Ministry for Primary Industries
Manatū Ahu Matua

Risk Management Proposal

Zoo Carnivora

ZOOCARNS.SPE

14 December 2022

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Contents

1 Purpose

(1) The purpose of this document is to:

a) Present biosecurity risks associated with importing zoo Carnivora into New Zealand.
b) Show how options for the management of risk organisms have been assessed.
c) Present the import requirements that MPI proposes using to manage the biosecurity risks.

2 Background

(1) The Zoo and Aquarium Association asked MPI to develop an import health standard (IHS) that would allow them to import zoo Carnivora from specified countries into New Zealand zoos.

(2) Zoo Carnivora are considered a risk commodity, with the potential to harbour exotic viral and bacterial diseases as well as carry parasites and seeds. In August 2021 the Ministry for Primary Industries (MPI) completed the *Import Risk Analysis (IRA) for Zoo Carnivora (Canidae, Eupleridae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)* from specified countries**.**

(3) The import of zoo felids from specific countries is currently allowed under the following import health standard: *Import Health Standard for Zoo Felidae from Specified Countries (2008)* and was therefore not initially included in the 2021 risk analysis. A review and update of the risk assessment for imported zoo Felidae was deemed necessary to allow imports of zoo felids under the generic import health standard for zoo Carnivora.

(4) In March 2022 MPI completed the following risk advice for zoo Felidae: *Technical Advice: Biosecurity Risks and Risk Management Measures for Importation of Non-domestic Felidae*.

(5) The following import health standards are currently in use for importing meerkats and red pandas:

a) *Import Health Standard for the Importation of Slender-Tailed Meerkat (Suricata suricatta) into New Zealand, ZOOMEEIC.ALL, 10 October 2002*
b) *Import Health Standard for the Importation of Red Pandas into New Zealand, ZOOPANIC.ALL, 14 October 1998*

(6) As meerkats and red pandas also come under the scope of the new IHS, an update of the risk assessment for these species was also requested. MPI finished the risk advice *Technical Advice-Risks associated with zoo meerkats and red pandas* in June 2022.

(7) The risk assessments and technical advice are for specified species of zoo Carnivora from specific countries.

(8) This import health standard will replace the below listed IHSs

a) *African Hunting Dogs into New Zealand, ZOOAHDIC.ALL, 18 November 1998*
b) *Malayan Sun Bears (Helarctos malayanus) from Australia, ZOOSUNIC.AUS, 18 May 2004*
c) *Meerkat (Suricata suricatta), ZOOMEEIC.ALL, 10 0ctober 2002*
d) *Zoo Felidae From Specified Countries, ZOOFELIC.SPE, 19 September 2008*
e) *Zoo Oriental Small Clawed Otters from Australia to New Zealand, ZOOOTTIC.AUS, 14 June 2006*
f) *Zoo Red Pandas, ZOOPANIC.ALL, 14 0ctober 1998*

(9) In accordance with MPI processes, the IHS contains generic import requirements. These requirements manage the biosecurity risk of importing specified zoo Carnivora from recognised countries listed in Schedule 4 of the IHS. The generic IHS serves as the basis for country-to-country (bilateral) negotiations of country specific veterinary certificates. MPI will issue a guidance document. This will have guidance about importing zoo Carnivora and will include examples of country specific bilaterally-agreed veterinary certificates for trade in zoo Carnivora.

3 Objective

(1) The objective is to effectively manage biosecurity risks that are associated with importing zoo Carnivora (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae) listed in the risk analyses, consistent with New Zealand's domestic legislation and international obligations.

4 Options assessment

(1) The World Trade Organization's Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement), Article 3.3, requires that risk management measures which provide a level of protection greater than provided by international standards may be imposed only when they can be scientifically justified on the basis of a risk assessment.

(2) For a detailed analysis of potential hazards and their risks please refer to the supporting documents (see Background) which contain the relevant risk assessments and analysis of management options for each risk organism.

(3) The above-mentioned risk work concluded that risk management measures are justified for the below hazards in imported zoo Carnivora:

a) *Babesia* spp. (babesiosis)
b) *Bacillus anthracis* (anthrax)
c) *Dirofilaria immitis* (heartworm)
d) External parasites
e) Internal parasites
f) *Leptospira* spp. (leptospirosis)
g) *Mycobacterium bovis* (bovine tuberculosis)
h) Rabies lyssavirus (rabies)
i) Seeds
j) *Trypanosoma* spp. (surra and tsetse fly associated trypanosomosis)

5 Updates

5.1 New issue

(1) This is a new issue. There are no updates to declare.

6 General requirements for importation of zoo Carnivora

(1) Animals must be resident in one or more approved, licensed or registered zoos or wildlife parks in the exporting country since birth or for at least the 12 months immediately before export unless otherwise approved by MPI.

(2) Animals must be born in captivity and not caught from the wild.

(3) The premises of origin (zoo or wildlife park) must provide separation from other animal populations not of an equivalent health status, be under veterinary supervision and have a documented health monitoring programme that would be effective in monitoring for diseases of biosecurity concern.

(4) Animals must be held in pre-export isolation (PEI) for 30 days.

(5) The animals must show no signs of infectious or contagious disease during PEI and on the day of shipment.

(6) Animals must be transported to a transitional facility and containment facility in New Zealand. The transitional facility must meet the requirements of the *Facility Standard: Zoo Animals Transitional*

Facilities, MPI-STD-ZOO, dated December 2018. The containment facility must meet the requirements of *Standard for Zoo Containment Facilities*, dated April 2018.

7 Recommendations for identified risk organisms

7.1 *Babesia* spp. (babesiosis)

7.1.1 Risk management options from the 2021 import risk analysis

Option 1

(1) The animals were kept in pre-export isolation for at least 30 days prior export; and

(2) During the 30 days prior to export, the animals were tested using an MPI-approved test for *Babesia gibsoni* or *Babesia* spp. not present in New Zealand, with negative results; and

(3) The animals were treated with an approved ectoparasiticide.

Option 2

(1) The animals were kept in pre-export isolation for at least 30 days prior export; and

(2) During the 30 days prior to export, the animals were treated with an MPI-approved chemotherapeutic agent known to eliminate *Babesia* spp.; and

(3) The animals were treated with an MPI-approved ectoparasiticide; and/or

(4) During the 30 days prior to export, the animals were tested using an MPI-approved test for *Babesia gibsoni* or *Babesia* spp. not present in New Zealand, with negative results.

7.1.2 Discussion

(1) *Babesia* spp. are the causative agent of babesiosis.

(2) Babesiosis in carnivorans is not a World Organisation for Animal Health (WOAH) listed disease.

(3) *Babesia* spp. (exotic) are notifiable organisms under the Biosecurity (Notifiable Organisms) Order 2016.

(4) *Babesia* spp. identified in carnivorans are not known to be zoonotic.

(5) The incubation period in some *Babesia* spp. may range from 10 to 28 days.

(6) Tick-borne transmission is the main route of transmission, however vertical transmission has been described and direct transmission has been suggested.

(7) The only known competent vector of *Babesia* spp. in New Zealand is *Haemaphysalis longicornis*, which can transmit *Babesia gibsoni*. Vector competency for all other *Babesia* spp. is not clear.

(8) *Babesia* spp. are identified as hazards in species within the Ailuridae, Canidae, Eupleridae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae families.

(9) *Babesia* spp. are not assessed as hazards in species within the Felidae family.

7.1.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae only)

(1) During pre-export isolation each animal was tested with an MPI-approved test for *Babesia* spp. with negative results.

(2) Zoo carnivorans must also meet external parasite requirements in section 7.4.

7.2 *Bacillus anthracis* (anthrax)

7.2.1 Risk management options from the 2021 import risk analysis

Option 1

(1) Country freedom for anthrax; and

(2) The animals were resident in anthrax-free countries since birth; and

(3) The animals showed no clinical signs of anthrax on the day of export.

Option 2

(1) The animals were kept for the 20 days prior to export in an establishment where no case of anthrax was officially declared during that period; and

(2) The animals showed no clinical signs of anthrax on the day of export.

The recommendations are similar to those of the World Organisation for Animal Health (WOAH) Terrestrial Code *(*the *Code)* for importation of ruminants, equids and pigs.

7.2.2 Discussion

(1) *Bacillus anthracis* is the causative agent of anthrax.

(2) Anthrax is a WOAH-listed disease affecting multiple species.

(3) Anthrax was last detected in New Zealand in 1954, and it is a notifiable disease under the Biosecurity (Notifiable Organisms) Order 2016.

(4) *B. anthracis* is assessed to be a risk in zoo carnivorans. However, only a small number of zoo carnivorans will be imported into New Zealand, and imports will be infrequent, so the risk analysis assessed the likelihood of an imported animal being infected is very low.

(5) In addition, the incubation period is short (1 to 14 days), and MPI considers the 30-day pre-export isolation period is sufficient to mitigate the risks.

7.2.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) The animals must remain clinically healthy during the pre-export isolation period. No further measures are required. This is consistent with other current zoo standards.

7.3 *Dirofilaria immitis* (heartworm)

7.3.1 Risk management options from the 2021 import risk analysis

(1) Canidae must be treated for heartworm (*Dirofilaria immitis*):

a) Zoo canids older than five months (earliest time post-infestation that heartworm antigen can be detected) on the date of export, must be subjected to an antigen ELISA with negative results within one month of travel; and

b) Within 48 hours of departure zoo canids must be treated with:

i) ivermectin at 6 mcg/kg; or
ii) milbemycin at 0.5 mg/kg; or
iii) moxidectin at 2-4 mcg/kg; or
iv) injectable sustained release formulation moxidectin at the recommended dose rate; or
v) selamectin at 6 mg/kg.

7.3.2 Discussion

(1) *Dirofilaria immitis* (canine heartworm) is a notifiable, unwanted organism in New Zealand.

(2) *Dirofilaria immitis* is identified as a hazard in species within the Canidae family.

(3) The parasite is transmitted by mosquitoes (*Aedes*, *Culex*, *Anopheles* and *Mansonia*) that are present in New Zealand.

(4) Antigen testing identifies the adult female worm but does not identify immature worms. Therefore, heartworm prevention should be used as a pre-export treatment to eliminate early infections.

(5) Canids with adult heartworm infections are likely to be infectious to intermediate hosts (mosquitoes). Canids with positive test results may be treated and are eligible for import once the antigen test results are negative.

(6) There are several requirements that must be met close to export, and that may necessitate sedation or anaesthesia of the animal. These requirements will all be moved to within 72 hours of export to enable them to be carried out at the same time, and the animal to recover fully prior to travel.

7.3.3 Proposed measures (Canidae only)

(1) If the zoo canid is five months of age or older on the date of shipment, it must be subjected to an antigen ELISA test for heartworm, with a negative result on a sample taken in pre-export isolation, in the 30 days prior to shipment; and

(2) During pre-export isolation and within the 72 hours prior to shipment each zoo canid (regardless of age) must be treated with one of the following:

a) ivermectin at 6 mcg/kg; or
b) milbemycin at 0.5 mg/kg; or
c) moxidectin at 2-4 mcg/kg; or
d) injectable sustained release formulation moxidectin at the recommended dose rate; or
e) selamectin at 6 mg/kg; or
f) an MPI-approved treatment effective against *Dirofilaria immitis*.

7.4 External parasites

7.4.1 Risk management options from the 2021 import risk analysis

(1) Within the three days prior to export, the animals were treated with an ectoparasiticide effective against ticks, fleas, mites, flies and lice; and

(2) Following treatment with an ectoparasiticide (effective against ticks, fleas, mites, flies and lice) prior to export, the animals were examined and certified free of external parasites; and/or

(3) The animals were treated with an ectoparasiticide (effective against ticks, fleas, mites, flies and lice) in post arrival quarantine/transitional facility; and/or

(4) Following treatment with an ectoparasiticide (effective against ticks, fleas, mites, flies and lice) in post-arrival quarantine/transitional facility and prior to release into the containment facility, the animals were examined and found to be free of external parasites.

7.4.2 Discussion

(1) Zoo carnivorans can be affected by numerous species of ticks, mites, lice, flies and fleas.

(2) External parasites are therefore identified as hazards in species within the Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae families.

(3) External parasites that are WOAH-listed include the New World screw-worm fly (*Cochliomyia hominivorax*) and Old World screw-worm fly (*Chrysomya bezziana*). MPI assessed these parasites individually in the 2021 import risk analysis and concluded they are not hazards.

(4) The broad-spectrum risk management measures outlined in the import risk analysis are likely to mitigate the entry of external parasites that are assessed as risks in the commodity as well as those that are not. Measures also prevent vectors of infectious diseases entering.

7.4.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) To be consistent with other current IHS conditions for zoo animals, each animal must be treated twice with an effective insecticide/acaricide 14 days apart during pre-export isolation. The pre-export isolation environment must be kept free of external parasites, and each animal must be examined and certified as being free from external parasites before the animal leaves the pre-export isolation premises.

7.5 Internal parasites

7.5.1 Risk management options from the 2021 import risk analysis

(1) The animals must be treated with an endoparasiticide effective against nematodes, cestodes and trematodes, seven to ten days prior to entering pre-export isolation; and

(2) The animals must be treated twice with an endoparasiticide effective against nematodes, cestodes and trematodes during pre-export isolation; and

(3) All faeces should be removed regularly during pre-export isolation; and

(4) Fresh faecal samples from the animals should be tested using an MPI-approved test to determine blood parasite presence, or by faecal eggs counts, with zero egg counts; and/or

(5) Animals can be tested using an MPI-approved test for specific parasites known to be endemic in the exporting country.

7.5.2 Discussion

(1) Internal parasites (affecting mammals) that are WOAH-listed include *Echinococcus granulosus*, *Echinococcus multilocularis*, *Taenia solium* (cestodes) and *Trichinella* spp. (nematodes).

(2) Internal parasites of the classes Cestoda (tapeworms) and Trematoda (flukes) and the phylum Nematoda (roundworms) have been identified as hazards in species within the Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae families.

7.5.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) An efficacious treatment against cestodes, nematodes and trematodes must be given twice during the pre-export isolation period, with an interval of not less than 14 days. These measures are consistent with current IHS conditions for cats and dogs, horses, sheep, and zoo species.

7.6 *Leptospira* spp. (leptospirosis)

7.6.1 Risk management options from the 2021 import risk analysis

Option 1

(1) No restrictions could be permitted for the importation of carnivoran species (within the scope of this analysis).

The WOAH Terrestrial Animal Health Standards Commission states that international trade does not increase the risks to human or animal health in regard to leptospirosis (WOAH Terrestrial Animal Health Standards Commission, 2007). Numerous serovars are present in New Zealand and over 250 exotic serovars are known. These are being managed in animal populations by vaccination and biosecurity.

There are also no domestic measures for carnivorans to prevent the spread of Leptospira spp. within New Zealand.

Option 2

(1) The animals were kept in pre-entry isolation for at least 30 days prior export; and

(2) During the 30 days prior to export, the animals were tested by an MPI-approved test for *Leptospira* serovars (pathogenic serovars not present in New Zealand), with negative results.

Option 3

(1) The animals were kept in pre-entry isolation for at least 30 days prior export; and

(2) During the 30 days prior to export, the animals were treated with an antibiotic effective against *Leptospira* spp.

7.6.2 Discussion

(1) *Leptospira* spp. are the causative agents of leptospirosis.

(2) Leptospirosis was removed from the *Code* in 2009.

(3) Eight *Leptospira* serovars have been isolated from cattle, pigs, dogs and humans in New Zealand.

(4) *Leptospira* spp. are identified as hazards in species within the Ailuridae, Canidae, Eupleridae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae families.

(5) Leptospirosis in cats is rare and global surveillance data point to a very low incidence of the disease in cats. Cats also appear to be less susceptible to both natural and experimental infections and clinical signs are mild or not noticeable. Cats have not been identified as the maintenance host for any serovar.

(6) *Leptospira* spp. are not identified as a risk in species within the Felidae family.

(7) *Leptospira* spp. were assessed to be a risk in other zoo carnivorans. However, only a small number of zoo carnivorans will be imported into New Zealand, and imports will be infrequent. The likelihood of entry of *Leptospira* spp. in healthy zoo carnivorans from recognised countries is low. The incubation period for leptospirosis ranges from four to 20 days with a bacteraemia lasting seven to ten days. Diagnosis of sub clinically infected animals is challenging due to low antibody responses and the presence of low numbers of organisms in tissues. MPI considers the 30-day pre-export isolation period is sufficient to mitigate the risks.

7.6.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) The animals must remain clinically healthy during the pre-export isolation period. No further measures are required.

7.7 *Mycobacterium bovis* (bovine tuberculosis)

7.7.1 Risk management options from the 2021 import risk analysis

Option 1

(1) The animal was resident in a county or zone free of *Mycobacterium bovis* since birth; and

(2) The animal showed no clinical signs of *Mycobacterium bovis* on the day of export.

Option 2

(1) The animal was resident, since birth, at a facility where no clinical, epidemiological or other evidence of *Mycobacterium bovis* has occurred during the previous five years in any species; and the disease is compulsorily notifiable in the exporting country; and

(2) The animal showed no clinical signs of infection with *Mycobacterium bovis* on the day of export.

7.7.2 Discussion

(1) *Mycobacterium bovis* is the causative agent of bovine tuberculosis.

(2) *Mycobacterium bovis* is a WOAH-listed infection affecting multiple species.

(3) The 2021 IRA noted that certain Mustelidae may function as maintenance hosts.

(4) Bovine tuberculosis was identified as a risk in Asian small-clawed otters within the Mustelidae family.

(5) Species within the Ailuridae, Canidae, Felidae, Eupleridae, Herpestidae, Hyaenidae, Procyonidae, Ursidae and Viverridae families are considered spillover/ dead-end hosts for *Mycobacterium bovis* and measures are not warranted.

(6) Available diagnostic tests have not been validated for zoo Mustelidae and are hence unreliable and inappropriate. MPI's risk management options are therefore limited to country, zone or premises freedom from bovine tuberculosis.

(7) *Mycobacterium bovis* is an endemic organism that is subjected to an official control programme in New Zealand. MPI cannot impose biosecurity measures that are more restrictive than its domestic controls. The importation of a small number of zoo Asian small-clawed otters into New Zealand zoos will have no bearing on New Zealand's official control programme or New Zealand's biosecurity status.

7.7.3 Proposed measures (Mustelidae only)

(1) The animals must remain clinically healthy during the pre-export isolation period. No further measures are required.

7.8 Rabies lyssavirus (rabies)

7.8.1 Risk management options from the 2021 import risk analysis

Option1

(1) Country freedom for rabies; and

(2) The animals were resident in rabies-free countries or zones since birth or for at least six months; and

(3) The animals showed no clinical signs of disease on the day prior to or on the day of export.

The recommendations are similar to those of the Code for the importation of domestic and captive wild mammals from countries or zones free from infection with the rabies virus.

Option 2

(1) The animals showed no clinical signs of disease on the day prior to or on the day of export; and

(2) The animals were kept for the six months prior to shipment in an establishment where separation from susceptible animals was maintained and where there has been no case of rabies for at least 12 months prior to shipment.

The recommendations are similar to those of the Code for the importation of wildlife from countries infected with rabies.

Option 3

(1) The animals have been vaccinated with an MPI-approved vaccine, in accordance with the recommendations of the manufacturer in terms of primary and booster vaccinations; and

(2) The animals were subjected to a rabies neutralisation antibody titre test, with a result of at least 0.5 IU/mL; and

(3) The animal showed no clinical signs of rabies on the day of shipment.

7.8.2 Discussion

(1) Rabies lyssavirus is the causative agent of rabies.

(2) Infection with rabies virus is a WOAH-listed disease affecting multiple species.

(3) Rabies lyssavirus can infect and cause rabies in all mammals.

(4) Rabies is a notifiable disease under the Biosecurity (Notifiable Organisms) Order 2016.

(5) Rabies lyssavirus is assessed to be a risk in zoo carnivorans.

(6) Wild and domestic carnivorans are regarded as maintenance hosts.

(7) Transmission results from bites, licking of mucous membranes or shallow skin wounds and abrasions, and, rarely, ingestion or inhalation of contaminated material.

(8) New Zealand recognises a number of countries and territories as free from rabies (listed in *Schedule 4* in IHS).

(9) Rabies in zoological collections is rare. Recommendations in the *Code* for the importation of wildlife (option 2) from countries infected with rabies can be considered for importing zoo carnivorans, with an extra layer of protection by regularly vaccinating the animals. Separating the animals from susceptible wildlife reservoirs for six months before the animals are shipped also mitigates the risk of rabies.

7.8.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) Each animal has been resident since birth or for at least six months in a rabies-free country as agreed by MPI and showed no clinical signs of rabies on the day of shipment; or

(2) Each animal has:

a) Been kept for the six months prior to shipment in an establishment where separation from susceptible wildlife reservoirs was maintained, and where there has been no case of rabies for at least 12 months immediately prior to shipment; and
b) Been vaccinated against rabies with an MPI-approved vaccine, with vaccine cover for at least six months prior to shipment; and
c) Showed no clinical signs of rabies on the day prior to or on the day of export; or

(3) Each animal has:

a) Been vaccinated against rabies with an MPI-approved vaccine, with vaccine cover for at least six months prior to shipment; and
b) Been subjected to a neutralising antibody titration test for rabies for which the blood was drawn:

i) at least four weeks after the rabies vaccination; and
ii) at least six months before the scheduled date of shipment; and

Note: The rabies antibody tests must be conducted at an official laboratory in accordance with one of the methods described in the WOAH Manual of Standards for Diagnostic Tests and Vaccines and found to have at least 0.5 IU/ml of antibody in its serum.

c) Showed no clinical signs of rabies on the day prior to or on the day of export.

7.9 Seeds

7.9.1 Risk management options from the 2021 import risk analysis

(1) Prior to export, the animals should be fed a diet not contaminated with viable seeds; and/or

(2) The pre-export isolation facility should be free of viable seeds; and/or

(3) Bedding used for the animals during pre-export isolation and transport should be free of seeds; and/or

(4) During pre-export isolation, the animals must be physically examined and be free of any seeds in their hair and coat; and/or

(5) The faeces and bedding of the imported animals should be collected and treated during the first 10 days of post-arrival quarantine.

7.9.2 Discussion

(1) The following points have been considered when drafting options to manage the risks associated with introduction of seeds:

a) Seeds could be introduced by zoo carnivorans attached to hair, within skin folds or in faeces.
b) Seeds are likely to be able to survive harsh environmental conditions.
c) Seeds are unlikely to be present on the animal's hair or in their faeces unless seeds have been present in the premises where the zoo carnivorans are held prior to export or in food eaten by the zoo carnivorans prior to export.
d) The examination of the zoo carnivoran's skin for the presence of seeds may require the administration of a tranquillizer or anaesthetic. This is likely to be stressful and compromise the animal's welfare, so the timing of the examination should be flexible to minimise the need for repeated anaesthesia.

7.9.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) Feed and bedding material in pre-export isolation must be free from evidence of seeds.

(2) Prior to departure to New Zealand each animal must be certified as free from visible contamination with plant material.

(3) The timing of the examination will be flexible to minimise the need for repeated anaesthesia.

7.10 *Trypanosoma* spp. (surra and tsetse fly associated trypanosomosis)

7.10.1 Risk management options from the 2021 import risk analysis

Option 1

(1) Country freedom for surra and tsetse fly associated trypanosomosis; and

(2) The animals were resident in surra and tsetse fly associated trypanosomosis free countries since birth; and

(3) The animals showed no clinical signs of disease on the day of export.

Option 2

(4) The exporting country had no clinical, epidemiological or other evidence of surra or tsetse fly associated trypanosomosis in any species in the previous two years; and

(5) Surra or tsetse fly associated trypanosomosis are compulsorily notifiable in the country; and

(6) The animals were resident in surra and tsetse fly associated trypanosomosis free countries for at least six months; and

(7) During the pre-export isolation, a blood sample was drawn from a peripheral vein of the animals and tested with an MPI-approved test. The test was negative for *Trypanosoma* spp. or *Trypanosoma evansi* and *Trypanosoma vivax*.

7.10.2 Discussion

(1) *Trypanosoma evansi* is the causative agent of surra.

(2) *Trypanosoma brucei*, *Trypanosoma brucei gambiense*, *Trypanosoma brucei rhodesiense*, *Trypanosoma congolense*, *Trypanosoma vivax* are the causative agents of tsetse fly associated trypanosomosis.

(3) Surra and tsetse fly associated trypanosomosis are WOAH-listed diseases.

(4) Trypanosomosis (*Trypanosoma* spp.) is a notifiable disease under the Biosecurity (Notifiable Organisms) Order 2016.

(5) Surra and tsetse fly associated trypanosomosis are arthropod-borne diseases. The only genera of these arthropod vectors present in New Zealand is *Stomoxys*.

(6) *Trypanosoma evansi* may be transmitted by *Stomoxys* spp.

(7) The only tsetse fly associated *Trypanosoma* spp. mechanically transmitted by *Stomoxys* spp. is *Trypanosoma vivax*.

(8) Surra (*Trypanosoma evansi)* and tsetse fly associated trypanosomosis (*Trypanosoma vivax* only) are identified as risk organisms in species within the Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae families.

(9) Recommendations could include country freedom or alternatively animals could come from zoo premises that have no known history of surra and tsetse fly associated trypanosomosis. The premises of origin must be under veterinary supervision and the health of the animals monitored so that incidents of disease and death are identified promptly, and *Trypanosoma* spp. are excluded as the cause during the preceding two years.

(10) While option two of the IRA suggests testing as well as *Trypanosoma* spp. being a notifiable disease in the exporting country this option has not been included. The requirement of a surveillance programme in the exporting zoo sufficiently mitigates the risk associated with importing zoo carnivorans. Furthermore, there are no measures for *Trypanosoma* spp. for domestic cats and dogs other than being certified as free from clinical signs of infectious diseases and being treated for external parasites.

7.10.3 Proposed measures (Ailuridae, Canidae, Eupleridae, Felidae, Herpestidae, Hyaenidae, Mustelidae, Procyonidae, Ursidae and Viverridae)

(1) Each animal has resided since birth in *T. evansi* and *T. vivax* -free countries as agreed by MPI and showed no clinical signs of trypanosomosis on the day of shipment; or

(2) Each animal:

a) Was resident, for at least the six months prior to shipment, at zoo premises where no clinical, epidemiological or other evidence of *T.evansi* or *T.vivax* has occurred in any animal species in the previous two years; and

b) Showed no clinical signs of trypanosomosis on the day of shipment.

Appendix 1 – Document History

Date First Issued	Title	Shortcode
14 December 2022	Risk Management Proposal: Zoo Carnivora	RMP ZOOCARNS.SPE
Date of Issued Amendments	**Title**	