Ministry for Primary Industries
Manatū Ahu Matua

Risk Management Proposal

Primates

PRIMATES.SPE

[Document Date]

Growing and Protecting New Zealand

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Contents

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

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

In June 2011, the *Import Risk Analysis (IRA): Zoo primates from Australia, Canada, the European Union, USA and Singapore* was completed by the Ministry for Primary Industries (MPI, formerly MAF Biosecurity New Zealand).

Subsequently the *Import Health Standard for Zoo Primates from Australia, Canada, the European Union, USA and Singapore* was issued in 2011, supported by the Risk Management Proposal (RMP).

The zoo industry has since requested that the approved species list in the 2011 IHS is expanded to include all species of primates holding a containment approval by the Environmental Protection Authority (EPA).

The MPI Risk team reassessed the original risk decisions in the *IRA*: *Zoo Primates from Australia, Canada, the European Union, USA and Singapore*, and concluded that none of the risk organisms identified in the IRA, with the exception of Cercopithecine herpesvirus 1 in macaques and *Allouattamyia* spp in howler monkeys, are managed by restricting imports to certain species of primates.

It is considered that:

a) *Allouattamyia* spp are not likely to be present on howler monkeys from a controlled environment under veterinary supervision and that are inspected for ectoparasites prior to shipment as required by the proposed import health standard for zoo primates; and
b) zoo primates are not a significant pathway for the introduction of *Allouattamyia* spp due to the small number of imports as well as the reduced exposure in captivity.

For the above reasons *Allouattamyia* spp are not considered a hazard in the commodity.

Thus, the findings of the 2011 IRA can be applied to all EPA-approved species of primates from Australia, Canada, the European Union, USA and Singapore with the exception of macaques.

This RMP has been written to accompany the updated Import Health Standard for Zoo Primates and contains the decisions of the 2011 RMP as well as any updated decisions.

3 Objective

The objective is to manage, to an acceptable level, the biosecurity risks posed by the import of primates into New Zealand.

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, *IRA: Zoo primates from Australia, Canada, the European Union, USA and Singapore*.

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

- Hepatitis B virus
- Rabies virus
- Tuberculosis (*Mycobacterium tuberculosis* and *M. bovis*)
- Enteric bacteria
- Helminth parasites
- Ectoparasites (Lice, Ticks, Mites)
- Seeds

The risk advice in 2017 identified no further risks with expanding the species list to all EPA approved species (with the exception of macaques).

Risk mitigation measures for the identified hazards remain unchanged in the new IHS with the exception of Hepatitis B virus. The changes are discussed below.

5 Recommendations for identified risk organisms

The organisms that were considered as hazards are those that could be transmitted by primates and may infect domestic or feral /wild animals, or humans in New Zealand or establish in the environment.

The following organisms were considered hazards in the commodity and will be considered in this RMP.

5.1 Hepatitis B virus

5.1.1 Risk management options presented in the 2011 IRA

(1) The following points have been considered when drafting options to manage the risks associated with introduction of Hepatitis B virus in the commodity:

a) Quarantine is not a suitable option for preventing the importation of the virus because infected primates may remain subclinical long-term carriers of the virus.
b) There is no treatment that will eliminate the virus.
c) The *Code* makes recommendations with respect to the disease.
d) Serological tests are available to detect antibodies in carrier animals.
e) Virus isolation or PCR are available for detection of the virus in blood of carriers.
f) The genotypes of the virus that infect apes are different from those that infect humans.

(2) Article 6.12.6. of the *Code* makes the following relevant recommendations:

> ***Certification and quarantine requirements for […] nonhuman primates [other than marmosets and tamarins] from premises under veterinary supervision***
>
> *Veterinary Authorities of importing countries should require:*
>
> *For prosimians, New World monkeys, Old World monkeys, gibbons and great apes from premises under veterinary supervision*
>
> 1. *the presentation of an international veterinary certificate attesting that the shipment meets the requirements specified in Article 6.12.3., and that the animals:*
>   a. *are either born in the premises of origin or have been kept there for at least 2 years;*

b. come from premises which are under permanent veterinary supervision, and where a suitable health monitoring programme is followed, including microbiological and parasitological tests as well as necropsies.
c. […]
d. […]
e. […]
f. […]
g. […]
h. were subjected to a diagnostic test for hepatitis B virus and their current status documented (gibbons and great apes only);

2. the placement of the animals in a quarantine station for at least 30 days, and during this period:
a. all animals *to be monitored daily for signs of illness and, if necessary, subjected to a clinical examination;*
b. all animals *dying for any reason to be subjected to complete post-mortem examination at a laboratory approved for this purpose;*
c. any cause of illness or death to be determined before the group to which the animals *belong is released from quarantine;*
d. […].

(3) This risk analysis does not examine the importation of nonhuman primates from uncontrolled environments. Nevertheless, it should be noted that Article 6.12.4 of the *Code* makes recommendations for quarantine requirements for nonhuman primates from an uncontrolled environment. The recommendations relating to hepatitis B in Article 6.12.4 are that the animals should be tested twice while being held in quarantine, with the first test being carried out during the first week and the second test 3-4 weeks later. The serological tests recommended are for anti-hepatitis B core antigen and for hepatitis B surface antigen.

(4) One or a combination of the following options could be considered in order to manage the risk effectively:

Option 1

a) All the measures recommended in the *Code* could be required. No testing other than physical examination would be required except for gibbons and great apes which should be subjected to a diagnostic test.

Note: This option implicitly assumes that veterinary supervision in the zoo of origin is sufficient to ensure that hepatitis B does not occur in the colony. It is justified by the assumption that genotypes of Hepatitis B virus found in apes differ from those found in humans and are not harmful for humans. Further, it is a reasonable option since the virus is endemic in this country and the small increase in risk posed by limited importations into a containment facility make no significant difference to the overall biosecurity risk.

Option 2

b) Animals to be imported could be tested serologically on two occasions while being held in quarantine, with an interval of 3-4 weeks between tests. Tests used should be for detection of antibodies against hepatitis B core antigen and hepatitis B surface antigen.

Note: This is equivalent to the measure recommended in the *Code* for importation of nonhuman primates from an uncontrolled environment.

Option 3

c) Animals to be imported could be tested serologically on two occasions while being held in quarantine, with an interval of 3-4 weeks between tests. The test used should be a sensitive PCR method for the detection of antibodies against hepatitis B core antigen and hepatitis B DNA sequences.

Note: Since PCR is more sensitive for detection of hepatitis B antigen this is more stringent than Options 1 and 2.

5.1.2 Discussion 2011 RMP

(1) The following is recommended in order to manage the risk from Hepatitis B virus:

a) All the measures recommended in Article 6.12.6 of the *Code* should be required. No testing other than physical examination would be required except for gibbons and great apes which should be subjected to a diagnostic test.

(2) This is Option 1 in the 2011 IRA options analysis:

a) In making this recommendation it is considered that veterinary supervision in the zoo of origin is sufficient to ensure that Hepatitis B does not occur in the colony. It is justified by the assumption that genotypes of Hepatitis B virus found in apes differ from those found in humans and are not harmful for humans. Further, it is a reasonable option since the virus is endemic in this country and the small increase in risk posed by limited importations into a containment facility make no significant difference to the overall biosecurity risk.

5.1.3 Risk management options presented in the IHS

(1) In the case of gibbons and great apes only, the animals were serologically tested for hepatitis on two occasions while in PEI, with an interval of 21–28 days between tests. Tests used were for detection of antibodies against hepatitis B core antigen and hepatitis B surface antigen and had negative results.

5.1.4 Discussion 2019

(1) The zoo industry approached MPI to reconsider the requirement for two tests for great apes and gibbons, as this necessitates two additional general anaesthetics. The zoo industry added the following points in support of their request:

a) The risk assessment acknowledges that there is no significant biosecurity risk posed by hepatitis B positive primates; the testing protocols are therefore outside of the remit of the import health standard.
b) The specific testing protocols recommended in the original RA 2011 are not appropriate for these species.
c) It has not been unequivocally established that apes never carry human genotypes of the virus or that humans are resistant to primate genotypes. However the justification for measures in the 2011 IHS overstates the zoonotic risk posed by primates carrying human genotypes of hepatitis B and does not recognise the potential for risk mitigation by vaccination of in-contact staff. Vaccination of personnel working with imported apes with the standard human hepatitis B vaccine would be effective in managing this risk. Vaccination is the mainstay of hepatitis B prevention in high risk situations such as human health care professionals.
d) Hepatitis B testing is complicated and relies on a number of serological markers that help to differentiate between animals that have never been infected, vaccinated animals, animals that are infected and immune, and animals that have been infected and are a chronic carriers.
e) Article 6.12.7 of the OIE Code describes a number of ways that would successfully manage any small risk posed by any HBV positive animals kept in zoos, and most of these are basic procedures that would be in place for standard husbandry of non-human primates.
f) The proposed exclusion of hepatitis B HBV positive primates (gibbons and great apes) based on an overstated zoonotic risk would not be recommended, given the remote risk of human exposure and the simple measures that could be implemented to mitigate these risks.

(2) Since hepatitis B is already endemic in New Zealand, the introduction of the virus in a few primates imported into a containment facility would not alter the prevalence of the disease significantly. For this reason, introduction of the virus in imported primates would not be relevant from a biosecurity perspective.

(3) Testing in the *Code* refers to serological tests for anti-hepatitis B core antigen and for hepatitis B surface antigen, and additional parameters as appropriate. This acknowledges that testing needs to be done in the context of the history of all testing in the colony. It would be up to the importing zoo to determine that gibbons and great apes that are imported are not infectious to other animals in the established population, or to staff.

(4) The recommendation is that the animals are healthy, and originate from premises that are under permanent veterinary supervision; and follow a health monitoring programme including necropsies, and microbiological and parasitology testing.

(5) The draft IHS has been amended to reflect this.

5.2 Rabies

5.2.1 Risk management options presented in the 2011 IRA

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

a) Rabies is an inevitably fatal disease of humans and other mammals
b) The incubation period for rabies may, on rare occasions, extend to a year or more
c) Effective vaccines are available for use in humans and nonhuman primates

(2) The *Code* (Article 6.12.6.) recommends that nonhuman primates should "*come from premises in which no case of tuberculosis or other zoonoses including rabies has occurred during the last 2 years prior to shipment in the building where the animals were kept*"

(3) One or a combination of the following options could be considered in order to manage the risk effectively:

Option 1

a) Animals to be imported should be certified as having been born in, and lived their entire life in, a captive primate population in which no case of rabies has occurred during the previous 2 years.

Note: This is equivalent to the *Code* recommendation.

Option 2

b) Animals to be imported should be certified as having been born in, and lived their entire life in, a country free from rabies.

Note: This would exclude importation from several of the countries considered in this risk analysis. Canada, the US and several European Union countries have endemic rabies. Excluding such countries would be extreme and unwarranted.

Option 3

c) When importing from a country where rabies occurs, animals to be imported should be certified as having been vaccinated at least 6 months prior to export with an effective inactivated rabies vaccine; and be

i) Subjected to a serological test to confirm seroconversion following vaccination; or
ii) Kept in isolation from other primates not part of the importation for the 6 months immediately prior to shipment.

5.2.2 Discussion 2011 RMP

(1) The following is recommended in order to manage the risk from rabies virus:

a) Animals to be imported should be certified as having been born in, and lived their entire life in, a captive primate population in which no case of rabies has occurred during the previous 2 years.

(2) This is Option 1 in the options analysis:

a) Which is similar to Article 6.12.6 of the *Code*. In making this recommendation it is considered that there is no reason to believe that this international standard does not manage the risk to an acceptable level.

5.2.3 Risk management options presented in the IHS

(1) The animals have been in premises in which no case of tuberculosis or other zoonosis including rabies has occurred in the last 2 years.

5.2.4 Discussion 2019

(1) Rabies virus is an OIE listed disease of multiple species, and an unwanted, notifiable organism New Zealand.

(2) The *Code* (Article 6.12.6.) recommends that nonhuman primates should "come from premises in which no case of tuberculosis or other zoonoses including rabies has occurred during the last 2 years prior to shipment in the building where the animals were kept".

(3) No changes are required to be made to the current risk management of rabies in zoo primates.

5.3 Tuberculosis *(Mycobacterium tuberculosis* and *Mycobacterium bovis)*

5.3.1 Risk management options presented in the 2011 IRA

(1) The following points have been considered when drafting options to manage the risks associated with introduction of *M. tuberculosis* and *M. bovis* in the commodity:

a) Quarantine is not a suitable measure for preventing introduction of mycobacteria as chronic and latent infections occur.
b) Treatments and vaccinations are not useful.
c) All *M. tuberculosis* group species are closely related, so infections can be detected using the same tests.
d) With regard to tuberculin skin tests, the following recommendation is made in Article 6.12.4. of the *Code*:

> *Of the skin tests, the Mantoux test is the most reliable of all and has the advantage over others in that the size of the reaction to the test is related to the severity of infection. Skin tests in marmosets, tamarins or small prosimians should be performed in the abdominal skin rather than in the eyelid. In some species (e.g. orangutan), skin tests for tuberculosis are notorious for false positive results. Comparative tests using both mammalian and avian PPD, together with cultures, radiography and ELISA may eliminate confusion.*

(2) The *Code* makes the following recommendations to manage the risk of tuberculosis when importing nonhuman primates;

> *Article 6.12.5.*
> ***Certification and quarantine requirements for marmosets and tamarins from premises under veterinary supervision***
>
> *Veterinary Authorities of importing countries should require:*
>
> *For marmosets and tamarins from premises under veterinary supervision*
>
> 1. *the presentation of an international veterinary certificate attesting that the shipment meets the requirements specified in Article 6.12.3., and that the animals:*
>   a. *are either born in the premises of origin or have been kept there for at least 2 years;*
>   b. *come from premises which are under permanent veterinary supervision, and where a suitable health monitoring programme is followed, including microbiological and parasitological tests as well as necropsies;*
>   c. *have been kept in buildings and enclosures in which no case of tuberculosis has occurred during the last 2 years prior to shipment;*

2. a description of the health monitoring programme implemented by the establishment of origin;
3. the placement of the animals in a quarantine station meeting the standards set in Chapter 5.9. for at least 30 days; and during this period:
a. all animals to be monitored daily for signs of illness and, if necessary, be subjected to a clinical examination;
b. all animals dying for any reason to be subjected to complete post-mortem examination at a laboratory approved for this purpose;
c. […]

Veterinary Authorities of importing countries should not normally require any tests for viral diseases or for tuberculosis. However, stringent precautions to ensure human health and safety should be followed as recommended in Article 5.9.4.

Article 6.12.6.

Certification and quarantine requirements for other nonhuman primates from premises under veterinary supervision

Veterinary Authorities of importing countries should require:

for prosimians, New World monkeys, Old World monkeys, gibbons and great apes from premises under veterinary supervision

1. the presentation of an international veterinary certificate attesting that the shipment meets the requirements specified in Article 6.9.3., and that the animals:
a. are either born in the premises of origin or have been kept there for at least 2 years;
b. come from premises which are under permanent veterinary supervision, and where a suitable health monitoring programme is followed, including microbiological and parasitological tests as well as necropsies;
c. have been kept in buildings and enclosures in which no case of tuberculosis has occurred during the last 2 years prior to shipment;
d. come from premises in which no case of tuberculosis or other zoonoses including rabies has occurred during the last 2 years prior to shipment in the building where the animals were kept;
e. were subjected to a tuberculosis test on two occasions with negative results, at an interval of at least 2 weeks between each test during the 30 days prior to shipment;
f. […]
g. […]
h. […]
2. the placement of the animals in a quarantine station for at least 30 days, and during this period:
a. all animals to be monitored daily for signs of illness and, if necessary, subjected to a clinical examination;
b. all animals dying for any reason to be subjected to complete post-mortem examination at a laboratory approved for this purpose;
c. any cause of illness or death to be determined before the group to which the animals belong is released from quarantine;
d. animals to be subjected to the following diagnostic tests and treatments in accordance with Chapter 4.16.:

(3) One or a combination of the following options could be considered in order to manage the risk effectively:

Option 1

a) Primates to be imported could have been born in or lived for the two years prior to shipment in premises in which tuberculosis has not been diagnosed in any animal for at least 2 years.

Option 2

b) Primates to be imported could be subjected to a tuberculin skin test on two occasions with negative results; once immediately on entry to a pre-export quarantine and again 4 weeks later.

Option 3

c) Primates to be imported could be subjected to a tuberculin skin test, and a serological test with negative results; both tests being conducted immediately on entry to a pre-export quarantine and again 4 weeks later.

Note: These options are applicable to all primates and do not differentiate marmosets and tamarins from other primates as the *Code* does in Articles 6.12.5. and 6.12.6 below.

Note: It should be noted, however, that the *Code* explicitly states that Veterinary Authorities of an importing country should not normally require that marmosets or tamarins be subjected to a test for tuberculosis.

Note: Each tuberculin test in a primate requires a general anaesthetic which is stressful and compromises the welfare of the animal. A requirement for unnecessary tuberculin tests should therefore be avoided.

(4) False positive results are relatively common in nonhuman primates, especially orangutans. Such false positives are not a biosecurity issue but will be of concern to an importer. An importer who suspects that a test result is a false positive could apply for a derogation on the grounds of equivalence by supplying additional evidence such as chest X-rays and/or the result of a blood test such as Chembio's PrimaTB STAT-PAK test.1

5.3.2 Discussion 2011 RMP

(1) The following is recommended in order to manage the risk from tuberculosis:

(2) Primates to be imported must have been born in or lived for the two years prior to shipment in premises in which tuberculosis has not been diagnosed in any animal for at least 2 years.

(3) This is Option 1 in the options analysis:

a) It acknowledges that the risk posed by the importation of a small number of primates into confinement, relative to other pathways for these organisms (live animals and humans), is very low, and it acknowledges that testing primates requires at least one general anaesthetic, which is stressful and compromises the welfare of the animal.

5.3.3 Risk management options presented in the IHS

(1) The animals have been in premises in which no case of tuberculosis or other zoonosis including rabies has occurred in the last 2 years.

5.3.4 Discussion 2019

(1) No changes are required to be made to the current risk management of tuberculosis in zoo primates.

5.4 Enteric bacteria

5.4.1 Risk management options presented in the 2011 IRA

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

a) Asymptomatic carriage of enteric bacteria is common and a period of quarantine will not eliminate this risk.
b) Reliable vaccines are not available to protect against enteric bacteria.
c) Administration of antibacterial drugs cannot be relied upon to eliminate carriage of enteric bacteria.

(2) The *Code* makes recommendations for managing the risk of enteric bacteria in primates imported from a controlled environment. For nonhuman primates, Articles 6.12.5. and 6.12.6. recommend faecal culture daily for 3 days within the first 5 days of arrival (or into pre-export quarantine).

(3) If the importation were to be from an uncontrolled environment (and hence outside the scope of this risk analysis), the *Code* recommends an additional one or two faecal cultures carried out at intervals of 2 to 4 weeks.

(4) The following options could be considered in order to manage the risk from enteric bacteria:

Option 1

a) No restrictions on importation except that the animals should be clinically healthy.

Note: This option implies that, since these enteric bacteria are universally distributed and occur commonly in New Zealand, they are not a significant biosecurity risk in the few primates being imported into a containment facility.

Option 2

b) Carry out faecal culture for enteric bacteria, as recommended in Articles 6.12.5. and 6.12.6. of the *Code*, with negative results.

Option 3

c) Carry out faecal culture for enteric bacteria, as recommended in Article 6.12.4. of the *Code*, with negative results.

5.4.2 Discussion 2011 RMP

(1) The following is recommended in order to manage the risk from enteric bacteria:

(2) No restrictions on importation except that the animals should be clinically healthy.

(3) This is Option 1 in the options analysis:

a) In making this recommendation it is considered that since these enteric bacteria are universally distributed and occur commonly in New Zealand, they are not a significant biosecurity risk in the few primates being imported into a containment facility.

5.4.3 Risk management options presented in the IHS

(1) As above.

5.4.4 Discussion 2019

(1) The enteric bacteria occur commonly in New Zealand. The importation of a small number of infected primates into zoos, which are containment facilities, is unlikely to alter the prevalence of human infection in any detectable way. On these grounds no changes are required to be made to the current risk management of enteric bacteria in zoo primates.

5.5 Internal parasites

5.5.1 Risk management options presented in the 2011 IRA

(1) The following points have been considered when drafting options to manage the risks associated with introduction of helminth parasites in the commodity

a) There are too many parasite species to consider each individually. Therefore, options for effective management should be based on general principles which will be effective to prevent introduction of all species.
b) Trematodes and cestodes are not considered to be a hazard in the commodity.
c) Nematode infestations can be diagnosed by examination of faecal samples. Faeces should be examined by larval culture and for eggs by flotation and sedimentation methods.

d) Effective treatments are available for all important parasites and could be used prophylactically.
e) Articles 6.12.5. and 6.12.6. of the *Code* recommend that primates being imported from a controlled environment be subjected to diagnostic tests for, and appropriate treatment against, endoparasites. The test procedure should consist of at least two tests, one of which should be at the start, the other towards the end of a quarantine period. Testing methods should be appropriate to species of primate and species of parasite.

(2) One or a combination of the following options could be considered in order to manage the risk effectively;

Option 1

a) No measures against internal parasites could be required on the importation of primates from a controlled environment.

Note: This option implies that introduction of internal parasites harmful to humans or other mammals is so unlikely that it can be regarded as negligible.

Option 2

b) Primates to be imported could be treated twice, once shortly after introduction into a quarantine, and again at least 4 weeks later. Different anthelmintics should be used for the treatments and both anthelmintics should be known to be broadly effective against nematode parasites.

Note: This option relies solely on treatment without testing to determine whether it has been effective.

Option 3

c) Primates to be imported could be subjected to a faecal examination using larval culture, sedimentation and flotation methods and any additional appropriate tests (e.g. testing of nasal swabs where there are clinical signs suggestive of *Anatichosoma spp*. infection) immediately on entry into quarantine.

i) A positive test result would be followed by identification of the species of parasite and appropriate treatment of all primates in the consignment.
ii) Two weeks after treatment all animals in the group could again be tested and if they are still positive they could be treated with a different anthelmintic. This procedure could be repeated until all animals in the group have negative faecal tests.

5.5.2 Discussion 2011 RMP

(1) The following is recommended in order to manage the risk from helminth parasites:

(2) Primates to be imported should be treated twice in pre-export quarantine, at least 2 weeks apart, with an anthelmintic known to be broadly effective against nematode parasites in primates.

(3) This is a combination of Option 1 (no treatment) and Option 2 (treating twice in pre-export quarantine at least 4 weeks apart with different anthelmintics).

a) In making this recommendation it is considered that the introduction of internal parasites harmful to humans or other mammals is unlikely, but that treatment in the same timeframe as ticks is simple to achieve and does not require extra handling of the animals. In some cases this may be accomplished by using products that treat both the target internal and external parasites.

5.5.3 Risk management options presented in the IHS

(1) During PEI the primates were treated twice, at least 14 days apart, for internal parasites.

5.5.4 Discussion 2019

(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. No changes are required to be made to the current risk management of internal parasites in zoo primates.

5.6 External parasites

5.6.1 Risk management options presented in the 2011 IRA

Lice

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

a) New species of lice which are able to parasitise humans are unlikely to be found on primates imported from a controlled environment.
b) Effective treatments are available for lice-infested primates and for the diseases they could be carrying.
c) Although the *Code* does not make specific recommendations relating to lice, it does make general recommendations for all ectoparasites.
d) Effective treatment of lice requires at least two treatments at an interval of 10-14 days.
e) The insecticide chosen should be one effective against all ectoparasites. Treatments for all types of ectoparasites should be integrated and reviewed regularly so as to insure the most effective insecticides are used.
f) The examination and treatment of primates for ectoparasites may require the administration of a tranquillizer or anaesthetic. This is likely to be stressful and compromise the animal's welfare, so should not be required unless absolutely essential.

(2) The *Code* recommends that nonhuman primates should be tested and treated for ectoparasites at least twice, once at the start of a quarantine period and once toward the end. Testing methods and treatments should be appropriate to the species of animal and parasitic agent.

(3) One or a combination of the following options could be considered in order to manage the risk effectively;

Option 1

a) Primates could be imported without restrictions provided that their skin and hair appears to be healthy.

Note: This option implies that lice are not likely to be present on primates that are sourced from a controlled environment under veterinary supervision, and that infestations with lice are of minor importance.

Option 2

b) While held in a pre-export quarantine, primates to be imported could be treated twice, 14 days apart, with a broad spectrum insecticide.

Note: This option is less stringent than the *Code* recommendations since inspections are not required. It does not provide assurance that treatments have been effective.

Option 3

c) While held in a pre-export quarantine, primates to be imported could be treated twice, 14 days apart, with a broad spectrum insecticide and inspected carefully after each treatment. Should viable lice be present after the second treatment, the procedure could be repeated using a different insecticide and treatment and inspections could be repeated until the animals are parasite-free.

Ticks

(4) The following points have been considered in drafting options to manage the risk of introducing ticks on the commodity;

a) A large number of tick species are capable of infesting primates.
b) Ticks are potential vectors of a number of diseases of humans and animals.
c) Resistance to acaricides is common and treatment cannot be relied upon as the only means of preventing the introduction of ticks.
d) Treatments for all types of ectoparasites should be integrated and reviewed regularly so as to insure the most effective insecticides are used.
e) It may be possible to manage quarantine of primates in a manner that would prevent the introduction of ticks, even without the use of acaricides. If primates were to be held in a quarantine facility for a sufficient length of time, say 6 weeks, any ticks that might be infesting on entry to the premises would have engorged and dropped off. Provided the premises were regularly cleaned and treated in a manner that would kill all ticks, re-infestation would be prevented.
f) The examination and treatment of primates for ectoparasites may require the administration of a tranquillizer or anaesthetic. This is likely to be stressful and compromise the animal's welfare, so should not be required unless absolutely essential.

(5) The *Code* recommends that nonhuman primates should be tested and treated for ectoparasites at least twice, once at the start of a quarantine period and once toward the end. Testing methods and treatments should be appropriate to the species of animal and parasitic agent.

(6) One or a combination of the following options could be considered in order to manage the risk effectively:

Option 1

a) While held in a pre-export quarantine, primates to be imported could be treated twice, 14 days apart, with an effective acaricide.

Note: This option relies solely on the effectiveness of the acaricide.

Option 2

b) While held in a pre-export quarantine, primates to be imported could be treated twice, 14 days apart, with an effective acaricide and inspected carefully after each treatment. Should viable ticks be present after the second treatment, the procedure could be repeated using a different acaricide and treatment and inspections could be repeated until the animals are parasite-free.

Note: Whichever option is selected, effective management of the risk requires that the quarantine premises have impervious floors and smooth painted walls.

(7) The premises should be cleaned thoroughly with a high pressure hose followed by steam cleaning or spraying with a suitable acaricide. Bedding should consist of material that will not harbour ticks. Grass and straw are not suitable while wood shavings or sawdust are. Bedding should be removed every 7 days and the premises cleaned thoroughly and sprayed with acaricide.

Mites

(8) The following points have been considered in drafting options to manage the risk of introducing trombiculid mites on the commodity;

a) Trombiculid mites are extremely small (0.4 mm) and are unlikely to be seen on inspection.
b) Trombiculid mites are a potential vector of scrub typhus.
c) Trombiculid mites are present on their host for a few days only.

(9) The *Code* recommends that nonhuman primates should be tested and treated for ectoparasites at least twice, once at the start of a quarantine period and once toward the end. Testing methods and treatments should be appropriate to the species of animal and parasitic agent.

Option 1

a) While held in a pre-export quarantine, primates to be imported could be treated twice, 14 days apart, with an effective ectoparasiticide.

Note: Effective management of the risk requires that the quarantine premises have impervious floors and smooth painted walls. The premises should be cleaned thoroughly with a high pressure hose followed by steam cleaning or spraying with a suitable insecticide. Bedding should consist of wood shavings or sawdust. Bedding should be removed every 7 days and the premises cleaned thoroughly and sprayed with insecticide.

5.6.2 Discussion 2011 RMP

Lice

(1) The following is recommended in order to manage the risk from lice:

(2) Primates should be imported without restrictions provided that their skin and hair appears to be healthy.

(3) This is Option 1 in the options analysis.

a) In making this recommendation it is considered that lice are not likely to be present on primates that are sourced from a controlled environment under veterinary supervision, and that infestations with lice are of minor importance.

Ticks

(4) The following is recommended in order to manage the risk from ticks:

a) While held in a pre-export quarantine, primates to be imported should be treated twice, 14 days apart, with an effective acaricide. Within the 72 hours prior to export the animals should be examined and found to be free from external parasites.

(5) This is a combination of Option 1 and Option 2 in the options analysis.

a) One veterinary inspection to ensure that the animal is well and does not harbour external parasites is standard practice for zoo animals, and it is hoped that this may be able to be accomplished without general anaesthetic, which is desirable on welfare grounds. If general anaesthetic is needed, only requiring one (rather than the two that would be required for Option 2) is preferable but still provides good risk management.

b) Effective management of the risk requires that the quarantine premises must have impervious floors and smooth painted walls. The premises should be cleaned thoroughly with a high pressure hose followed by steam cleaning or spraying with a suitable acaricide. Bedding should consist of material that will not harbour ticks. Grass and straw are not suitable while wood shavings or sawdust are suitable. Bedding should be removed every 7 days and the premises cleaned thoroughly and sprayed with acaricide.

Mites

(6) The following is recommended in order to manage the risk from mites:

a) While held in a pre-export quarantine, primates to be imported should be treated twice, 14 days apart, with an effective ectoparasiticide.

(7) This is Option 1 in the options analysis, and it is the same requirement as for ticks.

a) Effective management of the risk requires that the quarantine premises have impervious floors and smooth painted walls. The premises should be cleaned thoroughly with a high pressure hose followed by steam cleaning or spraying with a suitable insecticide. Bedding should consist of wood shavings or sawdust. Bedding should be removed every 7 days and the premises cleaned thoroughly and sprayed with insecticide.

5.6.3 Risk management options presented in the IHS

(1) During PEI the primates were treated twice, at least 14 days apart, with an insecticide/acaricide solution effective against ticks and other external parasites in primates.

5.6.4 Discussion 2019

(1) Primates can be affected by various species of ticks, lice, mites, flies and fleas.

(2) Zoo animals are not considered a significant pathway for the introduction of exotic ectoparasites due to the small numbers of animals imported as well as reduced exposure in captivity.

(3) 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 twice within PEI at least 14 days apart. The timing of the external parasite inspection will be flexible to reduce the number of times the animals have to be anaesthetised.

(4) As per several recent zoo requests and an existing Chief Technical Officer direction, a long acting acaricide can be used instead of retreating the premises every 10 days. This change has been reflected in the amended IHS.

(5) Some zoos are unable to meet clause 9 of the *Import Health Standard for Zoo Primates from Australia, Canada, the European Union, USA and Singapore* dated July 2011 (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 external parasite inspection is required.

5.7 Seeds

5.7.1 Risk management options presented in the 2011 IRA

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

a) Weed seeds will not be present on a primate's hair or in their faeces unless weeds or weed seeds have been present in the premises where primates are held prior to export or in food eaten by the primates prior to export.
b) Weed seeds are likely to be able to survive harsh environmental conditions.
c) The examination of a primate's skin for the presence of weed seeds may require the administration of a tranquillizer or anaesthetic. This is likely to be stressful and compromise the animal's welfare, so should not be required unless absolutely essential.
d) Examination of a primate's skin for ectoparasites would detect weed seeds.

(2) One or a combination of the following options could be considered in order to manage the risk effectively:

Option 1

a) Primates could be imported without restrictions on the assumption that they are unlikely to be carrying plant material or seed on their hair or skin or in their alimentary tract.

Option 2

b) Prior to export, primates could be fed a diet that is free from viable seeds. A normal primate diet is likely to be suitable.

Option 3

c) Premises where primates are held prior to export could be free from all bedding material that could contain weeds or weed seeds. Wood shavings, sawdust or artificial bedding materials would be suitable.

Option 4

d) Immediately prior to shipment primates could be inspected to ensure that they are free from plant material. If necessary they could be groomed thoroughly.

5.7.2 Discussion 2011 RMP

(1) The following is recommended in order to manage the risk from weed seeds:

a) No restrictions except that bedding accompanying the primates should be free of weed seeds.

(2) This is option 1 from the options analysis.

a) In making this recommendation it is considered that primates are unlikely to be carrying plant material or seed on their hair or skin or in their alimentary tract. Bedding cannot contain weed seeds.

5.7.3 Risk management options presented in the IHS

(1) As above.

5.7.4 Discussion 2019

(1) No changes are required to be made to the current risk management of seeds in zoo primates.

5.8 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 primates, with the exception of macaques, provided the species has a containment approval from the Environment Protection Authority (EPA).

(2) Cercopithecine herpes virus 1 (*Herpesvirus simiae*, Herpesvirus B virus) is considered a risk organism only in macaques.

(3) Cercopithecine herpes virus 1 requires no measures as macaques are not eligible for import.