NO2N Import into containment any new organism that is not genetically modified

This is an example application based on an application from the Canterbury Broom Group for the import of biological controls agents for Broom

Application title:

Import into containment of the broom biological control agents *Aceria genistae* and *Agonopterix assimillela* for breeding purposes

Applicant organisation:

Canterbury Broom Group

Please provide a brief summary of the purpose of the application (255 characters or less, including spaces)

To import into containment the broom biological control agents *Aceria genistae* and *Agonopterix assimillela* for breeding purposes.

PLEASE CONTACT ERMA NEW ZEALAND BEFORE SUBMITTING YOUR APPLICATION

Please clearly identify any confidential information and attach as a separate appendix.

Please check and complete the following before submitting your application:

All sections completed	Yes
Appendices enclosed	Yes/NA
Confidential information identified and enclosed separately	Yes/NA
Copies of references attached	Yes/NA
Application signed and dated	Yes
Electronic copy of application e-mailed to ERMA New Zealand	Yes

Signed: **Date:**

Section One – Applicant details

Name and details of the organisation making the application:	
Name:	Canterbury Broom Group
Postal Address:	PO Box 39-141, Christchurch
Physical Address:	35 Sheffield Cresent, Christchurch
Phone:	03 123 4567
Fax:	03 123 4567
Email:	Jbloggs@email.com
Name and details of the key contact person:	
Name:	H Gourlay
Postal Address:	Landcare Research, PO Box 69, Lincoln
Physical Address:	
Phone:	03 123 4567
Fax:	03 123 4567
Email:	As above
Name and details of a contact person in New Zealand, if the applicant is overseas:	
Name:	
Postal Address:	
Physical Address:	
Phone:	
Fax:	
Email:	

Note: The key contact person should have sufficient knowledge of the application to respond to queries from ERMA New Zealand staff.

Section 2: Purpose of the application

Lay summary of the application (approximately 200 words)

Note: This summary should include a description of the organism(s), the purpose of the application or what you want to do with the organisms(s)

Use simple non-technical language

The proposed project is to import *Aceria genistae* and *Agonopterix assimillela* into containment. These organisms will be used for breeding purposes with the longer term goal of releasing them to act as part of a suite of biological control agents for the controls of broom in New Zealand. These insects have been selected as potential biological controls agents because they specifically attack broom plants, therefore, no known adverse effects of impacts are predicted if an accidental release were to occur.

Invasion of broom has dramatically reduced pasture production and seriously affected conservation and forestry land values. The costs of reduced production from broom infestations in New Zealand have been estimated at $20 million annually and conservative annual estimated costs for its control in 1980-81 were around $1.2 million (Syrett, 1987). Control costs for forestry, where broom accounts for 40% of production losses, were estimated at $1.6 million annually in 1985.

Describe the background and aims of the project

Note: This section is intended to put the organism(s) in perspective of the wider project(s) that they will be used in. You may use more technical language but make sure that any technical words are included in the Glossary.

Broom (*Cytisus scoparius*) (L.) was introduced into New Zealand in the mid 1800s and is now considered to be a weed species of national importance in both pastoral and conservation land (Dowle 1971). Its ability to rapidly invade extensive new areas and grow vigorously at high altitude threatens extensive areas of hill and high country (Stevens and Hughes, 1973).

The Canterbury Broom Group, a community based project funded by farmers, Forestry groups, MAF, and regional councils throughout New Zealand, seek approval to import into containment *Aceria genistae* (Nalepa, 1892), the broom gall mite, and the leaf feeding moth *Agonopterix assimillela* (Hübner, 1825). *A. genistae* and *A. assimillela* are two of eight species selected as possible biological control agents for broom. *A. genistae* and *A. assimillela* have been shown to be host specific and therefore present a very low risk to other biota in New Zealand.

The overall aim is to apply to release *A. genistae* and *A. assimillela* to assist in the control of Broom. Together with the biological control agents already released in New Zealand, *Bruchidius villosus* (broom seed beetle) and *Arytainilla spartifoliella* (broom psyllid), this suite of insects is expected to have a significant impact on broom plant populations in New Zealand.

Section Three – Identification of the organism(s) to be imported

Complete this section separately for each new organism to be imported.

Identification of the organisms to be imported

Latin binomial, including full taxonomic authority:	*Aceria genistae* (Nalepa, 1892)
Common name(s), if any:	Broom gall mite
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Insect
Taxonomic class, order and family:	Insecta, Acarina, Eriophyidae
Strain(s) if relevant:	N/A
Other information, including presence of any inseparable or associated organisms and any related animals present in New Zealand:	There are no known pathogens or parasites of *A. genistae*. Predatory mites are known to attach *A. genistae* and all imported material will be microscopically examined before shipment to ensure no predators are imported.

Latin binomial, including full taxonomic authority:	*Agonopterix assimilella* (Hübner 1825)
Common name(s), if any:	Broom leaf-tying moth
Type of organism (eg bacterium, virus, fungus, plant, animal, animal cell):	Insect
Taxonomic class, order and family:	Insecta, Lepidoptera, Oecophoridae
Strain(s) if relevant:	N/A
Other information, including presence of any inseparable or associated organisms and any related animals present in New Zealand:	We intend to import adult moths into New Zealand containment for which there are no known parasitoids, therefore, the risk of parasitism in the imported material is extremely low.

Section Four – The proposed containment System

Describe the containment facility and the proposed containment system (physical and operational)

Question	Answer
Which MAF/ERMA Standard is this containment facility approved under?	MAF/ERMA New Zealand Standard *Transitional and Containment Facilities for Invertebrates*
What physical containment level (AS/NZS 2243: 2002) is this containment facility registered to (where relevant)?	PC2
What other physical measures do you propose to use to contain this organism?	All insects will be held in sealed clear plastic cages, within a sealed quarantine room. If an escape is detected within this quarantine room and the escapees cannot be counted and returned (as in the case of the mites) then all insect containers in the room will be sealed using sticky tape. These containers will then be removed to another room and the sealed quarantine room will be fumigated. Sticky insect traps will also be hung from the ceiling in the containment facility.
What procedural and operational measures do you propose to use to contain this organism?	Only trained and authorised personnel will have access to the quarantine containment facility. Every shipment of *A. genistae* and *A. assimilella* brought into New Zealand will be placed into containment and screened for pathogens to minimise/eliminate any risk. Any unwanted organisms found will be eliminated by line rearing each individual adult and larva until a disease free line is established. All inseparable insects, or diseases will be eliminated by autoclaving any infected material.
Any other information relevant to the containment of the organism.	The nearest field site where broom plants grow is located several hundred meters from the facility. The containment facility at Lincoln has operated continuously for 20 years with no notifiable incidents or escapes.

Describe the characteristics of the organism to be imported that may influence its ability; to escape from containment, to form a self sustaining population, or to cause adverse effects. *Refer to sample applications for guidance on how to answer these questions.*

Question	Answer
What are the characteristics of the organism that may prevent/enable it to escape from containment? *eg size, spore production, infectivity, seed/pollen characteristics etc.*	While adult insects of both *A. genistae* and *A. assimilella* are the most active stage in terms of dispersal, it is desirable to import the adult stage rather than eggs or larvae due to their resilience and ease of capture. *A. genistae* is a simple invertebrate which behaves in a similar way to a parasite. It penetrates plant tissue and feeds directly on simple sugars produced by the plant. Infestation with *A. genistae* leads to the formation of galls or tissue masses. Infested galls develop at the base of growing stems and contain massive colonies of overlapping generations of the mite. The formation of galls diverts nutrients from the reproductive parts of the plant thereby preventing flowering and seed production. *A. genistae* mites are reliant on their host for food and physical protection and often do not survive for more than a few hours outside the host. Therefore, reducing the likelihood of the mites being able to escape containment. *A. genistae* mites have been demonstrated to be host specific as gall formation was not observed in any of the 11 plant species, including native and valued introduced species, from the family Fabaceae to which *C. scoparius* belongs. The reproductive behaviour of *A. genistae* is not well understood but it is known that the mites have the capacity to produce off-spring both with and without sexual recombination. Adult *A. assimillela* moths are light brown in colour and are approximately 10 mm in length. While it is the adult stage that will be imported, the the larvae are what cause the damage. The larvae feed on leaves and stems. Following a period of dormancy mating occurs accompanied by egg laying into autumn. Emerging larvae bore into the stem of *C. scoparius*, overwintering until the following summer, when they emerge to feed within a protective webbing formed around a twig joint

	(hence the common name of this insect "broom leaf-tying moth"). Pupation occurs in the soil with the adults re-emerging the following spring. Initial host-specificity testing in the laboratory indicates that the moths are host-specific to the tribe Genisteae – of which there are no New Zealand native members. Preliminary results suggest that feeding is more specific in the field being limited to *C. scoparius*.
How could this organism escape from containment? *ie what are the possible pathways for escape?* *How does the proposed containment regime address these pathways?*	Possible pathways of escape are: • Escape during transport to containment facilities, • accidental or deliberate escape from enclosure, • escape due to accidental/unintentional or deliberate removal by people, and • escape from containment following natural disaster (flood, earthquake etc.) or fire. The containment provisions required by standard 154.02.08 require measures to be taken to prevent escape via any of these pathways.
If it were to escape, could this organism establish a population outside of containment in New Zealand? *ie what conditions are required for growth and reproduction? And are those conditions present in New Zealand?* *What factors might prevent this from occurring?*	In the event that an accidental escape of *A.genistae* or *A. assimilella* did occur these insects could establish a self-sustaining population. However, given the host specificity of both insects to broom such a population would not be considered undesirable.
If a population did establish could it be eradicated? How? Would it be noticed immediately? How would such a population be identified?	To eradicate a self-sustaining population a systemic organophosphate insecticide would be required. However, the blanket spraying of any area using such chemicals would pose a major environmental and health risk. Therefore, limiting or eradicating a population of escaped insects may prove to be impractical.

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Additional information	

Section Five – Identification and assessment of effects

Identify and assess the effects of the organism. Look primarily at the effects if the organism remains in containment, but also consider what might happen if the organism were to escape. If the organism were to escape think about what additional things would need to occur for these effects to be realised.

What are the beneficial effects of the organism(s) and the application? *These benefits must be relevant to the purpose and scope of the application*

The benefits to Landcare Research of developing rearing methodologies for these insects while in containment in New Zealand include better training and experience for staff in the biological control of weeds group.

Landcare Research and its staff will have an improved understanding of the biological control of broom and the phenology/biology of this insect.

Recognition of Landcare Research as a leader in the field of biocontrol of broom, and in experimental procedures for the host testing of potential control agents will be enhanced. This may lead to Landcare Research being given further international contracts.

This project fits into the philosophy and mission statement of Landcare Research.

What adverse effects could this organism have on the environment? *For all stages of the life cycle*

A. genistae or *A. assimilella* could cause minor to moderate feeding damage to native or valued introduced plants depending on the species affected and the level of damage. However, these insects have been selected for their potential for their host specificity to broom plants only. Furthermore, for any adverse effect on the environment, the insects would first need to escape and form a self-sustaining population, which is highly improbable given the containment measures proposed

A. genistae or *A. assimilella* could cause minimal to moderate damage if they were to hybridise with native fauna and reduce genetic diversity. However, for this to occur, an individual would need to escape from containment, find a compatible mate and produce a hybrid of sufficient fitness that it is capable of diluting the parental gene pool, this is highly improbable given the containment measures proposed.

The import of *A. genistae* or *A. assimillela* could potentially lead to the introduction of parasites and pathogens that could themselves escape containment and have an adverse effect on native or valued introduced fauna. However, given the strict requirements of quarantine procedures under the Biosecurity Act and the observation that there are no known parasites or pathogens of the adult stages of *A. genistae* or *A. assimillela* it is highly improbable that this effect could occur.

What adverse effects could this organism have on public health? *For all stages of the life cycle*

It is highly improbably that either *A. genistae* or *A. assimillela* would have an adverse effect on human health as neither are listed in Medical Insects and Arachnids. Furthermore, *A. genistae* has been approved for release in Australia suggesting that this species is not expected to have a negative impact on human health nor cause a nuisance effect.

What adverse effects could this organism have on the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, valued flora and fauna and other taonga (taking into account the principles of the Treaty of Waitangi)?
We foresee no negative effects on the relationship of Māori and their culture, traditions and ancestral lands. Māori will be consulted should these insects prove to be suitable control agents and an application for release is made.
Are there any other potential adverse effects (including effects on New Zealand's international obligations, society and community or the market economy)?
None known.
Are there any ethical considerations associated with the organism or the proposed research?
None known.

Section Six – Additional Information

Additional Information	Y/N	If yes, explain
Do any of the organism(s) need approvals under any other New Zealand legislation?	Y	Insects imported into containment are also regulated by the Biosecurity Act 1993. As part of this process an import health standard, which ensures screening to eliminate any pathogens or parasitoids, must be adhered.
Does New Zealand have any international obligations relating to (any of) the organism(s)?	N	
Have any of the new organism(s) in this application previously been considered in New Zealand or elsewhere? What was the outcome	Y	CSIRO, Canberra, Australia has imported *A.genistae* into containment and have received permission for release.
Is there any additional information that you consider relevant to this application that has not already been included?	N	

Provide a glossary of scientific and technical terms used in the application:
N/A
List of appendices:
N/A
List of references:
Emmet, AM 1988. A Field Guide to the Smaller British Lepidoptera, 2nd edition. The British Entomological and Natural History Society, London. Book Harper, M.W., Langmaid, J.R. & Emmett, A.M. 2002. Oecophoridae. In: Emmett, A.M. and Langmaid,J.R. (Eds.) The moths and Butterflies of Great Britain and Ireland Volume 4 (part 1). Harley Books, UK. Book Dowle, W.M. 1971. Comment: weeds in high country. Tussock Grasslands and Mountain Lands Institute Review 22: 15-17 Castagnoli, M. 1978: Ricerche sulle cause di deperimento e moria dello Spartium junceum L. in Italia. Eriophyes genistae (Nal.) e E. Spartii (G. Can.) (Acarina, Eriophyoidea): ridecizione, cenni di biologica e Danni. Redia 61: 539-550. Book Paynter Q, Shaw RH, Thomann T 1998. Report on weed work for New Zealand, report for 1998. Project XB 0879. Unpublished report of the International Institute of

Biological Control, Ascot UK, 1998:

Stevens, E.J. and Hughes, J.G. 1973: Distribution of sweet brier, broom and ragwort on Molesworth Station. Tussock Grasslands and Mountain Lands Institute. Special publication No. 9. 16pp + maps.

Syrett, P. 1978: The biological control of broom (Cytisus scoparius) in New Zealand: An Environment Impact Assessment. 46pp. Book