grandis*), bridal creeper (*Asparagus asparagoides*), and mile-a-minute vine (*Mikania micrantha*).
57. He acknowledged that the success rate of weed biocontrol is variable in New Zealand but is improving due to better agent and target weed selection.
58. Dr Paynter stated that *Freudeita cf cupripennis* is likely to escape parasitism and specialist predators in New Zealand due to the absence of native analogues. He highlighted the high mortality rates of moth plant noted at field sites in Uruguay in 2019, where *Freudeita cf cupripennis* was present in 2018. He emphasised that larval feeding killed plants during host-range testing and rearing in containment. Dr Paynter noted that root-feeders have a good track record in weed biological control (with approximately 54% of root feeders contributing to control versus 34% of aboveground herbivores).
59. Dr Paynter stated that MWLR believed that *Freudeita cf cupripennis* has a very good chance of being an effective biological control agent for moth plant.
60. Dr Paynter summarised that *Freudeita cf cupripennis* is only likely to attack plants within the sub-tribe Oxypetalinae. He noted that the main host plants of the monarch butterfly are not host plants of *Freudeita cf cupripennis* and the potential introduction of the beetle is unlikely to pose a threat to native predators.
61. Dr Paynter concluded that *Freudeita cf cupripennis* is unlikely to contribute to the pollination of moth plants, root-feeders have a good track record in weed biological control and *Freudeita cf cupripennis* has a very good chance of being an effective biological control agent for moth plant.
62. In response to questions from members of the Committee, Dr Paynter stated that results obtained in containment are likely to be realistic compared to the field as host-range testing included large plants. Dr Paynter acknowledged that *Tweedia* may be a perfectly acceptable host for *Freudeita cf cupripennis* but the intrinsic value to New Zealand is subjective and dependent on the commercial value determined by the public. Dr Paynter stated that if *Tweedia* is attacked by *Freudeita cf cupripennis* then insecticides could be used as a method for control or elimination.
63. In addition, Dr Paynter clarified that there were minimal differences between MWLR's initial consultation in 2011 for the importation of this beetle under APP201039. Dr Paynter also emphasised that while previous host-range testing had been undertaken, MWLR had adopted new, modern testing protocols and considered this to be a new application with new populations of *Freudeita cf cupripennis* and therefore, requiring new host-range testing.

64. Dr Paynter was asked by a submitter why no successful biological control agent for moth plant had been discovered. He concluded that New Zealand was the first country to make a collaborative effort to discover an effective biological control agent.

Presentation by EPA Staff

65. Aubanie Raynal (Advisor, New Organisms) presented a summary of the EPA Staff Assessment Report focussing on the benefits, risks and costs of *Freudeita cf cupripennis* and assessing the beetle against the minimum standards in the HSNO Act. The staff assessment discussed the information provided in the application, information readily available in scientific literature, and information submitted to the EPA via public submissions. The EPA staff assessed the potential benefits and positive effects of introducing the beetle, in particular the benefits to the environment and to the market economy.
66. The report also considered potential risks and costs (adverse effects) associated with its introduction. The potential adverse effects assessed included the risk of the beetle attacking non-target plants and adversely affecting food webs. The report also assessed the effects of the beetle on the relationship Māori have with their environment. The staff assessment concluded that the benefits of releasing the beetle to control moth plant are likely to outweigh any identified risks and costs. The staff assessment also concluded that *Freudeita cf cupripennis* meets the minimum standards for introduction and release as stated in the Act.

Record and summary of presentations from submitters at the hearing

Mr Gerry Te Kapa Coates, Te Runanga O Ngāi Tahu

67. Gerry Te Kapa Coates presented Ngāi Tahu's submission. Mr Coates outlined the Ngāi Tahu value system, which includes whanaungatanga (family), manaakitanga (looking after their people), kaitiakitanga (stewardship), tikanga (appropriate action), tohungatanga (expertise) and rangatiratanga (leadership). Mr Coates discussed the role the Ngāi Tahu HSNO Komiti plays in monitoring EPA applications and expressed that the EPA and MPI must be ever mindful of its task of 'active protection' under the Treaty of Waitangi.
68. Mr Coates noted that while the only territory of Ngāi Tahu currently inhabiting moth plant is Banks Peninsula, Ngāi Tahu were in support of the release of *Freudeita cf cupripennis* due to the seriousness of the presence of moth plant as an emerging weed in New Zealand.
69. Mr Coates acknowledged that Ngāi Tahu previously supported the release of a rust fungus, *Puccinia araujiae*, as a biological control agent in 2015 (APP202529) and the argument for the environmental benefits of moth plant have been persuasive.
70. He noted that Ngāi Tahu also support this application because although the introduction of the moth plant beetle in 2011 (APP201039) under the name *Colaspis argentinensis* did not proceed, sourcing the same or similar beetle from Uruguay now seemed to be a sensible option.
71. Mr Coates noted that adult *Freudeita cf cupripennis* beetles will be sourced from Uruguay and if approved for release, it is expected to work in tandem with the already approved rust fungus to suppress moth plant growth and spread.
72. Mr Coates noted that the population of adult *Freudeita cf cupripennis* beetles imported into containment in New Zealand and used in the host-range tests will be the parents of any moth plant beetles potentially released.

73. Mr Coates stated that Ngāi Tahu believe a reasonable case for the risks and benefits of this biocontrol has been made.
74. Mr Coates concluded that if *Freudeita cf cupripennis* is to be released, monitoring the establishment, efficacy and spread of the biological control agent should be a condition.
75. In response to a question on iwi consultation between Ngāi Tahu and iwi in the Waikato region, Mr Coates acknowledged that prior consultation between iwi had occurred in 2011 but not for this application. He expanded by admitting the challenges with iwi consultation as obtaining comment from Māori takes time and effort with many iwi not always having the time or resources. He concluded that Māori need to feel that the application is significant and that their views will be well considered.

Dr David Eccles

76. David Eccles did not have a visual presentation but orally presented his opposition to the application.
77. Dr Eccles expressed that while he was not completely against the use of a biological control agent for moth plant, he believed the current application exhibited numerous flaws which he felt significantly compromised the validity of the results.
78. In relation to the host-range testing, Dr Eccles believed more time was required on host-range testing as not all native species were tested. He stated that no research had been undertaken to ascertain the distribution of moth plant in New Zealand and no research to develop an understanding of the potential post-release adverse impacts of *Freudeita cf cupripennis* if moth plant is successfully suppressed.
79. Dr Eccles expressed that even if moth plant is suppressed and a few individual *Freudeita cf cupripennis* beetles remain, these individuals will do whatever they can within their means to sustain survival which may include potential non-target attack on native species.
80. Dr Eccles alluded to the fact that moth plant historically established in New Zealand in the 1880s and given the significant period of time since initial establishment, he did not see the sudden importance of identifying a successful biological control agent to control its dispersal.
81. In addition, he did not see the significance as the EPA considered the economic benefits to be negligible.
82. Concerned with the lack of Māori input during public consultation, Dr Eccles commented that the silence of Māori does not equate to an approval. He noted that Ngāi Tahu's submission was precautionary and the absence of Māori input made him uncomfortable with the idea of a potential release. Dr Eccles stated that a lack of consultation and input from Māori submitters places the onus on the submitter to do research to better understand the potential benefits and risks for New Zealand.
83. Dr Eccles questioned the validity of the evidence provided by the applicant as he considered much of the evidence to be largely based on unpublished reports. He believed that these unpublished reports were not noteworthy as they would not be accepted as 'underpinning science' in scientific literature. He stated that when searching for '*cupripennis* and moth plant' in Google Scholar, only one result appeared which was a public document produced by MWLR in 2018 that did not appear to be peer reviewed and is not published in a scientific journal. Dr Eccles noted that the applicant had referenced other reports that they acknowledged were not published in established scientific literature.

84. Dr Eccles also expressed concern at the binomial name of the organism. He believed that the EPA were being unfairly asked to make an approval on an organism whose name has not yet been confirmed or categorised. Dr Eccles stated that *Freudeita cf cupripennis* is currently a placeholder name.
85. Dr Eccles quoted a section of the application form which stated, “only 1% of flowers bear fruit and this may be because of a lack of suitable pollinators, an efficient pollinator in New Zealand could further increase the weediness of moth plant.” He believed that the applicant is proposing to release a beetle that naturally climbs all over the plant while feeding and could therefore potentially result in the inadvertent pollination of flowers. Dr Eccles noted that the applicant has indicated an interest in pursuing a future application to import and release a seed feeding fly, *Toxotrypana australis*. He stated that this insect is similar to *Freudeita cf cupripennis* in the sense that it may inadvertently increase the pollination of moth plant through physical contact and therefore, increase the weediness.
86. Dr Eccles highlighted another method in which the weediness of moth plant could be inadvertently increased through the introduction of a new species. He noted that it has been acknowledged that milkweeds such as moth plant have pollinia. These masses of pollen grains attach to pollinating insects upon contact with flowers. He stated that some beetles assist with pollination as the pollen is a staple of their diets. As these beetles consume pollinia, they may also defecate within other flowers which can facilitate pollination and therefore, progress reproduction to enable moth plant hosts to produce more seeds to disperse. Dr Eccles concluded that the potential risks of releasing a new organism could outweigh the perceived benefits.
87. Dr Eccles ended with statements on the lack of conclusive evidence supporting *Freudeita cf cupripennis* being an effective biological control agent in its native habitat. He noted that according to scientific literature, adult *Freudeita cf cupripennis* individuals feed on foliage and larvae feed on the roots. He highlighted that in its native habitat of South America, poor results were observed in relation to defoliation and moth plant root consumption by *Freudeita cf cupripennis*.
88. Dr Eccles concluded that it appeared the efficacy of *Freudeita cf cupripennis* as a biological control agent of moth plant had not been adequately established to warrant consideration for a release.
89. In relation to a question from the Committee, Dr Eccles believed that physical removal of moth plant was still a sufficient method of control given the lack of research and evidence on moth plant dispersal and establishment in New Zealand.

End summary of hearing

90. The hearing was adjourned and closed on 1 May 2019.
91. The Committee would like to thank all people who submitted the information that was used in making this decision. Public submissions provide a focus for the Committee on points that need clarification, and the Committee found the submissions and the applicant’s responses very helpful in its consideration of the application.

Organism description

92. The organism proposed for release is:

Taxonomic Unit	Classification
Class	Insecta
Order	Coleoptera
Family	Chrysomelidae
Genus	<i>Freudeita</i>
Species	<i>confer cupripennis</i> (Lefèvre, 1877)
Common name	Moth plant beetle

Inseparable organisms

93. No inseparable organisms associated with *Freudeita cf cupripennis* were identified.

Assumptions for risk assessment

94. The Committee noted that there is uncertainty about whether or not *Freudeita cf cupripennis* will successfully establish self-sustaining populations and have an impact on moth plant populations in the New Zealand environment. The Committee considered that if the beetle fails to establish, there will not be any significant effects from its release. Conversely, if *Freudeita cf cupripennis* successfully establishes, any effects would be at their greatest. Therefore, the Committee assessed the benefits and risks and the minimum standards associated with the release of the beetle based on the establishment of self-sustaining populations in the environment.

Identification and assessment of potentially significant adverse effects

95. The Committee considered the potential risks and costs of the release of *Freudeita cf cupripennis* including any potentially significant adverse effects on the environment, public health, people and communities, the market economy, and Māori culture, traditions, and the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

Potential adverse effects on the environment

96. The Committee considered the potential for *Freudeita cf cupripennis* to cause adverse effects if the actions by the beetle damage and reduce populations of native plants, the beetle interferes with trophic webs and is highly effective at reducing moth plant populations that would in turn, facilitate an invasion of sensitive habitats by potentially worse weeds.

97. The Committee also considered the potential for *Freudeita cf cupripennis* to interbreed or hybridise with native beetle species.

Risks to non-target native plant species

98. The Committee considered the host range experiments that had been undertaken to examine if *Freudeita cf cupripennis* could attack non-target native plant species.

99. The Committee noted that host range testing involved two of three native species that were selected to represent the genus *Parsonsia*. The third one, *P. praeruptis*, confined to North Cape in

the North Island, was considered by the applicant to be outside the actual range of moth plant; furthermore, the genus *Parsonsia* is already represented in the tests by two other native species.

100. The Committee noted the results of the host range testing which indicated that no species outside the sub-tribe of the target weed was attacked by either adult or larval forms of *Freudeita cf cupripennis*. The Committee noted that only one species outside the sub-tribe Oxypetalinae, *Hoya carnosa*, was observed to be insignificantly targeted by *Freudeita cf cupripennis* with two out of 50 larvae feeding on the plant and then further developing into adults.
101. The Committee concluded that native plant species are not at risk of attack by *Freudeita cf cupripennis* due to *Freudeita cf cupripennis* having a strong preference for moth plant in host testing.

Interference with ecosystem interactions and food webs

102. The Committee noted that while potential reductions of moth plant populations may occur from the release of *Freudeita cf cupripennis*, the occupation of the niche by another weed remains hypothetical. The Committee concluded that if there were to be any occurrence of another weed occupying the niche of moth plant, proper control measures for the new pest could be investigated prior to the pest becoming significant to native habitats.
103. The Committee noted that moth plant established in New Zealand more than 130 years ago but no specialist moth plant feeding invertebrates were found in New Zealand during a survey carried out between October 2002 and March 2004 by MWLR and DOC. The Committee noted that among the 100 species collected on the vine, only two exotic invertebrates, passionvine hopper (*Scolypopa australis*) and occasionally the oleander aphid (*Aphid nerii*) were found in high numbers. These species are associated with a number of other plant species and therefore do not depend on moth plant populations.
104. The Committee noted that the introduction of *Freudeita cf cupripennis* could potentially represent a new source of food for birds and other insectivores, but no information was found on the role the beetle in the food-web or its potential toxicity in its native environment.
105. The Committee concluded that the release of *Freudeita cf cupripennis* would not interfere or have adverse effects on ecosystem interactions and trophic webs.

Establishment of potentially worse weeds

106. The Committee noted that a potential reduction in moth plant populations could lead to the emergence of other exotic and invasive weeds already present in New Zealand. Vine weeds, such as old man's beard or Japanese honeysuckle found in similar environments, could take advantage of the decrease of moth plant populations.
107. The Committee concluded that while it is likely that other weeds could replace moth plant, the occupation of the moth plant niche by another weed remains hypothetical.
108. The Committee concluded that if this occurred, proper control measures for the new weed could be investigated in good time

Risk of hybridisation

109. The Committee considered the potential of *Freudeita cf cupripennis* to hybridise with native or introduced beetle species.
110. The Committee noted that there are no native or introduced species in the *Freudeita* genus present in New Zealand, therefore, the potential for hybridisation would not occur with *Freudeita cf cupripennis*.

111. The Committee concluded that the release of *Freudeita cf cupripennis* is unlikely to have adverse impacts on ecosystem interactions and food webs.

Potential adverse effects on the economy

112. The Committee considered the potential adverse impact on the market economy if *Freudeita cf cupripennis* attacks target non-target plant species that are of economic value such as exotic ornamental plants.

113. The Committee noted that laboratory tests revealed that the moth plant beetle would only significantly target the most closely related species found in New Zealand which is Tweedia (*O. caeruleum*).

114. The Committee noted that Tweedia is an exotic species without high economic value and propagation of the species is restricted to specialised nurseries and gardeners.

115. The Committee concluded that the release of *Freudeita cf cupripennis* is highly improbable to have adverse effects on the New Zealand market economy.

Potential adverse effects on Māori culture, traditions, and Te Tiriti o Waitangi

116. The Committee took into account the possible effects on the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, valued flora and fauna, and other taonga, and the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

117. The Committee noted that the applicant engaged with Māori in 2011 when the applicant applied for the release of the moth plant beetle and in 2015 for the release of the moth plant rust, *Puccinia araujiae*. Te Herenga, Ngāi Tahu and Ngāpuhi HSNO Komiti were informed in 2018 of the new proposal.

118. The Committee noted that in 2011, the applicant contacted and invited 169 iwi, hapū, and Māori organisations and individuals making up the ERMA (now EPA) Māori National Network. Māori were generally not opposed to the introduction of the biological control agent but raised concerns around the potential impact of the moth plant beetle on native flora/fauna and on garden species, as well as, how it would interact and potentially shape or modify native food webs and ecosystems, and if the moth plant beetle could be controlled or eradicated once established

119. The Committee noted that in 2015, the applicant contacted authorities of all iwi in the Northland region but received no responses.

120. The Committee noted that no further consultation was undertaken in 2018 for the release of *Freudeita cf cupripennis*.

121. The Committee noted that the EPA's Kaupapa Kura Taiao (KKT) team completed a cultural risk assessment in conjunction with the staff assessment report. The Committee noted that KKT assessed the level of effect of this application to be minimal, that it provides sufficient information to take into account the principle of 'active protection' under the Treaty of Waitangi and is therefore consistent with the requirements under section 8 of the HSNO Act (1996).

122. The Committee noted Māori concerns about the potential release of another exotic organism and its potential to impact people and the environment. The Committee also noted Māori concerns in relation to the continued use of pesticides.

123. The Committee considered the application to be broadly consistent with the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) including the principle of active protection.

124. The Committee noted that no risks to native or taonga species, ecosystems and traditional Māori values, practices, health and well-being were identified in the application.
125. The Committee considered that it is unlikely that the beetle would have adverse effects on taonga species and concluded the risk to be negligible.
126. The Committee noted that any potential risks from the release of *Freudeita cf cupripennis* to Māori interests are likely to be acceptable.
127. After assessing all the information, the Committee did not identify any adverse effects on the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, valued flora and fauna, and other taonga.

Potential adverse effects on public health and people and communities

128. The Committee did not identify any significant adverse effects on public health and people and communities from the application to release *Freudeita cf cupripennis*.

Identification and assessment of potentially significant beneficial effects

129. The Committee considered the potential benefits of the release of *Freudeita cf cupripennis*, including any potentially significant beneficial effects on the environment, public health, people and communities, the market economy, and Māori culture, traditions, and the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

Potential benefits to the environment

130. The Committee considered whether *Freudeita cf cupripennis* would reduce the abundance of moth plant populations, which would reduce the ability of the weed to spread within existing sites and to new habitats.
131. The Committee also considered whether control of moth plant by the biological control agent would lead to significant reductions in pesticide use and incidences of non-target damage.
132. The Committee also considered whether control of moth plant would lead to reduced incidences of adverse health effects from exposure to the caustic and toxic milky sap moth plant exudes when stems and fruit are damaged.
133. The Committee considered whether control of moth plant would lead to enhanced experiences of recreational areas.

Limiting the risk of the spread of moth plant and invasion into new sites will improve biodiversity values

134. The Committee noted that DOC considers moth plant to be one of the 13 worst weeds in New Zealand with moth plant posing a significant threat to native habitats such as offshore islands, forests, lake margins and wetlands.
135. The Committee noted that in host testing, *Freudeita cf cupripennis* had a strong preference for moth plant over native plant species.
136. The Committee considered that through the action of *Freudeita cf cupripennis* reducing moth plant populations, the future expansion of moth plant into unmanaged and natural habitats may be curtailed. The Committee noted that moth plant has not yet reached its full range in New Zealand and the use of *Freudeita cf cupripennis* is likely to decrease its entry into and rate of invasion of native environments that provide habitats for native and beneficial exotic species.

137. The Committee noted that the release of *Freudeita cf cupripennis* is expected to improve biodiversity values through the decrease of moth plant populations. The Committee noted that the potential removal of the moth plant mat that covers native ground vegetation and vines which intrude the canopy will allow for light to penetrate the forest floor again and enable native plant species to re-establish.
138. The Committee noted that the expected reduction of moth plant populations will lead to a reduction of seed production further reducing the spread and adverse impacts in the environment.
139. The Committee noted that a major benefit from the release of *Freudeita cf cupripennis* would be that the beetle is capable of reaching inaccessible moth plant populations which would lead to a reduced reliance on physical or chemical control methods. The Committee noted that reduced chemical and physical efforts would allow volunteers to allocate more of their time to other significant environmental projects such as the control of other invasive weeds.
140. The Committee noted that biological control is thought to be the only effective option for long-term sustainable management of moth plant in native and unmodified habitats, especially where dense infestations are beyond physical and chemical control as it is too costly and unmanageable.
141. The Committee concluded that it is likely the release of *Freudeita cf cupripennis* would reduce the vigour and abundance of moth plant in New Zealand, thus reducing its progressive invasion of existing and new habitats and sustaining biodiversity which may be at risk from moth plant in the future. The Committee concluded that it is likely the release of *Freudeita cf cupripennis* would improve biodiversity values through reduced expansion and establishment of moth plant which, in turn, would assist in the emergence and establishment of native plants to these habitats.

Reductions in chemical usage

142. The Committee noted that moth plant populations are largely controlled by manual removal, herbicide gel use and the careful spraying of herbicides only in large infestations in order to avoid severe damage to other plants.
143. The Committee noted the difficulty with using broad-spectrum herbicides as the climbing nature of moth plant makes it challenging to obtain effective results for eradication or control.
144. The Committee noted that the manual cut and paste method with herbicide gel is largely used by volunteers whereas professional contractors or council staff are more likely to use spray methods.
145. The Committee noted the slow nature of manual methods such as hand weeding and applying herbicide gel with limited results as inaccessible properties and hidden localities allow moth plant to continually proliferate and reinfest cleaned areas.
146. The Committee concluded that it is unlikely the release of *Freudeita cf cupripennis* will lead to a reduction in overall herbicide usage since volunteers only use a small quantity of herbicide gel and spraying will continue to be used by operators to control many other weeds.
147. The Committee concluded that as a result, the moth plant beetle will have a minimal impact on herbicide usage nationally but may have some effects locally.

Potential benefits to the market economy

148. The Committee considered the economic benefits of the release of *Freudeita cf cupripennis* through reduced pesticide costs.
149. The Committee also considered the perceived economic benefits that are challenging to quantify financially, such as efforts of volunteers and community groups in controlling and eradicating moth plant in their spare time.

Reductions in costs attributed to herbicide use

150. The Committee considered the financial cost of controlling or eradicating moth plant through herbicide usage. The Committee noted that actual costs attributed to moth plant are difficult to determine as most funded weed control programmes target multiple weeds and as a result, the cost of controlling moth plant can only be estimated.

151. The Committee concluded that the release of the beetle is likely to reduce moth plant in areas designated for management or eradication of the plant. The Committee concluded that the release of the beetle is unlikely to reduce financial costs to landowners, territorial authorities, land managers and agencies as volunteers only use a small quantity of herbicide gel and spraying by operators will continue to control other weeds.

Increased time, effort and disposable income for volunteers

152. The Committee considered the financial, physical and mental benefits for volunteers and members of the public in community groups who dedicate their time and efforts in controlling and eliminating moth plant in the environment.

153. The Committee acknowledged the difficulty in using financial measures to quantify the benefits of reduced time and effort spent by volunteers on removing moth plant.

154. The Committee considered that a reduction in community efforts for controlling moth plant would produce costs savings for individuals through reduced petrol usage when travelling to infested areas, increased disposable incomes and more spare time for individuals to spend their income which would in turn contribute to the local economy.

155. The Committee noted that these perceived benefits would vary between regional and local scales with financial benefits more likely on a local scale.

156. Taking into consideration the work of volunteers, the Committee concluded that the potential benefits of the release of *Freudeita cf cupripennis* on New Zealand's market economy varied from low to medium in regions where moth plant is well represented.

Potential benefits to people and communities

157. The Committee considered that the release of *Freudeita cf cupripennis* could indirectly improve the community through the potential reduction of contact between people and the poisonous plant.

158. The Committee noted that benefits on communities would vary across New Zealand. The Committee noted that greater community benefits will be gained where *Freudeita cf cupripennis* reduces moth populations in areas that are easily accessible to the public.

159. The Committee concluded that whilst there are likely to be benefits to people and communities from the release of *Freudeita cf cupripennis*, the benefits are predicted to be minimal at a national scale.

Potential beneficial effects on public health and on Māori and their relationship with the environment

160. The Committee did not identify direct benefits to public health or benefits that relate to Māori and their relationship with the environment specifically.

Weighing of beneficial and adverse effects

161. The Committee concluded that the potential risks and costs of releasing *Freudeita cf cupripennis* are **negligible** while the potential benefits are **non-negligible**.

162. Therefore, the Committee found the benefits outweighed the risks of releasing *Freudeita cf cupripennis*.

Minimum Standards

163. Under the provisions of Section 38 of the Act, the Committee considered whether *Freudeita cf cupripennis* meets the minimum standards set out in section 36 of the Act; specifically whether *Freudeita cf cupripennis* would not:

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

Potential to cause significant displacement of any native species within its natural habitat

164. The Committee considered the potential for *Freudeita cf cupripennis* to cause significant displacement of any native species within their natural habitats.

165. The Committee noted that host range testing and studies in its range indicate that *Freudeita cf cupripennis* is specific to plants in the sub-tribe of Oxypetalinae. The Committee noted that the closest related native plants found in New Zealand are in a different sub-family, Apocynoideae, and were not attacked by the beetle in host testing.

166. The Committee considered it unlikely for *Freudeita cf cupripennis* to cause significant displacement of any native plants in their natural habitat as *Freudeita cf cupripennis* had a strong preference for moth plant over native species in host testing.

167. The Committee concluded that *Freudeita cf cupripennis* is not likely to cause significant displacement of any native species within its natural habitat.

Potential to cause significant deterioration of natural habitats

168. The Committee considered the potential for *Freudeita cf cupripennis* to cause significant deterioration of natural habitats.

169. The Committee noted that *Freudeita cf cupripennis* could potentially cause adverse indirect effects on ecosystem interactions such as food webs. The Committee found that the likelihood of significant adverse indirect effects in the ecosystem is very unlikely since the agent would not cause excessive pressure on native insect species or natural habitats through interactions such as a lack of food for specialised herbivores.

170. The Committee concluded that based on host specificity, *Freudeita cf cupripennis* does not feed on native plants and will not cause significant deterioration of native habitats.

Potential to cause significant adverse effects on human health and safety

171. The Committee considered the potential for *Freudeita cf cupripennis* to cause significant adverse effects on human health and safety.
172. The Committee concluded that *Freudeita cf cupripennis* is not likely to cause any significant adverse effects on human health and safety.

Potential to cause significant adverse effects on New Zealand's inherent genetic diversity

173. The Committee considered the potential of *Freudeita cf cupripennis* to cause adverse effects on New Zealand's inherent genetic diversity. The Committee considered that this could occur through potential cross-breeding with other *Freudeita* beetle species in New Zealand.
174. The Committee noted that there are no native or exotic *Freudeita* beetles in New Zealand that could interbreed with *Freudeita cf cupripennis*.
175. The Committee concluded that *Freudeita cf cupripennis* is not likely to cause any significant adverse effect to New Zealand's inherent genetic diversity.

Potential to cause disease, be parasitic, or become a vector for disease

176. The Committee considered the potential for *Freudeita cf cupripennis* to cause disease, be parasitic, or become a vector for human, animal, or plant disease, resulting in damage to species other than moth plant.
177. The Committee noted that this biological control agent is not known to cause disease or become a vector for animal, plant or human disease in their native range.
178. The Committee concluded that *Freudeita cf cupripennis* is not likely to cause disease, be parasitic, or become a vector for disease.

Conclusion on the minimum standards

179. The Committee was satisfied that *Freudeita cf cupripennis* meets the minimum standards set out in section 36 of the HSNO Act.

Ability of the organism to establish undesirable self-sustaining populations

180. In accordance with section 37 of the Act and clauses 10(e) and (f) of the Methodology, the Committee took into consideration the ability of *Freudeita cf cupripennis* to form undesirable self-sustaining populations, and the ease of eradication of such populations.
181. The Committee noted that the intention of the importation and release of *Freudeita cf cupripennis* is to establish and develop self-sustaining populations, in order to control moth plant. Further, they considered that in order for a self-sustaining population of *Freudeita cf cupripennis* to be undesirable, it would need to cause undesirable adverse effects.
182. The Committee considered that any population of *Freudeita cf cupripennis* will be desirable since that is the foundation of a classical biological control strategy, and that this agent is not likely to cause adverse effects in the New Zealand environment.
183. The Committee noted that the potential risks of releasing *Freudeita cf cupripennis* are negligible and that if any population of *Freudeita cf cupripennis* were found to be undesirable, it would be

difficult and expensive to eradicate such a population without the application of non-specific pesticides.

184. The Committee concluded that it is highly improbable that *Freudeita cf cupripennis* would form undesirable self-sustaining populations.

Achieving the purpose of the Act

185. The purpose of the Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms (section 4 of the Act).

186. In order to achieve the purpose of the Act, when considering the application the Committee recognised and provided for the following principles (section 5) of the Act:

- a. the safeguarding of the life-supporting capacity of air, water, soil and ecosystems
- b. the maintenance and enhancement of the capacity of people and communities to provide for their own economic, social and cultural well-being and for the reasonably foreseeable needs of future generations.

187. The Committee took into account the following matters when considering the application in order to achieve the purpose of the Act (sections 6, 7 and 8 of the Act):

- a. the sustainability of all native and valued introduced flora and fauna
- b. the intrinsic value of ecosystems
- c. public health
- d. the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, valued flora and fauna, and other taonga
- e. the economic and related benefits and costs of using a particular hazardous substance or new organism
- f. New Zealand's international obligations
- g. the need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects
- h. the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

188. The Committee is satisfied that this decision is consistent with the purpose of the Act and the above principles and matters. Any substantive issues arising from the legislative criteria and issues raised by submitters have been discussed in the preceding sections of this decision.

Decision

189. After reviewing all of the information contained in the application, the Committee was satisfied that the application met the requirements of section 34 of the Act. In any event, in accordance with section 59(3)(a)(ii), the Committee waives any information requirement that has not been met.

190. The Committee considered that the threshold for approval under section 38 of the Act has been met. It is satisfied that the organism meets the minimum standards set out in section 36 of the Act, and that the beneficial effects of the organism outweighs the adverse effects of the organism, taking into account all of the following:

- all the effects of the organism and any inseparable organisms,
- the matters in section 37 of the Act,
- the relevant matters in Part 2 of the Act; and

- the Methodology.

191. The Committee decided to exercise its discretion and **approve** the import for release and/or release from containment of *Freudeita cf cupripennis* under section 38(1)(a) of the Act. The Committee noted that in accordance with section 38(2) of the Act, the approval has been granted **without controls**.

192. The Committee noted that under section 38(3) of the Act, if *Freudeita cf cupripennis* has not been released within five years of the date of this decision, this approval for release will lapse. However, any person may apply before the expiry of the time limit for an extension of that time limit for a further period of up to five years.

193. The Committee has waived the requirement under section 38(4) of the Act, to notify the Authority of the release of *Freudeita cf cupripennis*.



13 May 2019

Dr Kerry Laing
Chair, Decision Making Committee
Environmental Protection Authority

Date

Organism	Approval code
<i>Freudeita confer cupripennis</i> Lefèvre, 1877	NOR100170