

Application to

Import a new organism into containment

That is not a genetically modified organism

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ENVIRONMENTAL RISK MANAGEMENT AUTHORITY



NGĀ KAIWHAKATŪPATO WHAKARARU TAIAO

Publication number 121/01

Please note

This application form covers the importation of a new organism into containment that is **not a genetically modified organism** under s39 of the Hazardous Substances and New Organisms (HSNO) Act. This form may be used to seek approvals for more than one organism where the organisms are of a similar nature.

Do not use this form for genetically modified organisms. If you want to import a genetically modified organism into containment please use the form entitled *Application to import genetically modified organisms into containment*.

This is the approved form for the purposes of s40 (2) of the HSNO Act and replaces all other previous versions.

Confidential information must be collated in a separate appendix. You must justify why you consider the material confidential and make sure it is clearly labelled as such.

The Environmental Risk Management Authority (ERMA New Zealand) may approve the importation of a new organism into containment for a variety of purposes such as research, conservation, production of biopharmaceuticals, display etc. If approved, the organism must be held in a containment facility that is registered with the Ministry of Agriculture and Forestry (MAF) and in accordance with any other controls imposed on the approval. Once an approval is granted, any person may use the approval to import a new organism of the same species provided the same conditions are met.

You must sign the application form and enclose the application fee (including GST). ERMA New Zealand will not process applications that are not accompanied by the correct application fee.

ERMA New Zealand may decide to publicly notify this application if it considers there is likely to be significant public interest in it. The fee is more for notified applications. For more information regarding fees refer to our Fees and Charges Schedule on our website at www.ermanz.govt.nz.

If you have any queries regarding the information required or would like to discuss your draft application form, please contact a New Organisms Advisor at ERMA New Zealand or email noinfo@ermanz.govt.nz.

An electronic and paper copy of the final completed form must be submitted.

This form was approved on 6 May 2010 by the Chief Executive of ERMA New Zealand acting under delegation from the Authority.

Section 1: Application details:

a) Application title

Tropical Butterfly Importation

b) Organisation name

Otago Museum

c) Postal address

PO Box 6202, Dunedin 9059
419 Great King St, Dunedin 9016
(03) 474 7474
(03) 477 5993
mail@otagomuseum.govt.nz

Section 2: Provide a plain language summary of why you are importing the organism and the benefits/risks of holding the organism in containment.

This application is to support our proposal to bring additional species of tropical butterflies, not currently able to be imported into New Zealand, to complement and extend the approved species the Otago Museum presently holds in our Tropical Forest containment area. These additional species will allow a greater diversity for display and education to be offered to our visitors.

We are proposing to import 53 additional species of tropical butterflies: These species of tropical butterfly have been identified as those which will most effectively fulfil the purposes of display diversity and education for visitors to the Tropical Forest, whilst being non-harmful and non-invasive to New Zealand flora and fauna.

Section 3: Purpose of your Application

a) Which of the following best describes the purpose of your application?

Fermentation or regeneration of a new organism	N
Field test a new organism	N
Conservation of genetic material	N
Public display including – but not limited to – circus or zoological garden	Y
Maintaining for use in an emergency	N
Maintaining to produce antigens, biopesticides, biopharmaceuticals, enzymes, hormones or vaccines for release	N
Maintaining for diagnostic purposes	N
Other	N

b) Explain why you believe your application meets this purpose

Part of the mandate of Otago Museum, as outlined in the Otago Museum Trust Board Act (1996) is to bring the world to Otago. The Tropical Forest has been created as a response to this mandate. New Zealand has only a very small number of native butterfly species and the opportunity to see and interact with live tropical butterflies and plants in a tropical environment is an opportunity which a large number of our community will never get to experience anywhere else. The vast amount of extremely positive feedback we have received to date is evidence of the success of this initiative.

The Otago Museum's Tropical Forest, a living environment populated with tropical plants and tropical butterfly species, has been open since November 2007. In that time the Tropical Forest has become a significant local, national and tourist attraction with over 250,000 visitors over the first two-year period. Additionally, a significant number of schools from the Otago and Southland regions have brought their students to the Tropical Forest to participate in the New Zealand curriculum-linked education programmes which our trained teachers develop and run in this area. The Tropical Forest is an accredited, MAF approved containment zone where imported pupae of approved butterfly species emerge in quarantine and are then released into the public area of the exhibit.

Our vision for the Tropical Forest is to provide a spectacular visual and educational experience. To achieve this we need to offer a wide variety of butterfly species. Increasing the range of species approved for import would enhance the quality of the exhibit, providing a broader visual spectacle. More importantly, it would allow greater opportunities to educate the public about both the tropics and our own more temperate lands. This audience includes the significant number of school groups – from all over Otago and Southland- who visit the Otago Museum Tropical Forest each year. Topics supporting the tropical areas of learning available to our schools include: the life and adaptations of tropical butterflies, rainforest ecology and preservation conservation and protection of our own flora and fauna. Within this authentic environment, students can be taught key values such as conservation and species management as they relate to the preservation of New Zealand's native flora and fauna.

The Tropical Forest offers a unique and intensely stimulating environment for our trained Communicators and Education Officers to assist students and adults to learn about the butterflies and other life contained therein. Species lifecycles, adaptations, habitats and food sources are examples of topics presented, all of which are wrapped in a conservation message. The reasons behind import regulations, and the importance of these -and other methods - in protecting the unique New Zealand environment, flora and fauna, are already being explored with these visitors. Increasing the variety and diversity of butterfly species on display in the Tropical Forest presents opportunities for this to occur in greater depth. In addition, visitors will be motivated to return to the Tropical Forest to observe the new species, thus gaining new learning and reinforcing existing knowledge.

Learning opportunities and overall visitor experience are maximised when we can provide species of butterflies that exhibit optimal display behaviours - such as flying during low light periods and at levels the visitor can easily observe. Only some of the species currently approved for import perform well in these circumstances. Species in this application have been selected to ensure the display of butterflies is always excellent

If this application to import additional species of tropical butterflies is successful, all

existing precautionary strategies will continue to be followed stringently. The butterflies will be imported in the same manner and following the same import procedures as the species already approved (see Appendix 1). The Tropical Forest is a MAF approved containment and quarantine facility, with precautionary measures and strategies employed which exceed the required MAF standards. Safety features include a staff member in the facility at all times, double doors with a darkened entry area between air curtains, plastic strips at the entrance, two separate mirror areas with text to advise visitors to check for 'hitch-hiking butterflies' when leaving, a MAF-approved anteroom area located adjacent to the facility, and mesh covered ventilation systems. Visitors are supervised and are informed of containment rules verbally at the ticket sale desk, with signage when entering and leaving, and by the Communicator staff member in the Forest itself. All staff who work in the Tropical Forest have been trained in containment requirements and access to the quarantine areas of the facility is limited to staff who have specific and intensive training in quarantine procedure.

The Otago Museum has a mandate to uphold and educate the public about the conservation and protection of the New Zealand natural environment; ensuring these precautionary measures are followed in the Tropical Forest is a natural part of this mandate. We are extremely cognisant and concerned about the conservation of existing New Zealand fauna and flora, as well as the conservation of the world's rainforests and butterfly species. To allow any risk to native resources would, therefore, be unacceptable to us.

In the improbable event of a tropical butterfly escaping from the Otago Museum containment facility, it would not survive outside of those controlled conditions. All species in the application come from tropical regions; New Zealand lies in a temperate climatic zone where temperatures and humidity levels are unsuitable for tropical species to survive. Therefore, even on a warm summer's day an escaped butterfly would become lethargic and stationary and would be unable to seek food. This would lead to death even in the unlikely event that the butterfly survived the cooler night temperatures. It would be impossible for a tropical butterfly at any stage (egg, caterpillar, pupa or adult) to survive over winter in New Zealand. This applies to all species in this application. Species that have home ranges that include temperate climate areas, or that routinely migrate to these areas have been excluded on the basis that they may be able to survive New Zealand conditions. In addition, the caterpillars of all of the proposed species feed on non-native plants. In the unlikely event of an escape, there is no risk of destruction or harm to native fauna and flora through being a food source for caterpillars.

Section 4: Identification of the proposed organism to be held in containment

NB Unless otherwise specified, all information regarding the presence of host plants in New Zealand and the relationship of host plants to native species has been sourced from Allan Herbarium (2000)

Genus:	<i>Archaeoprepona demophon</i> (Linnaeus, 1758) Synonym: <i>Prepona demophon</i> (Linnaeus, 1758)
Common name(s):	One-spotted prepona
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Greater Antilles (Brower, 2009)</p> <p>Host plants:</p> <p><i>Pithecellobium longifolium</i>.</p> <ul style="list-style-type: none">• Not present in New Zealand• Host species belongs to the family Fabaceae. New Zealand has no native species below the sub-family <p><i>Annona</i> species (Robinson, Ackerly, Kitching, Beccaloni and Hernandez, 2007)</p> <ul style="list-style-type: none">• <i>A. cherimola</i> is grown in northern New Zealand, particularly Bay of Plenty (Webb, Sykes and Garnock-Jones, 1988)• Host species belongs to the family Annonaceae. New Zealand has no native species in this family <p><i>Mollinidea brasiliensis</i>, <i>M. ovata</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none">• Not present in New Zealand• Host species belong to the family Monimiaceae. New Zealand has no native species in the genus <i>Mollinidea</i> <p><i>Siparuna guiensis</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none">• Not present in New Zealand• Host species belongs to the family Monimiaceae; New Zealand has no native species in the genus <i>Siparuna</i> <p><i>Nectandra</i> species (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none">• Not present in New Zealand• Host species belong to the family Lauraceae. New Zealand has no native species in the genus <i>Nectandra</i>

	<p><i>Ocotea</i> species (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belong to the family Lauraceae. New Zealand has no native species in the genus <i>Ocotea</i> <p><i>Persea americana</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • This plant is avocado, grown commercially in North Auckland, Bay of Plenty and Poverty Bay (Webb <i>et al.</i>, 1988) • Host species belongs to the family Lauraceae; New Zealand has no native species in the genus <i>Persea</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>
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Genus:	<i>Anteos clorinde</i> (Godart, 1824)
Common name(s):	White angled sulphur
Type of organism:	Insecta, Lepidoptera, Pieridae
Other information, important to note about this organism:	<p>Range: Texas/Arizona to Brazil (Landman, 2005)</p> <p>Host plants: <i>Senna spectabilis</i> (Landman, 2005), <i>Cassia emarginata</i> (Feltwell, 2001)/<i>Senna bicapsularis</i></p> <ul style="list-style-type: none"> • Not present in NZ • Host species belongs to the family Fabaceae. New Zealand has no native species below the sub-family <p><i>Pithecellobium</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Fabaceae. New Zealand has no native species below the sub-family <p>Closest association with a New Zealand butterfly is at sub-family level: Coliadinae</p>

Genus:	<i>Biblis hyperia</i> (Cramer, 1782)
Common name(s):	Red rim

Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: South/Central America (Feltwell, 2001)</p> <p>Host plant: <i>Tragia volubilis</i></p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Euphorbiaceae. New Zealand has no native species in the genus <i>Tragia</i>. <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Caligo atreus</i> (Kollar, 1850)
Common name(s):	Yellow-edged giant owl
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Amazon (Landman, 2005)</p> <p>Host plants: <i>Musa sp.</i>, (Landman, 2005)</p> <ul style="list-style-type: none"> • <i>Musa</i> species are present in New Zealand • Host species belong to the family Musaceae. New Zealand has no native species in this family <p><i>Heliconia sp.</i>, (Landman, 2005)</p> <ul style="list-style-type: none"> • <i>Heliconia</i> species are present in New Zealand • Host species belong to the family Heliconiaceae. New Zealand has no native species in this family <p>Closest association with a New Zealand butterfly is at sub-family level: Satyrinae</p> <p><i>Caligo eurilochus</i>, <i>C. memnon</i>, <i>C. teucer</i>. approved for import NOC98008</p>

Genus:	<i>Caligo illeonus</i> (Cramer, 1776)
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Common name(s):	Giant owl
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Host plants:</p> <p><i>Hedychium coronarium</i>, (Robinson <i>et al.</i>, 2007).</p> <ul style="list-style-type: none"> • Present in New Zealand • Host species belongs to the family Zingiberaceae. New Zealand has no native species in this family <p><i>Musa acuminata</i>, <i>M. paradisiacal</i> (Robinson <i>et al.</i>, 2007).</p> <ul style="list-style-type: none"> • <i>M. acuminata</i> is present in New Zealand • Host species belong to the family Musaceae. New Zealand has no native species in this family <p><i>Saccharum officinarum</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Present in NZ • New Zealand has no native species in the genus <i>Saccharum</i> <p>Closest association with a New Zealand butterfly is at sub-family level: Satyrinae</p> <p><i>Caligo eurilochus</i>, <i>C. memnon</i>, <i>C. teucer</i>. approved for import NOC98008</p>

Genus:	<i>Callicore pitheas</i> (Latreille, 1811)
Common name(s):	Pitheas 88
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Ecuador (Landman, 2005)</p> <p>Host plants:</p> <p>The Family Sapindaceae (Landman, 2005)</p> <ul style="list-style-type: none"> • New Zealand has native species in genus <i>Alectryon</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Catopsilia scylla</i> (Linnaeus, 1763)
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Common name(s):	Yellow migrant, Orange migrant
Type of organism:	Insecta, Lepidoptera, Pieridae
Other information, important to note about this organism:	<p>Range: Asia to Australasia</p> <p>Host plants: <i>Cassia fistula</i>, <i>C. obtusifolia</i> (Feltwell, 2001), <i>C. surattensis</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>C. fistula</i> is present in New Zealand • Host species belong to the family Fabaceae. New Zealand has no native species below the sub-family <p><i>Senna alata</i>, <i>S. bicapsularis</i>, , <i>S. occidentalis</i>, <i>S. siamea</i>, <i>S. sophera</i>, <i>S. spectabilis</i>, <i>S. tora</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Genus members <i>S. alata</i>, <i>S. tora</i> are present in New Zealand • Host species belong to the family Fabaceae. New Zealand has no native species below the sub-family <p><i>Tephrosia candida</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>T. candida</i> is present in New Zealand • Host species belongs to the family Fabaceae. New Zealand has no native species below the sub-family <p>Closest association with a New Zealand butterfly (<i>Catopsilia pomona</i>) is at genus level: <i>Catopsilia</i></p> <p><i>Catopsilia pomona</i> approved for import NOC98008</p>

Genus:	<i>Cepora aspasia</i> (Stoll, 1790)
Common name(s):	n/a
Type of organism:	Insecta, Lepidoptera, Pieridae
Other information, important to note about this organism:	<p>Range: Philippines, Indonesia</p> <p>Host plants: <i>Capparis lanceolaris</i>, <i>C. micracantha</i>, <i>C. obovata</i>, <i>C. pubaflora</i>. (HOSTS, 2009)</p> <ul style="list-style-type: none"> • No host species listed above are present in New Zealand • Host species belong to the family Caparaceae. New Zealand has no native species in this family.

Closest association with a New Zealand butterfly is at tribe level: Pierinae

Genus: *Charaxes bupalus* (Staudinger, 1889)

Common name(s): n/a

Type of organism: Insecta, Lepidoptera, Nymphalidae

Other information, important to note about this organism: Host plant:
Mallotus subpeltatus

- Not present in NZ
- New Zealand has no native species in the genus *Mallotus*

Closest association with a New Zealand butterfly is at family level: Nymphalidae

Genus: *Charaxes harmodius* (Felder, 1866)

Common name(s): n/a

Type of organism: Insecta, Lepidoptera, Nymphalidae

Other information, important to note about this organism: Range: India to New Guinea (Brower, 2010)

Host plant:
Cryptocarya griffithiana

- Not present in New Zealand
- Host species belongs to the family Lauraceae. New Zealand has no native species in the genus *Cryptocarya*.

Closest association with a New Zealand butterfly is at family level: Nymphalidae

Genus: *Consul fabius* (Doubleday, 1849)

Common name(s):	Tiger-striped leafwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Host plants: <i>Piper amalago</i>, <i>P. auritum</i>, <i>P. gaudichaudianum</i>, <i>P. hispidum</i>, <i>P. marginatum</i>, <i>P. peltatum</i>, <i>P. reticulatum</i>, <i>P. swatzianum</i>, <i>P. umbellatum</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>Piper betle</i> is present in New Zealand but requires controlled conditions to survive • Host species belong to the family Piperaceae. New Zealand has no native species in genus <i>Piper</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Danaus genutia</i> (Cramer, 1779)
Common name(s):	Common tiger, Striped tiger
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: India to NW Australia (Brower, 2007)</p> <p>Host plants:</p> <p><i>Asclepias currasavica</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Calotropis gigantea</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Ceropegia intermedia</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>C. intermedia</i> not present in New Zealand, although other <i>Ceropegia</i> species are present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species in the genus <i>Ceropegia</i>. <p><i>Cynanchum boudieri</i>, <i>C. dalhousiae</i>, <i>C. formosanum</i>, <i>C. lanhsuense</i>, <i>C. liukiense</i> (Robinson <i>et al.</i>, 2007)</p>

- All *Cynanchum* species are banned in New Zealand
- Host species belong to the family Apocynaceae. New Zealand has no native species in the genus.

Graphistemma pictum (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host plant belongs to the family Apocynaceae. New Zealand has no native species in the genus *Graphistemma*.

Marsdenia formosana, *M. tinctoria*, *M. tomentosa* (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belong to the family Apocynaceae. NZ has no native species in the genus *Marsdenia*.

Oxystelma pulchellum (Robinson *et al.*, 2007)

- Not present in New Zealand
- New Zealand has no native species in the genus *Oxystelma*.

Raphistemma lemma (Robinson *et al.*, 2007)

- Not present in New Zealand
- New Zealand has no native species in the genus *Raphistemma*.

Stephanotis floribunda (Robinson *et al.*, 2007)

- Present in New Zealand
- New Zealand has no native species in the genus *Stephanotis*

Telosma cordata (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Apocynaceae. New Zealand has no native species in the genus *Telosma*.

Tylophora cissoides (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Apocynaceae. New Zealand has no native species in the genus *Tylophora*.

Vincetoxicum tanakae (Robinson *et al.*, 2007)

- Not present in New Zealand
- New Zealand has no native species in the genus *Vincetoxicum*.

Closest association with a New Zealand butterfly (*Danaus plexippus*) is at genus level: *Danaus*

Danaus chrisippus, *D. gilippus*, *D. limniace* approved for import
NOC98008

Genus:	<i>Danaus melanippus</i> (Cramer, 1777)
Common name(s):	White tiger
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: India to Burma (Feltwell, 2001)</p> <p>Host plants:</p> <p><i>Cynanchum lanhsuense</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • All <i>Cynanchum</i> species are banned in NZ • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family • <p><i>Ficus</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Several <i>Ficus</i> sp are naturalised in New Zealand • New Zealand has no native <i>Ficus</i> species • New Zealand has native Moracaceae of genus <i>Strebulus</i>. <p><i>Gymnema</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Sarcolobus</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Tylophora cissoides</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host plant belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p>Closest association with a New Zealand butterfly (<i>Danaus plexippus</i>) is at genus level: <i>Danaus</i></p> <p><i>Danaus chrisippus</i>, <i>D. Gilippus</i>, <i>D. limniace</i> approved for import NOC98008</p>

Genus:	<i>Delias hyparete</i> (Linnaeus, 1758)
Common name(s):	Painted jezebel

Type of organism:

Insecta, Lepidoptera, Pieridae

**Other information,
important to note
about this organism:**

Range: Tropical Asia

Host plants:

Annona muricata, *A. squamosa* (Robinson *et al.*, 2007)

- Not present in New Zealand
- Genus member *A. cherimola* grown in northern New Zealand particularly Bay of Plenty (Webb *et al.*, 1988)
- Host species belongs to the family Annonaceae. New Zealand has no native species in this family.

Averrhoa bilimbi (Robinson *et al.*, 2007)

- Not present in New Zealand
- Genus member *A. carambola* is present in New Zealand
- Host species belongs to the family Oxalidaceae. New Zealand has no native species in this family.

Cocos nucifera (Robinson *et al.*, 2007)

- Present in New Zealand but requires controlled, artificial conditions in order to survive
- Host species belongs to the family Aracaceae. New Zealand has no native species in the genus *Cocos*

Dendrophthoe falcata, *D. glabrescens*, *D. pentandra* (Robinson *et al.*, 2007)

- Not present in New Zealand
- None of these species are permitted for import into New Zealand
- Host species belong to the family Loranthaceae. New Zealand has no native species in the genus *Dendrophthoe*

Impatiens (Robinson *et al.*, 2007)

- Multiple species; *I. balsamina*, *I. glandulifera*, *I. niamniamensis*, *I. sodenii*, *I. textorii*, *I. walleriana* are present in New Zealand
- Host species belong to the family Balsaminaceae. New Zealand has no native species in this family.

Loranthus parasiticus, *L. pentandrus*, *L. yadoriki* (Robinson *et al.*, 2007)

- Host species listed above not present in New Zealand; all are banned from import
- New Zealand has native species for which *Loranthus* is a genus synonym: *Peraxilla colensoi*, *P. tetraptala*, *Alepsiis flavida*.

Macrosolen cochinchinensis (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Loranthaceae. New Zealand has no native species in the genus *Macrosolen*

Mangifera indica (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Anacardiaceae. New Zealand has no native species in this family

Nephelium lappaceum (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Sapindaceae. New Zealand has no native species in the genus *Nephelium*

Santalum album (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Santalaceae. New Zealand has no native species in the genus *Santalum*

Scurrula ferruginea (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Loranthaceae. The genus *Scurrula* is not represented in New Zealand

Senna siamea (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Fabaceae. New Zealand has no native species in this family below the sub-family

Taxillus limprichtii (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Loranthaceae. The genus *Taxillus* is not represented in New Zealand

Theobroma cacao (Robinson *et al.*, 2007)

- Present in New Zealand only in controlled, artificial conditions
- Host species belongs to the family Malcaceae. New Zealand has no native species in the genus *Theobroma*

Viscum coloratum (Robinson *et al.*, 2007)

- *V. coloratum* is not present in New Zealand.
- NZ has native *Korthalsella* species, for which *Viscum* is a genus pseudonym.

Closest association with a New Zealand butterfly is at family level:
Pieridae

Genus:

Dryadula phaetusa (Linnaeus, 1758)

Common name(s):	Banded orange heliconia
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Brazil (Landman, 2005)</p> <p>Host plants: <i>Passiflora talamacensis</i> (Landman, 2005), <i>P. distephana</i>, <i>P. granadilla</i> (Brown, 1981 cited by Beltran and Bower, 2008). <i>P. jileki</i>, <i>P. mansii</i>, <i>P. morifolia</i>, <i>P. mucronata</i>, <i>P. pohlii</i>, <i>P. rubra</i>, <i>P. suberosa</i>, <i>P. tuberosa</i>, <i>P. vespertilio</i>, <i>P. vitifolia</i>, <i>P. X violaceae</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • No host species listed above are present in New Zealand • New Zealand has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollissima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in controlled conditions <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Eryphanis polyxena</i> (Meerburgh, 1775)
Common name(s):	Purple mort bleu
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Guatemala to Amazon Basin (Landman, 2005)</p> <p>Host plant: Bamboo (<i>Graminae/Poaceae</i>) (Landman, 2005)</p> <ul style="list-style-type: none"> • Genera <i>Chimonobambusa</i>, <i>Pseudosasa</i>, <i>Phylloslachys</i>, <i>Pleibastus</i>, <i>Semiarundinaria</i>, <i>Sasa</i>, <i>Sasella</i>, <i>Bambusa</i>, <i>Himilaycalmus</i> are present in New Zealand (Edgar and Connor, 2000) • Host species belong to the family <i>Praminae/Poaceae</i>. New Zealand has no native species below the sub-family <i>Bambuseae</i>. <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Eueides aliphera</i> (Godart, 1819)
Common name(s):	Aliphera longwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Brazil (Bower and Beltran, 2009)</p> <p>Host plants: <i>Passiflora ambigua</i>, <i>P. auriculata</i>, <i>P. amethystina</i>, <i>P. bahiensis</i>, <i>P. caerulea</i>, <i>P. capsularis</i>, <i>P. coccinea</i>, <i>P. cornuta</i>, <i>P. costaricensis</i>, <i>P. cyanea</i>, <i>P. kermesina</i>, <i>P. lauriflora</i>, <i>P. lonchophora</i>, <i>P. oerstedii</i>, <i>P. quadrangularis</i>, <i>P. rubra</i>, <i>P. setacea</i>, <i>P. biflora</i>, <i>P. vitiflora</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • No host species listed above are present in New Zealand • NZ has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollissima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in controlled conditions <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Eueides isabella</i> approved for import NOC980008</p>

Genus:	<i>Euthalia adonia</i> (Cramer, 1782)
Common name(s):	Green baron
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Tropical Asia</p> <p>Host plants: <i>Mangifera indica</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Anacardiaceae. New Zealand has no native species in this family <p><i>Taxilus parasiticus</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Loranthaceae. New Zealand

	<p>has no native species in the genus <i>Taxillus</i></p> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>
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Genus:	<i>Euploea sylvester</i> (Fabricius, 1793)
Common name(s):	Double-banded crow, Two-brand crow
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Host plants :</p> <p><i>Ficus eugenioides</i>, <i>F. microcarpa</i>, <i>F. racemosa</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Host species listed above are not present in New Zealand; other <i>Ficus sp</i> are naturalised • New Zealand has native Moracaceae of genus <i>Strebulus</i>. No native <i>Ficus</i> species <p><i>Gymnema sylvestre</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Ichnocarpus frutescens</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in NZ • New Zealand has no native species in the genus <i>Ichnocarpus</i> <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p> <p><i>Euploea mulciber</i>, <i>E. core</i> approved for import NOC98008</p>

Genus:	<i>Godyris zavaleta</i> (Hewitson, 1855)
Common name(s):	Zavaleta glasswing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Host plants:</p> <p><i>Cestrum nocturnum</i>, <i>C. brensii</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>C. nocturnum</i> is present in New Zealand • Host species belongs to the family Solanaceae. New Zealand

	<p>has no native species in the genus <i>Cestrum</i></p> <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p>
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Genus:	<i>Greta nero</i> (Hewitson, 1854)
Common name(s):	Nero glasswing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Panama</p> <p>Host plants: <i>Cestrum racemosum</i> (Haber, 2001a), <i>Cestrum microcalyx</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • The host species listed above are not present in New Zealand • Genus member <i>C. nocturnum</i> is present in New Zealand • Host species belong to the family Solanaceae. New Zealand has no native species in the genus <i>Cestrum</i> <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p> <p><i>Greta oto</i> approved for import NOC98008</p>

Genus:	<i>Hamadryas amphinome</i> (Linnaeus, 1767)
Common name(s):	Red cracker
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Central America, casual vagrant into southern USA (Feltwell, 2001)</p> <p>Host plants: The Family Euphorbiaceae (Feltwell, 2001)</p> <ul style="list-style-type: none"> • New Zealand has native species in genera <i>Euphorbia</i> and <i>Homolanthus</i>.

	<p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Hamadryas arinome</i>, <i>H. februa</i>, <i>H. feronia</i>, <i>H. fornax</i>, <i>H. chloe</i>, <i>H. guatemalena</i> approved for import NOC03002</p>
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Genus:	<i>Hamadryas laodamia</i> (Cramer, 1777)
Common name(s):	Starry night
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Central/South America</p> <p>Host plant:</p> <p><i>Dalechampia triphylla</i> (Feltwell, 2001)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Euphorbiaceae. New Zealand has no native species in the genus <i>Dalechampia</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Hamadryas arinome</i>, <i>H. februa</i>, <i>H. feronia</i>, <i>H. fornax</i>, <i>H. chloe</i>, <i>H. guatemalena</i> approved for import NOC03002</p>

Genus:	<i>Heliconius hecale</i> (Fabricius, 1775)
Common name(s):	Tiger longwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Peru</p> <p>Host plants:</p> <p>The genus <i>Passiflora</i>, (Landman, 2005; Feltwell, 2001) but the butterfly does seek a certain species [in Costa Rica] (Landman, 2005)</p> <ul style="list-style-type: none"> • New Zealand has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollissima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in

	<p>controlled conditions</p> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Heliconius charitonius</i>, <i>H. cydno</i>, <i>H. doris</i>, <i>H. melpomene</i>, <i>H. sara</i> approved for import NOC98008</p>
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Genus:	<i>Heliconius hewitsoni</i> (Staudinger, 1875)
Common name(s):	Hewitson's longwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plants: <i>Passiflora</i>, subgenus <i>astrophea</i> (Brown, 1981), <i>Passiflora pittieri</i> (DeVries, 1997 cited by Brower and Beltran, 2008a)</p> <ul style="list-style-type: none"> • No host species listed above are present in New Zealand • New Zealand has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollissima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in controlled conditions <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Heliconius charitonius</i>, <i>H. cydno</i>, <i>H. doris</i>, <i>H. melpomene</i>, <i>H. sara</i> approved for import NOC98008</p>

Genus:	<i>Heliconius ismenius</i> (Latreille, 1817)
Common name(s):	Tiger heliconian
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plants: <i>Passiflora granadilla</i> and <i>P. distephana</i>. In laboratory accept <i>Plectostemma</i> (Brown, 1981 cited by Beltran, 2008). <i>Passiflora alata</i>, <i>P.</i></p>

	<p><i>pedata</i>, <i>P. ambigua</i> and <i>P. platyloba</i> (DeVries, 1997 cited by Beltran, 2008).</p> <ul style="list-style-type: none"> • No host species listed above are present in New Zealand • New Zealand has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollisima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas. <i>P. lindeniana</i> grows in controlled conditions (Webb <i>et al.</i>, 1988) <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Heliconius charitonius</i>, <i>H. cydno</i>, <i>H. doris</i>, <i>H. melpomene</i>, <i>H. sara</i> approved for import NOC98008</p>
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Genus:	<i>Heliconius sapho</i> (Drury, 1782)
Common name(s):	Sapho longwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plants: <i>Passiflora</i>, subgenus <i>Astrophea</i> (Brown, 1981), <i>Passiflora pittieri</i> (DeVries, 1997 cited by Brower and Beltran, 2008b).</p> <ul style="list-style-type: none"> • No host species listed above are present in New Zealand • New Zealand has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollisima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in controlled conditions <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Heliconius charitonius</i>, <i>H. cydno</i>, <i>H. doris</i>, <i>H. melpomene</i>, <i>H. sara</i> approved for import NOC98008</p>

Genus:	<i>Historis acheronta</i> (Fabricius, 1775)
Common name(s):	Tailed cecropian

Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Greater Antilles to South America (Wahlberg and Brower, 2009)</p> <p>Host plants:</p> <p><i>Cecropia obtusifolia</i>, <i>C. peltata</i>, (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belong to the family Cecropiaceae. New Zealand has no native species in this family <p><i>Mangifera indica</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Anacardiaceae. New Zealand has no native species in this family <p>Closest association with a New Zealand butterfly is at sub-family level: Nymphalinae</p>

Genus:	<i>Idea leuconoe</i> (Erichson, 1834)
Common name(s):	Paper kite/Rice wing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Southern China to Philippines/Indonesia (Landman, 2005)</p> <p>Host plants:</p> <p><i>Tylophora ovate</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Cynanchum formosanum</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand; all <i>Cynanchum</i> banned from import • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Parsonia alboflavescens</i>, <i>Parsonia spiralis</i> (HOSTS, 2009)</p> <ul style="list-style-type: none"> • Not present in New Zealand • New Zealand has 3 endemic <i>Parsonia</i> species. One is threatened. <p>Closest association with a New Zealand butterfly is at sub-family level:</p>

	Danainae
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Genus:	<i>Ithomia heraldica</i> (Bates, 1866)
Common name(s):	Herald clearwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Nicaragua to Panama (Haber, 2001b)</p> <p>Host plants:</p> <p><i>Acnistus arborescens</i>, <i>Cuatresia riparia</i>, <i>Witheringia morii</i>, <i>Lycianthes amatitlanensis</i> (Haber, 2001b).</p> <ul style="list-style-type: none"> • The species listed above are not present in New Zealand • Host species belong to the family Solanaceae. New Zealand has no native species of these genera. • New Zealand has two native <i>Solanum</i> species <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p>

Genus:	<i>Lamproptera curius</i> (Staudinger, 1889)
Common name(s):	White dragontail
Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Range: India to Philippines; Indonesia</p> <p>Host plants:</p> <p><i>Illigera celebica</i>, <i>I. Cordata</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belong to the family Hernaniaceae. New Zealand has no native species in this family <p>The family Papilionidae is not represented in New Zealand</p> <p><i>Lamproptera meges</i> approved for import NOC98008</p>

Genus:	<i>Lexias pardalis</i> (Moore, 1878)
Common name(s):	Common archduke
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Indomalayan zone</p> <p>Host plant: <i>Cratoxylum formosum</i></p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Clusiaceae. New Zealand has no native species in the genus <i>Cratoxylum</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Pachliopta neptunus neptunus</i> (Guerin-Meneville, 1840) Synonym <i>Losaria neptunus</i>
Common name(s):	Yellow-bodied clubtail
Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Range: Tropical Asia</p> <p>Host plant: <i>Thottea tomentosa</i></p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Aristochliaceae. New Zealand has no native species in this family <p>The family Papilionidae is not represented in New Zealand</p>

Genus:	<i>Mechanitis polymnia</i> (Bates, 1864)
Common name(s):	Orange-spotted tiger clearwing

Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Amazon area (Landman, 2005)</p> <p>Host plants: The genus <i>Solanum</i> (Landman, 2005)</p> <ul style="list-style-type: none"> • New Zealand has two native <i>Solanum</i> species <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p> <p><i>Mechanitis menapis saturate</i> approved for import NOC98008</p>

Genus:	<p><i>Memphis eurypyle</i> (Felder, 1863)</p> <p>Synonyms <i>Anaea eurypyle</i> or <i>Fountainia eurypyle</i> (Felder, 1863)</p>
Common name(s):	Pointed leafwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plants: <i>Casearia ramiflora</i>,</p> <ul style="list-style-type: none"> • Not present in NZ <p><i>Croton jalapensis</i>, <i>Croton niveus</i>, <i>Croton reflexifolius</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belong to the family Euphorbiaceae. New Zealand has no native species in genus <i>Croton</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<i>Morpho granadensis</i> (Felder, 1862)
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Common name(s):	n/a
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Central America</p> <p>Host plant: <i>Macharium seemani</i> (Feltwell, 2001)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Fabaceae. New Zealand has no native species in the genus <i>Macharium</i> <p>Closest association with a New Zealand butterfly is at sub-family level: <i>Satyrinae</i></p> <p><i>Morpho peleides</i>, <i>M. polyphemus</i> approved for import NOC98008</p>

Genus:	<i>Opsiphanes bogotanus</i> (Distant, 1875)
Common name(s):	Bogota owl
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plants: <i>Heliconia</i> sp (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>Heliconia</i> species are present in New Zealand • Host species belong to the family Heliconiaceae. New Zealand has no native species in this family <p>Closest association with a New Zealand butterfly is at sub-family level: <i>Satyrinae</i></p>

Genus:	<i>Opsiphanes cassina</i> (Felder, 1862)
Common name(s):	Split-banded owl

Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Amazon (Landman, 2005)</p> <p>Host plant:</p> <p><i>Cocos nucifera</i> (Landman, 2005),</p> <ul style="list-style-type: none"> • Present in New Zealand but requires controlled, artificial conditions in order to survive • Host species belongs to the family Aracaceae. New Zealand has no native species in the genus <i>Cocos</i> <p><i>Acrocomia vinifera</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Aracaceae. New Zealand has no native species in the genus <i>Acrocomia</i> • <p>Closest association with a New Zealand butterfly is at sub-family level: Satyrinae</p>

Genus:	<i>Opsiphanes tamarindi</i> (Felder, 1861)
Common name(s):	Tamarind owlet
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Mexico to Amazon (Landman, 2005)</p> <p>Host plants:</p> <p><i>Heliconia</i> and <i>Musa</i> (Landman, 2005)</p> <ul style="list-style-type: none"> • <i>Musa</i> and <i>Heliconia</i> species are present in New Zealand • Host species belong to the families Heliconiaceae and Musaceae. New Zealand has no native species in these families <p><i>Cocos nucifera</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Present in New Zealand but requires controlled, artificial conditions in order to survive • Host species belongs to the family Aracaceae. New Zealand has no native species in the genus <i>Cocos</i> <p>Closest association with a New Zealand butterfly is at sub-family level: Satyrinae</p>

Genus:	<i>Pachliopta atropos</i> (Staudinger, 1888)
Common name(s):	n/a
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Philippines</p> <p>Host plant: <i>Aristolochia philippinensis</i></p> <ul style="list-style-type: none"> • Not present in New Zealand • Genus members <i>A. elegans</i>, <i>A. semperverans</i> are present in New Zealand. • Host species belongs to the family Aristochiaceae. New Zealand has no native species in this family <p>Family Papilionidae not represented in New Zealand</p> <p><i>Pachliopta aristolochia</i>, <i>P. polydorus</i> approved for import NOC98008. <i>P.kotzebuae</i>, <i>P. oreon</i>, approved for import NOC03002</p>

Genus:	<i>Pareronia valeria</i> (Cramer, 1776)
Common name(s):	Common wanderer
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Asia, up to altitudes of 900m (Feltwell, 2001)</p> <p>Host plant: <i>Capparis zeylanica</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Capparaceae. New Zealand has no native species in this family <p>Family Papilionidae not represented in New Zealand</p>

Genus:	<i>Panacea procilla</i> (Hewitson, 1853)
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Common name(s):	Procilla beauty
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plant: <i>Caryodendron angustifolium</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host plant belongs to the family Euphorbiaceae. New Zealand has native species in the genera <i>Euphorbia</i> and <i>Homolanthus</i>. There are no native species in the genus <i>Caryodendron</i> <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p>

Genus:	<p><i>Papilio daedalus</i> (Felder and Felder, 1861)</p> <p>Synonym: <i>Achilles daedalus</i> (Felder and Felder, 1861)</p>
Common name(s):	n/a
Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Host plant: <i>Micromelium minutium</i></p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Rutaceae. New Zealand has no native species in genus <i>Micromelium</i> <p>The family Papilionidae is not represented in New Zealand</p> <p>16 <i>Papilio</i> species approved for import NOC98008. 3 further <i>Papilio</i> approved NOC03002</p>

Genus:	<i>Papilio palinurus</i> (Fabricius, 1787)
Common name(s):	Emerald swallowtail

Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Range: Bruma, Malaysia, Indonesia, Philippines (Landman, 2005)</p> <p>Host plants:</p> <p><i>Clausena excavate</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Rutaceae. New Zealand has no native species in the genus <i>Clausena</i> <p><i>Euodia</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • <i>E. hortensis</i> is present in New Zealand, in controlled conditions • Host species belongs to the family Rutaceae. New Zealand has no native species in the genus <i>Euodia</i> <p><i>Micromelum minutum</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Rutaceae. New Zealand has no native species in the genus <i>Micromelum</i> <p>The family Papilionidae is not represented in New Zealand</p> <p>16 <i>Papilio</i> species approved for import NOC98008. 3 further <i>Papilio</i> approved NOC03002</p>

Genus:	<i>Parantica aspasia</i> (Fabricius, 1787)
Common name(s):	Yellow glassy tiger
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Tropical Asia</p> <p>Host plants:</p> <p><i>Gymnema</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family <p><i>Tylophora</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Apocynaceae. New Zealand has no native species below the sub-family

Closest association with a New Zealand butterfly is at tribe level: Danaini

Genus:	<i>Parides childrenae</i> (Gray, 1832)
Common name(s):	Green-celled cattleheart
Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plant:</p> <p><i>Aristolochia tanduzii</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none">• Not present in New Zealand• Genus members <i>A. elegans</i>, <i>A. semperverans</i> are present in New Zealand.• Host plant belongs to the family Aristochiaceae. New Zealand has no native species in this family <p>The family Papilionidae is not represented in New Zealand</p> <p><i>Parides arcas</i> approved for import NOC03002</p>

Genus:	<i>Polyura schreiber</i> (Godart, 1824)
Common name(s):	Blue Nawab
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Tropical Asia</p> <p>Host plants:</p> <p><i>Adenia pavonina</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none">• Not present in New Zealand• Host species belongs to the family Passifloraceae. New Zealand has no native species in the genus <i>Adenia</i> <p><i>Annona</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none">• Genus member <i>A. cherimola</i> is grown in northern New Zealand

particularly Bay of Plenty (Webb *et al.*, 1988)

- Host species belongs to the Annonaceae family. New Zealand has no native species in this family

Bruguiera cylindrica (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the order Rhizophorales. New Zealand has no native species in this order

Castanopsis (Robinson *et al.*, 2007)

- Species not present in New Zealand
- Host species belongs to the family Fagaceae. New Zealand has no native species in this family

Cinnamomum species (Robinson *et al.*, 2007)

- *C. camphora*, *C. lourerei* are present in New Zealand
- Host species belong to the family Lauraceae. New Zealand has no native species in the genus *Cinnamomum*.

Cynometra cauliflora (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Fabaceae. New Zealand has no native species below the sub-family

Moullava spicata (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Fabaceae. New Zealand has no native species below the sub-family

Nephelium lappaceum (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the family Sapindaceae. New Zealand has no native species in the genus *Nephelium*

Rhizophora apiculata *R. mucronata* (Robinson *et al.*, 2007)

- Not present in New Zealand
- Host species belongs to the order Rhizophorales. New Zealand has no native species in this order

Rosa sp (HOSTS, 2009)

- Many *Rosa* species are present in NZ
- Host species belong to the family Rosaceae. New Zealand has no native species in the genus *Rosa*.

Rourea santaloides (Robinson *et al.*, 2007)

- Not present in NZ
- Host species belongs to the family Connaraceae. New Zealand

	<p>has no native species in this family</p> <p><i>Theobroma cacao</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Present in New Zealand only in controlled, artificial conditions • Host species belongs to the family Malcaceae. New Zealand has no native species in the genus <i>Theobroma</i> <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p>
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Genus:	<i>Tithorea tarricina</i> (Hewitson, 1857)
Common name(s):	Cream-spotted tigerwing
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: Neotropical</p> <p>Host plant:</p> <p><i>Prestonia portabellensis</i> (Feltwell, 2001)</p> <ul style="list-style-type: none"> • Not present in New Zealand • New Zealand has no native species in the genus <i>Prestonia</i> <p>Closest association with a New Zealand butterfly is at sub-family level: Danainae</p>

Genus:	<i>Troides magellanus</i> (Felder, 1862)
Common name(s):	Magellan birdwing
Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Host plants:</p> <p><i>Aristolochia acuminata</i>, <i>A. debilis</i>, <i>A. zollingeriana</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Genus members <i>A. elegans</i>, <i>A. semperverans</i> are present in New Zealand. • Host species belongs to the family Aristochliaceae. New Zealand has no native species in this family

	<p>The family Papilionidae is not represented in New Zealand</p> <p><i>Troides magellanus</i> is listed on CITES Appendix II but not threatened</p> <p><i>Troides brookiana</i>, <i>T. helena</i>, <i>T. radamantus</i> approved for import NOC98008</p>
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Genus:	<i>Troides plateni</i> (Staudinger, 1888)
Common name(s):	Dr Platen's birdwing
Type of organism:	Insecta, Lepidoptera, Papilionidae
Other information, important to note about this organism:	<p>Range: Philippines</p> <p>Host plant: <i>Aristolochia tagala</i></p> <ul style="list-style-type: none"> • Not present in New Zealand • Genus members <i>A. elegans</i>, <i>A. semperverans</i> are present in New Zealand. • Host species belongs to the family Aristochiaceae. New Zealand has no native species in this family <p>The family Papilionidae is not represented in New Zealand</p> <p><i>Troides plateni</i> is listed on CITES Appendix II but not threatened</p> <p><i>Troides brookiana</i>, <i>T. helena</i>, <i>T. radamantus</i> approved for import NOC98008</p>

Genus:	<i>Samia luzonica</i> (Watson, 1913)
Common name(s):	Luzoni silkmoth
Type of organism:	Insecta, Lepidoptera, Saturnidae

Other information, important to note about this organism:	<p>Host plants:</p> <p><i>Ligustrum</i> species (HOSTS, 2009)</p> <ul style="list-style-type: none"> • <i>Ligustrum ovaefolium</i>, <i>L. sinense</i>, <i>L. vulgare</i>, <i>L. lucidum</i> are present in New Zealand. <i>L. semperverens</i> is present in controlled conditions. • <i>L. Lucidum</i> is a pest species in NZ • Host species belong to the family Oleaceae. New Zealand has no native <i>Ligustrum</i> species.
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Genus:	<p><i>Vindula dejone</i> (Erichson, 1833)</p> <p>Synonym: <i>Vindula. deione</i> (Erichson, 1833)</p>
Common name(s):	Cruiser
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: India, Pakistan, Burma, Thailand, Malaysia, Indonesia (Landman, 2005)</p> <p>Host plants:</p> <p><i>Adenia</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belongs to the family Passifloraceae. New Zealand has no native species in the genus <i>Adenia</i> <p><i>Passiflora quadrangularis</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • NZ has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollisima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in controlled conditions <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Vindula arsinoe</i> approved for import NOC98008</p>

Genus:	<i>Vindula erota</i> (Fabricius, 1793)
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Common name(s):	Cruiser
Type of organism:	Insecta, Lepidoptera, Nymphalidae
Other information, important to note about this organism:	<p>Range: India, Pakistan, Burma, Thailand, Malaysia, Indonesia (Landman, 2005)</p> <p>Host plants: <i>Adenia palmata</i> (Feltwell, 2001) <i>Adenia heterophylla</i>, <i>A. macrophylla</i>, (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • Host species belong to the family Passifloraceae. New Zealand has no native species in the genus <i>Adenia</i> <p><i>Passiflora foetida</i> (Robinson <i>et al.</i>, 2007)</p> <ul style="list-style-type: none"> • Not present in New Zealand • New Zealand has one native <i>Passiflora</i> species: <i>P. tetrandra</i>. • <i>P. pinnatistipula</i>, <i>P. caerulea</i>, <i>P. mollissima</i> are widespread in New Zealand. <i>P. edulis</i>, <i>P. tripartita</i>, <i>P. apetala</i>, <i>P. antioquiensis</i> grow in Northern areas (Webb <i>et al.</i>, 1988). <i>P. lindeniana</i> grows in controlled conditions <p>Closest association with a New Zealand butterfly is at family level: Nymphalidae</p> <p><i>Vindula arsinoe</i> approved for import NOC98008</p>

Section 5: The proposed containment system

a) Is there a MAF/ERMA Standard you propose to hold the organism under?

Microorganisms and Cell Cultures	N
Invertebrates	N
Vertebrate Laboratory Animals	N
Zoo Animals	Y
Plants	N
Not sure	N
Other (describe)	N

b) Is there a physical containment level you propose to hold the organism under?

PC1	
PC2	
Not sure	
Not relevant	Y

i. Where relevant, describe anything else you will do to keep the organism contained?

The Tropical Forest is separated from the rest of the Museum by a darkened vestibule area that has aluminium and glass doors at one end and plastic strips at the other. An air curtain is positioned within the vestibule to create turbulence that butterflies find difficult to fly through and which will detach a butterfly that may be sitting on a visitor leaving the facility. A full-length mirror has text to inform visitors to check for butterflies on their person when leaving. Between the vestibule and the Museum is an interpretive space that is MAF-approved as an anteroom area. Visitors must pass through this area before entering and after leaving the facility. This area has an air curtain at its entrance, with another full-length mirror and signage alerting visitors to their responsibilities to check for butterflies. All openings to ventilation systems are covered with wire mesh. These measures all exist currently to contain the species already approved and are proving extremely effective. During public opening hours, a specifically trained Communicator staff member is present in the facility at all times. Visitors are supervised and informed of containment rules both verbally at the ticket sale desk, through text on signage when entering and leaving, and by the attendant Communicator staff member. Visitors are encouraged to leave bags and coats outside of the facility, and free lockers are supplied for this purpose. The facility is checked daily for potential breaches of containment and this check is recorded on the daily check-list. Physical access to the quarantine area is restricted to a limited number of authorised key holders. These people undergo comprehensive training in quarantine

procedures as a requirement for the Quarantine Room key being issued.

c) Describe possible ways the organism could escape from containment?

Possible escape pathways:

- A butterfly flies out of the main entry/exit
- A butterfly 'hitch hikes' out on a visitor or staff member
- A visitor removes a butterfly intentionally
- Damage to building creates a hole that a butterfly may fly through and escape
- A butterfly flies out of the building fire exit during an emergency.

d) What conditions are required for it to establish in the New Zealand environment?

All species in this application are tropical and require tropical conditions and tropical host plants to survive. New Zealand is part of the Australasian zoo-geographic zone. Conditions within this zone vary: North and Northeastern Australia and all of New Guinea are tropical while the remainder of the zone, including New Zealand, is temperate. While tropical butterflies may exist in the zone to which New Zealand belongs, they are limited to the tropical regions only and do not occupy the entire zone. The risk of tropical butterflies establishing a population in New Zealand, if they were to escape, is therefore extremely low. Warm-tropical species which are occasional blow-ins from Australia (such as *Hypolimnas bolina*) do not establish permanent populations in New Zealand (Gibbs, 1961). All selected species will become inactive and die at temperatures below 20degC.

The closest relationship that any of these species have with a New Zealand butterfly is at sub-family level, making interbreeding impossible. The exceptions to this distance are *Danaus genutia* and *Danaus melanippus* – related at genus level to *Danaus plexippus* (Monarch) – and *Catopsilia scylla* – related at genus level to *Catopsilia pomona*. Host plants species for *D. genutia* and *D. melanippus*, including those plants already present in New Zealand, are the same as for *D. chrysippus* and *D. gilippus* (Robinson *et al.*, 2007), approved for import under NOC98008. *Catopsilia pomona* is a very rare visitor from Australia and approved for import under NOC98008.

Butterflies are highly selective about host plants, frequently laying eggs on one species of plant only. The host plants identified for the species in this application are not native plants. The potential for a butterfly to adopt a new, unrelated plant as a host is very low requiring many generations of exposure to a new plant, which is likely to be in close proximity to an existing host (Chew and Robbins, 1989). New Zealand supports few existing hosts and the environmental conditions would not allow tropical butterflies to survive in order to establish the long-term association required between the butterfly and its new food plant.

Where host plants are related to native plants, this is most frequently at family level. The

potential for a butterfly species to adopt a native species that is distantly related to a specifically-preferred host plant is unlikely. Again, climatic and environmental conditions in New Zealand would prevent establishment of a population. Notably, there are several butterfly species that have been approved for import that host on plants that grow in New Zealand and are from families that include plants native to New Zealand. For example, *Papilio* species host on citrus plants (Rutaceae), however the New Zealand climate prevents the butterflies from becoming established.

New Zealand has one native and several introduced *Passiflora* species. Although *Heliconius* butterflies feed widely on *Passiflora*, several have already been approved for import. Again, environmental conditions would prevent the butterflies from surviving. When provided with *Passiflora granadensis* foliage in the Otago Museum's Tropical Forest, the already-approved species of *Heliconius* still do not lay eggs.

e) How would an escaped organism/population be located, identified and eradicated?

Winter temperatures would kill any population that may establish

In the unlikely event that a population established in the heat of mid-summer, the unusual colouring of tropical species compared to that of New Zealand species would make them highly noticeable to members of the public. The public tend to be highly observant; our own experience includes a number of calls from people to report Red Admiral butterflies. The callers have thought that the butterfly's bright colouring marks them as a tropical species that has escaped from the Tropical Forest.

Section 6: Beneficial and adverse effects that you are aware of

a) What are the benefits of importing the organism into containment?

The butterfly species in the application will provide additional learning opportunities for the public and school students by increasing the number and diversity of species able to be seen in containment. Many more learning opportunities regarding adaptive behaviours, features etc can be made when a range of butterflies are available for observation and comparison.

The visual spectacle of the Tropical Forest exhibit will be enhanced leading to heightened visitor experiences and opportunities for enriched repeat visits.

Our staff will have better understanding and wider knowledge of tropical butterfly species to pass on to visitors.

The species offer opportunities to further increase understanding and appreciation of the importance of conservation and conservation efforts, both to tropical rainforest and New Zealand environs.

The Otago Museum will be able to the further support sustainable breeding and rainforest regeneration programmes in tropical countries by purchasing pupae from suppliers engaging in these activities.

b) If the organism were to escape, what adverse effects could it have on:

i. On the environment?

Due to the inability of these butterflies and caterpillars to survive outside of the controlled conditions of the Otago Museum Tropical Forest containment facility, they could have no adverse impact on the environment

ii. On public health and safety?

No adverse health effects from butterfly species have been identified. Some individuals may be allergic to butterfly scales, resulting in skin irritation but this applies equally to native butterfly species and species already approved for import into New Zealand. To date we have had no visitor complaints to suggest that this has occurred.

iii. On Māori and their culture and traditions?

As survival of the species outside the Tropical Forest is improbable, there will be no adverse effects on the relationship of Maori and their culture and traditions with taonga. The butterflies identified in this application are not able to survive outdoors in New Zealand and therefore native flora and fauna would not be affected if, in the rare instance, any butterflies were to escape. No native plants are appropriate as host plants, effectively stopping the life cycle at egg stage, even if the butterflies could live long enough to breed. Butterflies ingest water and nectar but the inability of tropical species to establish a population would ensure no competition for food with nectar-feeding native birds.

iv. On the market economy, or society and the community?

No other potential adverse effects would occur if these tropical butterflies were approved for import. The butterflies would not survive outside of the controlled conditions of the Otago Museum Tropical Forest containment facility.

Section 7: Is there any other information relevant to the consideration of this application that has not been mentioned earlier?

There has been three other previous approvals to import tropical butterflies (other species), there has been no recorded escapes leading to adverse effects on the environment, public health and safety, Maori and their culture or the market economy.

The following species were declined under application NOC03002, lodged by another butterfly importer. The ERMA decision cited insufficient supporting material regarding ability to establish, particularly in relation to host plants. We have addressed that omission in this application.

Archaeoprepona dempohon

Biblis hyperia

Brassolis isthimia

Caligo atreus

Catopsilia scylla

Consul fabius

Dryadula phaetusa

Euides aliphera

Heliconius hecale

Heliconius hewitsoni

Heliconius ismenius

Heliconius sapho

Mechanitis polymnia

Memphis (Anaea) euryppyle

Morpho granadensis

Opsiphanes cassina

Tithorea tarricina

Idea leuconoe

Vindula deione/dejone

Vindula erota

Section 8: References and appendices – hard copies must be attached to the application form.

a) List of references attached

Author	Title and Journal

b) List of appendices attached

Appendix Number	Title
1:	MAF Biosecurity Standard 154.03.04, Schedule 17 'Invertebrates: Butterflies and Moths
2:	Otago Museum Tropical Forest Operating Manual

Section 9: Declaration and signing the application form

In preparing this application I have:

- Taken into account the ethical principles and standards described in the ERMA New Zealand Ethics Framework Protocol (<http://www.ermanz.govt.nz/resources/publications/pdfs/ER-PR-05-1.pdf>);
- Identified any ethical considerations relevant to this application;
- Ensured that my answers contain an appropriate level of information about any ethical considerations identified, and provided information about how these have been anticipated or might be mitigated; and
- Contacted *ERMA New Zealand staff for advice if in doubt about any ethical considerations.*

I have completed this application to the best of my ability and, as far as I am aware, the information I have provided in this application form is correct.

Signed

Date

Signature of applicant or person authorised to sign on behalf of applicant

Before submitting your application you must ensure that:

- all sections are completed;
- appendices (if any) are attached;
- copies of references (if any) are attached;
- any confidential information identified and enclosed separately;
- the application is signed and dated;
- your application fee has been paid or is enclosed; and
- an electronic copy of the final application is e-mailed to ERMA New Zealand.