



Risk Management Proposal

Zoo Marsupials and Monotremes from Australia

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1 Purpose

The purpose of this document is to:

- present the risks associated with the importation of specified marsupials and monotremes from Australia.
- outline options considered for managing those risks.
- show how these options have been assessed.
- provide recommendations for import requirements to be included in the import health standard (IHS). The IHS is developed under Section 24A of the Biosecurity Act 1993.

For a detailed risk assessment of the identified hazards, refer to the Import Risk Analysis (IRA): *Specified Marsupials and Monotremes from Australia*. A copy can be viewed at the following link:

<http://www.mpi.govt.nz/importing/overview/import-health-standards/risk-analysis/>

2 Background

In 2010 a request for the development of an IHS for the importation of zoo marsupials and monotremes from Australia was submitted.

The IRA for specified marsupials and monotremes from Australia was carried out by the Ministry for Primary Industries (MPI) with the objective of mitigating risks associated with importing this commodity. The IRA is the basis for the risk management measures discussed in this document.

The IHS for marsupials and monotremes from Australia will be based on risk options from the IRA.

3 Objective

The objective of the risk management measures proposed for the IHS is to manage, to an acceptable level, the biosecurity risks posed by the import of marsupials and monotremes into New Zealand from Australia.

From the IRA, the following organisms were classified as potential hazards in the commodity and identified for risk management:

- *Leptospira* spp
- Weed seeds
- External parasites
- Internal parasites
- Q fever (*Coxiella burnetii*)
- Macropod herpesvirus
- Koala retrovirus

4 Recommendations for identified risk organisms

The diseases that were considered as potential hazards are those that could be transmitted by marsupials and monotremes and may infect domestic and feral /wild animals, or humans in New Zealand.

The following diseases were considered a potential hazard in the commodity and will be considered in this risk management proposal (RMP).

4.1 *LEPTOSPIRA SPP*

A range of *Leptospira* serovars can subclinically infect marsupials. Antibodies against leptospires have been demonstrated in various macropods, but no clinical disease or lesions have been reported. Introduction of new serovars of *Leptospira* is unlikely to have a significant impact on the New Zealand animal population.

4.1.1 Risk management options for *Leptospira* species from risk assessment

1. Individuals could be imported without restrictions.
2. Animals could be quarantined for 4 weeks and tested serologically upon entry into quarantine and again after 2 weeks. Those that are serologically negative or clearly identifiable as having antibodies that indicate infection or previous infection only with a serovar that occurs in New Zealand could be imported.
3. Animals to be imported could be treated with suitable antibiotics before shipment.

4.1.2 Recommended option

Because the zoo marsupial species covered in this risk analysis are not regarded as maintenance hosts for any *Leptospira* serovars, the animals can be imported without restrictions. This is consistent with other recent zoo standards.

4.2 WEED SEEDS

Exotic species of weed seeds could be introduced by marsupials and monotremes attached to hair, within skin folds or in faeces.

The IRA for the importation of weed species by live animals and unprocessed fibre of sheep and goats recommended that animals should be held, pre shipment, in areas free of weed species. Faeces produced during transport should be safely disposed of, either en route or on arrival in New Zealand. A copy can be viewed at the following link: www.mpi.govt.nz/document-vault/2827.

4.2.1 Risk management options for weed seeds from risk assessment

Options are:

1. The marsupials and monotremes could be thoroughly groomed and inspected for contaminating plant material immediately prior to pre export isolation (PEI).

2. The animals could be housed in a PEI facility free of environmental seeds. Feeding of processed pellets that are essentially free of weed seeds will ensure that the animals do not ingest new burdens of weed seeds.

4.2.2 Recommended option

The above bullet point options are successive, and both are recommended to mitigate the risk. However the timing of the examination will be flexible to minimise the need for repeated anaesthesia. It is also recommended that zoo marsupials and monotremes are certified as being clean and free from obvious contamination with dirt, plant material and other organic matter by the official veterinarian prior to export. These measures are consistent with current IHS conditions for live animals, including zoo species.

4.3 EXTERNAL PARASITES

Marsupials and monotremes can be affected by various species of lice, ticks, mites, flies and fleas. Zoo animals are not considered a significant pathway for the introduction of exotic ticks due to the small numbers of animals imported as well as reduced exposure in captivity.

4.2.3 Risk management options for external parasites from risk assessment

The following measures could be considered to mitigate the risk of importing exotic external parasites:

1. Marsupials and monotremes could be treated with an acaricide, 7-10 days prior to entering PEI.
2. Marsupials and monotremes could be treated during the 48 hours immediately prior to entering PEI with an insecticide/acaricide treatment regime that is effective against ticks, mites and fleas.
3. The quarantine premises in which the marsupials and monotremes are isolated for 30 days could have impervious washable floors and walls, or be on a fenced, impervious pad without walls and surrounded by a cleared area free from vegetation. Bedding should not be straw or plant material that could contain tick eggs and larvae. Inert material such as wood shavings and sterilised peat could be considered suitable. The animals could be fed rations that are free from potential contamination with ectoparasites, their eggs, larvae or nymphs.
4. Marsupials and monotremes could have all the bedding on which they are housed removed every ten days during the quarantine period and, at this time, the walls and floor could be thoroughly cleaned, and sprayed with an acaricide.
5. Marsupials and monotremes could be meticulously inspected for evidence of ectoparasites, at least 10 days after entering PEI. If still infested, the treatment could be repeated and animals inspected again at least 10 days later. Treatments and inspections could be repeated until the animals are found to be free from evidence of ectoparasites. The ectoparasiticide could be altered if the previously used treatment has not been effective.
6. Marsupials and monotremes could be treated with an acaricide within the 3 days prior to shipment.

4.2.4 Recommended option

The above options are successive and all are recommended, with some slight variations, to mitigate the risk of external parasites.

To be consistent with other current IHS conditions for zoo animals and to decrease the number of times the animals are handled, treatments must be given on arrival into PEI, and repeated 3 days prior to shipment. The timing of the ectoparasite inspection will also be flexible to reduce the number of times the animals have to be anaesthetised.

As per several recent zoo requests a long acting acaricide can be used instead of retreating the premises every 10 days (see clause 4 above).

Some Australian zoos are unable to meet clause 3 (having zoo animals in enclosures with impervious floors and walls for a 30 day PEI period) for animal welfare reasons. It has been assessed as acceptable that the animals are housed in enclosures without impervious washable floors for the first 20 days. The enclosure must be surrounded by a cleared area free from vegetation. For the last 10 days of PEI the animals must be contained in premises with impervious floors. If this option is chosen an additional tick inspection is required.

4.4 INTERNAL PARASITES

Multiple genera of nematodes, trematodes, and cestodes have been identified in marsupials and monotremes. None of these are likely to be significant pathogens for monotremes and marsupials or for other animals in zoos. However, it is possible that unknown parasites could be introduced and that the various host associations of the known parasites may not yet be fully understood, making internal parasites a non-negligible hazard.

A range of internal parasites has been reported in marsupials and monotremes. The below points have been considered when drafting options to manage the risks associated with the introduction of internal parasites in the commodity.

4.4.1 Risk management options for internal parasites from risk assessment

Options are:

1. The marsupials and monotremes for export to New Zealand could be treated with an endoparasiticide effective against nematodes and cestodes 7-10 days prior to entering PEI.
2. Marsupials and monotremes for export to New Zealand could be treated with an endoparasiticide within 48 hours after entering PEI.
3. The efficacy of the endoparasiticide could be checked 7-14 days after the endoparasite treatment by examining faeces samples from the treated animals by the faecal floatation concentration/sedimentation method and be required to give a zero roundworm and tapeworm egg count.
4. While being held in quarantine all soiled bedding could be removed at least every 10 days.
5. Treatments and testing could be repeated on animals that have positive egg counts until they give a zero roundworm and fluke egg count. The anthelmintic type should be changed as necessary.
6. Within 3 days of export to New Zealand animals could again be treated with an endoparasiticide.

4.4.2 Recommended option

An efficacious treatment for internal parasites must be given twice during the PEI period, with an interval of not less than 14 days. These measures are consistent with current IHS conditions for live animals, including zoo species.

4.5 Q FEVER (*COXIELLA BURNETII*)

Q fever is OIE listed but there is no *Code* chapter with recommendations. Infections are of minimal economic importance but *Coxiella burnetii* is a zoonotic organism that sometimes causes serious disease in humans. Infection in wildlife is most likely to stem from direct contact with contaminated fomites, such as faeces or birth products. A tick-vertebrate-tick cycle also exists. *C. burnetii* can subclinically infect marsupials and monotremes. Even though marsupials and monotremes do not exhibit clinical signs they are capable of shedding the organism intermittently over prolonged periods of time.

Imported marsupials and monotremes will be held in containment facilities, so the likelihood of exposure is limited to zoo staff, wild birds and rodents that may access their enclosures.

4.5.1 Risk management options for Q fever from risk assessment

Options are:

1. The marsupials and monotremes could be imported without restrictions.
2. Marsupials and monotremes for export could;
 - (a) be maintained tick-free and quarantined in tick-free premises for at least 21 days AND
 - (b) test negative by an antibody detection ELISA within 5 days prior to shipment.
3. Marsupials and monotremes for export could;
 - (a) be maintained tick-free and quarantined in tick free premises for at least 21 days AND
 - (b) test negative by an antibody detection ELISA within the 5 days prior to shipment AND
 - (c) have a faecal sample collected and tested by PCR within 5 days prior to shipment with negative results.

4.5.2 Recommended option

Since potentially infected humans and zoo animals have been imported into New Zealand from many countries for many years, it may be likely that *C. burnetii* has already been introduced into New Zealand. Given that Q fever has not become established here, no restrictions are necessary. However, suitable measures must be in place to prevent tick importation. This is consistent with current MPI practice, where testing for Q fever is required only where recommended by the OIE.

4.6 MACROPOD HERPESVIRUS

Macropod herpesviruses are assumed to occur Australia-wide, but disease attributable to herpesviruses has only been reported in captive macropods. A range of species has been affected including red, eastern and western grey kangaroos, several wallaby species and long-nosed potoroos.

There is a high prevalence of antibody titres to herpesviruses in captive macropods. Infection can be latent, and virus can be shed without the animal showing clinical signs.

4.6.1 Risk management options for macropod herpesvirus from risk assessment

Options are:

1. Macropods could be imported without restriction.
2. Macropods could be certified as being born or permanently resident in establishments where no evidence of herpesvirus has been detected.
3. Macropods could be held in quarantine for at least 30 days prior to shipment AND
4. Macropods could be serologically tested for herpesvirus antibodies, and must test negative to be eligible for import due to the high likelihood of latent infection.

4.6.2 Recommended option

Animals can be imported without restrictions as there are no consequences for other animal or human populations in New Zealand. Individual zoo importers could choose to manage herpesvirus infection as a quality issue.

4.7 KOALA RETROVIRUS

4.7.1 Risk management options for koala retrovirus from risk assessment

Koala retrovirus (KoRV) has a high prevalence amongst koala populations in some regions of Australia. Koalas infected with endogenous KoRV carry the virus for life. As there is no existing koala population in NZ zoos there are no immediate consequences.

Options are:

1. Koalas could be imported without restriction.
2. Koalas could be certified as being born or permanently resident in establishments where no evidence of KoRV has been detected.
3. Koalas could be certified as showing no clinical signs of disease suggestive of immunodeficiency prior to export. A complete (lifetime) health record could be provided for each koala.
4. Koalas could be tested by PCR for KoRV RNA or DNA, and must test negative to be eligible for import.

4.7.2 Recommended option

As there are no existing koala populations in New Zealand, individual zoo importers could choose to manage KoRV infection as a quality issue and koalas could be imported without restrictions.

4.8 MARSUPIALS AND MONOTREMES MUST HAVE BEEN BORN IN, AND REMAINED IN, A GOVERNMENT REGISTERED OR LICENSED ZOO OR WILDLIFE PARK.

At the zoo's request and following consultation with MPI's Risk Analysis team this was changed to include non-zoo born marsupials and monotremes to enable the importation of rescued orphaned animals.

There are no risks identified in the IRA that are managed by restricting imports to individuals born in zoos. The findings of the IRA could be applied to orphaned animals.