



Risk Management Proposal

Zoo Marsupials and Monotremes

ZOOMAMON.AUS

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1 Purpose

The purpose of this document is to:

- Show how options for the management of risk organisms have been assessed.
- Provide recommendations for import requirements.

2 Background

Marsupials and monotremes are considered risk commodities, with the potential to harbour exotic viral, bacterial and parasitic diseases which could become established in New Zealand.

In November 2014, the Import Risk Analysis (IRA) Specified Marsupials and Monotremes from Australia was completed by the Ministry for Primary Industries (MPI).

Subsequently the Import Health Standard for Zoo Marsupials and Monotremes from Australia was issued in 2015, supported by the 2015 Risk Management Proposal.

The zoo industry has since requested that the approved species list in the IHS is expanded to include all species of marsupials and monotremes holding a containment approval by the Environmental Protection Authority (EPA).

The MPI Risk team reassessed the original risk decisions in the IRA: Specified Marsupials and Monotremes from Australia, and concluded that none of the risk organisms identified in the IRA are managed by restricting imports to certain species of monotremes and marsupials. Thus, the findings of the 2015 IRA can be applied to all EPA-approved species of monotremes and marsupials from Australia.

Risk mitigation measures discussed in the 2015 RMP will therefore remain unchanged.

The decisions from that document are also repeated in the remainder of this document. These decisions accompany the current draft IHS for consultation.

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.

4 Options assessment

Under Article 3.3 of the World Organisation for Animal Health (OIE) Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement), risk management measures which provide a level of protection greater than provided international standards may be imposed only when they can scientifically justified on the basis of a risk assessment.

For a detailed analysis of hazards and their risks please refer to the supporting document the [Import Risk Analysis \(IRA\) Specified Marsupials and Monotremes from Australia](#).

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

- *Leptospira spp*
- Seeds
- External parasites
- Internal parasites
- Q fever (*Coxiella burnetii*)

- Macropod herpesvirus
- Koala retrovirus

5 Recommendations for identified risk organisms

5.1 *Leptospira* species

- (1) A range of *Leptospira* serovars can subclinically infect marsupials. Antibodies against leptospirens 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.

5.1.1 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.

5.1.2 Recommended option

- (1) 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.

5.2 Seeds

- (1) Exotic species of seeds could be introduced by marsupials and monotremes attached to hair, within skin folds or in faeces.
- (2) 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.

5.2.1 Risk management options for weed seeds from risk assessment

- (1) Options are:
 - a) The marsupials and monotremes could be thoroughly groomed and inspected for contaminating plant material immediately prior to pre export isolation (PEI).
 - b) The animals could be housed in a PEI facility free of environmental seeds. Feeding of processed pellets that are essentially free of seeds will ensure that the animals do not ingest new burdens of seeds.

5.2.2 Recommended option

- (1) The above options are successive, and both are recommended to mitigate the risk.
- (2) However the timing of the examination will be flexible to minimise the need for repeated anaesthesia.
- (3) 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.

5.3 External parasites

- (1) Marsupials and monotremes can be affected by various species of lice, ticks, mites, flies and fleas.
- (2) 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.

5.3.1 Risk management options for external parasites from risk assessment

- (1) The following measures could be considered to mitigate the risk of importing exotic external parasites:
- (2) Marsupials and monotremes could be treated with an acaricide, 7-10 days prior to entering PEI.
- (3) 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.
- (4) 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.
- (5) 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.
- (6) 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.
- (7) Marsupials and monotremes could be treated with an acaricide within the 3 days prior to shipment.

5.3.2 Recommended option

- (1) The above options are successive and all are recommended, with some slight variations, to mitigate the risk of external parasites.
- (2) 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 external parasite inspection will also be flexible to reduce the number of times the animals have to be anaesthetised.
- (3) As per several recent zoo requests, a long acting acaricide can be used instead of retreating the premises every 10 days (see clause 5 above).
- (4) 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.
 - a) It has been assessed as acceptable that the animals are housed in enclosures without impervious washable floors for the first 20 days.
 - i) The enclosure must be surrounded by a cleared area free from vegetation.
 - ii) For the last 10 days of PEI the animals must be contained in premises with impervious floors.
 - b) If option a) is chosen an additional tick inspection is required.

5.4 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.

5.4.1 Risk management options for internal parasites from risk assessment

- (1) Options are:
 - a) 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.
 - b) Marsupials and monotremes for export to New Zealand could be treated with an endoparasiticide within 48 hours after entering PEI.
 - c) 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.
 - d) While being held in quarantine all soiled bedding could be removed at least every 10 days.
 - e) 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.
 - f) Within 3 days of export to New Zealand animals could again be treated with an endoparasiticide.

5.4.2 Recommended option

- (1) 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.

5.5 Q fever (*Coxiella burnetii*)

- (1) 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.
- (2) 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.
- (3) 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.

5.5.1 Risk management options for Q fever from risk assessment

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

5.5.2 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.

The importation of a small number of marsupials and monotremes into a containment facility is not considered to be relevant from a biosecurity point of view and therefore does not warrant measures.

5.5.3 Discussion 2019

- (1) In addition to the above, the zoo industry commented on the difficulties of testing for *C. burnetii* in marsupials and monotremes. The following points were raised:
 - a) Antibody responses to *Coxiella burnetii* are highly variable.
 - b) It is unknown how long antibodies persist in Australian wildlife and whether this differs between host species.
 - c) There is very limited data on the epidemiology including seroprevalence of *Coxiella burnetii* in marsupials and or monotremes.
 - d) It is unknown how long marsupial and or monotreme hosts shed the bacteria for, or whether infection is persistent or transient.
 - e) There is limited availability for serological, commercially available tests in Australia.
 - f) Given the lack of knowledge and accessibility, testing is unlikely to achieve risk reduction.

5.5.4 Recommended option

- (1) The animals are healthy, and originate from premises under permanent veterinary supervision; and follow a health monitoring programme including necropsies, and microbiological and parasitology testing.
- (2) Suitable measures are in place to prevent tick importation.
- (3) No changes are required to be made to the IHS.

5.6 Macropod herpesvirus

- (1) 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.
- (2) 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.

5.6.1 Risk management options for macropod herpesvirus from risk assessment

- (1) Options are:
 - a) Macropods could be imported without restriction.
 - b) Macropods could be certified as being born or permanently resident in establishments where no evidence of herpesvirus has been detected.
 - c) Macropods could be held in quarantine for at least 30 days prior to shipment; and
 - d) 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.

5.6.2 Recommended option

- (1) 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.

5.7 Koala retrovirus

5.7.1 Risk management options for koala retrovirus from risk assessment

- (1) 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 from the virus.
- (2) Options are:
 - a) Koalas could be imported without restriction.
 - b) Koalas could be certified as being born or permanently resident in establishments where no evidence of KoRV has been detected.
 - c) 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.
 - d) Koalas could be tested by PCR for KoRV RNA or DNA, and must test negative to be eligible for import.

5.7.2 Recommended option

- (1) 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.

5.8 Orphaned animals

- (1) The initial draft of the IHS sent to the zoo industry stated that 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 has been changed to include non-zoo born marsupials and monotremes to enable the importation of rescued orphaned animals.
- (2) 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.

5.9 Eligible species

- (1) At the zoo's request and following consultation with MPI's Risk Analysis team, the IHS has been amended to include all species of monotremes and marsupials, provided the species has a containment approval from the Environment Protection Authority (EPA).
- (2) There are no risks identified in the IRA that are managed by restricting the standard to certain species of monotremes and marsupials. The findings of the IRA can be applied to all species.