

**Import Risk Analysis:
Specified members of the
Order: Squamata from
government-approved
zoological collections in
Australia**

REVIEW OF SUBMISSIONS

16 October 2008

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Policy and Risk
MAF Biosecurity New Zealand



Import Risk Analysis: Specified members of the Order: Squamata from
government-approved zoological collections in Australia.

Review of Submissions

16 October 2008

Approved for general release

A handwritten signature in black ink that reads 'Christine Reed'.

Christine Reed
Manager, Risk Analysis
MAF Biosecurity New Zealand

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Executive Summary

Curators of New Zealand zoological collections wish to import certain species of lizards from the Order Squamata for the purposes of display and as part of a regional co-operative breeding programme for species conservation. In addition, lizard collections, including imported species, are held at a number of zoological and wildlife facilities and others are held by professional or amateur herpetologists.

The biosecurity risks associated with the importation of clinically healthy live animals (and their eggs) from defined species within the Order Squamata (Class Reptilia) from government-approved zoological collections Australia into private or public zoological collections in New Zealand were considered in a draft import risk analysis released for public consultation on 26 May 2008.

It was concluded that the risk in live Squamata was non-negligible for the following organisms:

- Pathogenic adenoviruses (Atadenoviruses)
- Exotic *Salmonella* spp.
- Gastro-intestinal nematodes
- Haemosporidian protozoa
- *Entamoeba invadens*
- Ectoparasites (ticks and mites)

Options for sanitary measures to effectively manage risks associated with these hazards were presented. These included requirements that imported animals be held in pre-export quarantine for 90 days and measures based on treatment, diagnostic testing, or veterinary certification.

It was concluded that risks in eggs of Squamata are limited to pathogenic adenoviruses of lizards (Atadenoviruses) and exotic *Salmonella* spp. Options for sanitary measures to effectively manage risks associated with these hazards were presented, including requirements that eggs originate from premises where reptiles are under veterinary supervision and measures based on diagnostic testing and veterinary certification.

It should be noted that the prevention or management of any adverse effects associated with a new lizard species entering New Zealand is a requirement of the Hazardous Substances and New Organisms (HSNO) Act 1996. Any application to import a new lizard species under Part V of the HSNO Act would need to be assessed under that legislation by the Environmental Risk Management Authority (ERMA).

Three submissions were received, from the New Zealand Herpetological Society (NZHS), the Royal New Zealand Forest and Bird Protection Society (RFBPS), and the Society for research on amphibians and reptiles in New Zealand (Inc.).

MAFBNZ has responded to reviewers submissions as follows:

- The risk analysis applies only to the 12 species and two genera of lizards that are named in the Commodity Definition (Section 2.1).
- The risk analysis does not contain recommendations or instructions. These will appear when a draft Import Health Standard (IHS) is circulated for review. The most appropriate option or combination of options will be used in the IHS. The draft IHS will be circulated to a wide spectrum of interested parties including the reviewers of this risk analysis for review.

- The risk analysis considers biosecurity risks posed by known disease agents. Matters relating to which species of lizards are present in New Zealand, which species are classified as new species and whether importation of new species will be allowed are not part of the risk analysis. These matters will be considered by the Environmental Resource Management Authority (ERMA) under the authority of the Hazardous Substances and New Organisms (HSNO) Act.
- In the evaluation of the likely consequences following the introduction of the agents considered in the draft risk analysis, MAFBNZ presented the available published scientific literature and transparently based the consequence assessments on these findings.
- MAFBNZ is confident that the Australian Veterinary authorities will be able to provide the certification required with respect to the health status of individual lizards and the collections from which they are derived.
- The findings of Reardon and Norbury (2004) are considered to be consistent with the draft import risk analysis, which stated that, based on the lack of evidence from either wild or captured lizards that haemoparasites other than *Plasmodium* spp. and other Haemosporidia cause disease or other negative effects, the consequence assessment for haemogregarinid and other haemoparasites in the commodity is considered to be negligible.
- The finding of *Amblyomma sphenodonti* in association with tuatara on off-shore islands (such as the Mercury Islands, Alderman Islands, Trios Group, and Stephens Island) has been noted and the notifiable organisms register will be amended to reflect the presence of this tick in New Zealand.

This review of submissions has not identified significant new technical issues that affect the conclusions of the draft import risk analysis for specified members of the Order: Squamata from government-approved zoological collections in Australia. Therefore the conclusions of the draft import risk analysis are considered to be valid as a basis for the development of import health standards for these commodities.

1 Introduction

Risk analyses are carried out by MAF Biosecurity New Zealand under section 22 of the Biosecurity Act 1993, which lays out the requirements in regard to issuing Import Health Standards (IHSs) to effectively manage the risks associated with the importation of risk goods.

Draft risk analyses are written by the Risk Analysis Group and submitted to internal, interdepartmental, and external technical review before the draft risk analysis document is released for public consultation. The Risk Analysis Group of MAF Biosecurity New Zealand then reviews the submissions made by interested parties and produces a review of submissions document. The review of submissions identifies any matters in the draft risk analysis that need amending in the final risk analysis although the decision to implement these changes lies with an internal committee of MAF Biosecurity New Zealand. The final risk analysis and the review of submissions together inform the development of any resulting IHS by the Border Standards Group of MAF Biosecurity New Zealand for issuing under section 22 of the Biosecurity Act by the Director-General of MAF on the recommendation of the relevant Chief Technical Officer (CTO).

Section 22(5) of the Biosecurity Act 1993 requires CTOs to have regard to the likelihood that organisms might be in the goods and the effects that these organisms are likely to have in New Zealand. Another requirement under section 22 is New Zealand's international obligations and of particular significance in this regard is the *Agreement on Sanitary & Phytosanitary Measures* (the "SPS Agreement") of the World Trade Organisation.

A key obligation under the SPS agreement is that sanitary and phytosanitary measures must be based on scientific principles and maintained only while there is sufficient scientific evidence for their application. In practice, this means that unless MAF is using internationally agreed standards, all sanitary measures must be justified by a scientific analysis of the risks posed by the imported commodity. Therefore, risk analyses are by nature scientific documents, and they conform to an internationally recognised process that has been developed to ensure scientific objectivity and consistency.

MAF Biosecurity New Zealand released the document *Import Risk Analysis: Specified members of the Order: Squamata from government approved zoological collections in Australia* for public consultation on 26 May 2008. Every step was taken to ensure that the risk analysis provided a reasoned and logical discussion, supported by references to scientific literature. The draft risk analysis was peer reviewed internally and externally and then sent for interdepartmental consultation to the Ministry of Health, the Department of Conservation and the New Zealand Food Safety Authority. Relevant comments were incorporated at each stage of this review process. The closing date for public submissions on the risk analysis was 7 July 2008.

Three submissions were received. Table 1 lists the submitters and the organisations they represent.

This document is MAF Biosecurity New Zealand's review of the submissions that were made by interested parties following the release of the draft risk analysis for public consultation. Public consultation on risk analyses is primarily on matters of scientific fact that affect the assessment of risk or the likely efficacy of any risk management options presented.

For this reason, the review of submissions will answer issues of science surrounding likelihood¹, not possibility², of events occurring. Speculative comments and economic factors other than the effects directly related to a potential hazard are beyond the scope of the risk analysis and these will not be addressed in this review of submissions.

Table 1. Submitters and Organisations Represented

Submitter	Organisation Represented/Location
Barbara Watkins	New Zealand Herpetological Society
Kevin Hackwell	Royal Forest and Bird Protection Society
Melinda Habgood	Society for Research on Amphibians and Reptiles in New Zealand

¹ Likelihood: The quality or fact of being likely or probable; probability; an instance of this.

² Possible: Logically conceivable; that which, whether or not it actually exists, is not excluded from existence by being logically contradictory or against reason.

2 Review of Submissions: Import Risk Analysis: specified members of the order: Squamata from government-approved zoological collections in Australia

2.1 New Zealand Herpetological Society Incorporated (NZHS)

2.1.1 NZHS suggest that squamata “that contain a possible risk should be housed, as you suggest in your draft, in a regulated containment area in duly authorised institutions that have sufficiently qualified staff and veterinary services. Any public display should be so constructed as to allow viewing but prohibit personal contact by the public”.

MAFBNZ response: The draft import risk analysis has examined the biosecurity risks associated with live Squamata and eggs imported from government-approved zoological collections from Australia as described in Section 2.1 (the commodity definition).

Section 2.3.1 of the draft import risk analysis states that “In assessing the likelihood of exposure to lizards in New Zealand, an assumption is made that there is potential for contact between imported animals and their offspring and lizards in the outside environment. Such contact might be direct through the walls of enclosures, indirect through transfer of fomites, movement of rodents, insects or other animals, or through escape or release of the imported lizards or their progeny”.

Provided imported lizards are subject to risk management measures as described in the draft import risk analysis, MAFBNZ considers there to be no biosecurity reasons why these individuals cannot be imported into private collections. However, as noted in the draft import risk analysis, the prevention or management of any adverse effects associated with a new lizard species entering New Zealand is a requirement of the Hazardous Substances and New Organisms (HSNO) Act 1996. Any application to import a new lizard species under Part V of the HSNO Act would need to be assessed under that legislation by the Environmental Risk Management Authority (ERMA).

2.1.2 NZHS suggests that “It is of concern that NZ appears not to have sufficient skilled personnel and professional expertise to establish suitable containment and monitoring facilities in many of the zoos that are desirous of importing exotic Squamata spp.

MAFBNZ response: MAFBNZ is introducing a new containment standard for zoo animals that includes specific containment and staff training requirements. These requirements will apply to all zoos and have been developed in close consultation with zoo industry experts. Containment facilities are regularly audited by MAFBNZ and any irregularities are promptly reported, both internally and to the Environmental Risk Management Authority New Zealand.

2.1.3 NZHS also makes enquiries about animals that are listed by biosecurity as currently present in New Zealand.

MAFBNZ response: The risk analysis is only concerned with biosecurity issues, that is, disease agents that could be introduced when importing lizards. Decisions about whether a particular species of lizard is a new species and can be introduced are made by the Environmental Resource Management Agency (ERMA). ERMA acts under the Hazardous Substances and New Organisms (HSNO) Act. Importers of new species will have to apply to ERMA for permission to import new species; MAFBNZ will not issue a “Permit to Import”

unless permission has been obtained from ERMA for the importation of the species concerned. It will be the responsibility of importers who wish to import new species to first obtain clearance from ERMA for the species concerned. It will also be ERMA's responsibility to determine what constitutes a new species. Only when the species to be imported is well known to be present in New Zealand, will a "Permit to Import" be issued without clearance from ERMA.

2.1.4 NZHS considers that "any importation of "new" reptile spp. should be derived from well regulated and monitored facilities and that acceptable sanitary certification is gained prior to any exotic reptiles being introduced into New Zealand".

MAFBNZ response: It is stated in the commodity definition of the risk analysis that "Individuals to be imported will have been resident in a government-approved zoological collection in Australia for at least twelve months prior to importation or will have been born in captivity in a government-approved zoological collection and remained there for their entire lives prior to importation". This will ensure that animals will be derived from suitable sources and the import health standard (IHS) will specify the conditions and certification required. This will be transparent any draft IHSs that are published for review.

2.2 Royal Forest and Bird Protection Society (RFBPS)

2.2.1 RFBPS seeks clarification on whether the risk analysis relates to only the species of squamata listed in the commodity definition or to all species of squamata from Australia.

MAFBNZ response: The draft import risk analysis relates only to the 12 species and two genera (*Pogona* spp. and *Nephurus* spp.) listed in the commodity definition.

2.2.2 RFBPS states that "it is very disappointing that while the IRA considers 14 species, it does not specify how many of these species are already present in New Zealand..... etc"

MAFBNZ response: See the response to another reviewer's question in Section 2.1.3.

2.2.3 RFBPS has asked for clarification on whether MAFBNZ has produced the risk analysis in response to a specific request or if anyone could import lizards.

MAFBNZ response: A specific request was made to import lizards. In responding to this request the Risk Analysis Section of MAFBNZ produced the risk analysis that is under review. The risk analysis defines the risks involved and suggests options for effective management of identified risks. However, it does not make specific recommendations or specify any measures that must be implemented when importing animals. Based on the options presented in the risk analysis and those suggested by reviewers of the risk analysis, the Animal Imports and Exports Section of the Border Standards Directorate of MAFBNZ will produce an IHS. The IHS will specify precisely the measures that must be applied and the procedures that must be followed when importing animals. None of the options in the risk analysis indicate that importation of lizards need be limited to a single importer or group of importers. The final measures recommended will not be influenced by a desire to favour a particular importer. RFBPS will be given the opportunity to comment on a draft of the IHS before it is finalised.

2.2.4 RFBPS states that the risk analysis does not sufficiently consider the impacts that new species of lizards could have on naïve indigenous fauna.

MAFBNZ response: A naïve population will usually be more susceptible to a particular pathogen than a population in which the pathogen is endemic. A difficulty with making this judgement with respect to New Zealand lizards is that it is not known whether the diseases are endemic or not, and whether a truly naïve population exists. It is possible that several if not all of the disease agents of Australian lizards could also be found in New Zealand if looked for intensively enough. In addition, for a number of diseases that are rare in Australia, there is no evidence that Australian lizards have been widely infected with the disease agents. There is no evidence that there is a high prevalence of antibodies against the various agents, which would be the case if they were a largely immune population. Therefore, the New Zealand population may be no more susceptible than the Australian one.

MAFBNZ's risk analysis procedures (section 4.4.3.1) states "the assessment of the likelihood and consequences of environmental impacts often involves greater uncertainty than the assessment of impacts on cultivated or managed plants/animals. This is due to the lack of information, additional complexity associated with ecosystems and variability associated with unwanted organisms or diseases, hosts or habitats and the lack of baseline data. In these cases it is again necessary to document the areas of uncertainty and the degree of uncertainty in the assessment, and to indicate where expert judgement has been used."

In the evaluation of the likely consequences following the introduction of the agents considered in the draft risk analysis, MAFBNZ presented the available published scientific literature and transparently based the consequence assessments on these findings.

For example, paramyxoviruses (Section 3.1.1 of the draft import risk analysis) are not recognised in New Zealand lizards (or Australia), and reports have shown evidence of exposure of a number of lizard species (in Honduras, Mexico and London) to these viruses with no effect on health. MAFBNZ has concluded that, based on this available evidence, it is reasonable to conclude there would be a negligible likelihood of disease in native lizard species following the introduction of paramyxoviruses associated with an imported lizard.

2.2.5 RFBPS suggests "The fact that an Australian zoological collection may be "government approved" is not in itself an adequate safeguard that it will be disease free. The proper criteria is surely that the collection must be demonstrably disease free. Any standard should require that such a collection has been able to show that active monitoring has revealed that the collection has been free from all risk organisms for at least 90 days prior to the date of export"

MAFBNZ response: The scope of the risk analysis limits the animals eligible for importation to those that been resident for at least 1 year or their entire lives, in a government-approved zoological collection. In addition for adenovirus it is suggested that for the lizard collection from which the animals for export will be chosen, the lizards could have been under veterinary supervision for 90 days before shipment and that any cases of disease or death during that period could be examined to exclude adenovirus infection. Other organisms of concern were protozoa, internal or external parasites and Salmonella. For these organisms, appropriate testing or treatment options have been suggested. The options presented in the draft risk analysis are considered by MAFBNZ to be appropriate for the diseases concerned. It is to be expected that testing and certification required will be more precisely specified in the IHS. RFBPS will have an opportunity to review and comment on the IHS.

2.2.6 RFBPS states that the New Zealand status of the assessed organism is very important to the assessment. However, sometimes the report would specify that no reports of [the organism] being present in New Zealand have been located. Other times it would instead state that [the organism] is not included in the register of unwanted organisms. Both pieces of information should have been provided for each assessed organism.

MAFBNZ response: MAFBNZ acknowledges that reporting both pieces of information could have been included.

However, in practice very few of the organisms that are listed on the unwanted organisms register are present in New Zealand and none of these are organisms that were considered to be of non-negligible concern in this risk analysis. Therefore, including both pieces of information for each disease agent would not alter any conclusions in the risk analysis.

2.2.7 RFBP is concerned because the risk analysis states in many cases that one or a combination of options could be adopted, when they believe that the options presented are not either/or options and that in most cases all the options should be implemented.

MAFBNZ response: The choice of the appropriate option or combination of options will be made by at the time of drafting any IHS that is based on this risk analysis, as discussed above.

2.3 Society for Research on Amphibians and Reptiles in New Zealand (Inc.)

2.3.1 p. 58-63, Identification of haemoparasites in New Zealand lizards

Several species of lizard in which haemoparasites have been identified were absent from the list. *Hepatozoon lygosomarum* was found in McCann's skink (*Oligosoma maccanni*), the Otago skink (*O. otagense*), and the grand skink (*O. grande*; Reardon and Norbury, 2004). There was a significant relationship between *H. lygosomarum* prevalence and the prevalence of its supposed ectoparasite vector *Ophionyssus scincorum*, and a weak relationship with the prevalence of the ectoparasite *Odontacarus lygosomae*. Although the impact of these parasites on their host lizards remains unclear, threatened lizards (such as *O. otagense* and *O. grande*) on mainland New Zealand are under high physiological stress and would be most at risk should new haemoparasites enter New Zealand. Because it is unknown which ectoparasites could be used as vectors for haemoparasites (other than *Plasmodium* spp. and Haemosporidia), and the consequences of these parasites remains unclear, it would be worth re-evaluating whether the consequence of these parasites in the commodity is negligible. Risk management by testing lizards for such haemoparasites before importation could be easily achieved whilst testing for *Plasmodium* spp. and Haemosporida.

MAFBNZ response: Table 3 of the import risk analysis reflects the findings of McKenna (2003). The paper cited above by SRANZ (Reardon and Norbury, 2004) records the presence of *H. lygosomarum* in two further species of lizard in New Zealand. However, as this parasite is recognised in the risk analysis as being present in the common skink and the moko skink, this does not affect the conclusions of the risk analysis.

It is interesting to note that Reardon and Norbury (2004) report high levels of parasitaemia in *O. otagense* due to *H. lygosomarum*, although no clinical effect due to this parasite is observed. The authors also suggest that this may reflect a benign predisposition to carry naturally high levels of parasitaemia although they go on to suggest that this requires further research.

The findings of this paper are therefore considered to be consistent with the draft import risk analysis, which stated that, based on the lack of evidence from either wild or captured lizards that haemoparasites other than *Plasmodium* spp. and other Haemosporidia cause disease or other negative effects, the consequence assessment for haemogregarinid and other haemoparasites in the commodity is considered to be negligible.

2.3.2 p. 71-74, Ectoparasites

Several species of reptiles in which ectoparasites have been identified were absent from the list. However, it is unlikely that any of the additions would change either the risk assessment or management. It is worth noting (for consideration of wording) that there is an endemic, hostspecific *Amblyomma* species (*Amblyomma sphenodonti*, the tuatara tick) that is absent from the list. The species previously belonged to the *Aponomma* genus, but was reclassified in 2002 (Klompen et al., 2002), although recent genetic analysis of the relationship between *Am. sphenodonti* and other *Amblyomma* species suggest that a new genus may be warranted (Miller et al., 2007). *Amblyomma sphenodonti* would not be found on imported reptiles, and risk management procedures for other ectoparasites should adequately cover any risks.

MAFBNZ response: The information presented in Table 4 (page of the draft import risk analysis) reflects the findings of McKenna (2003).

The finding of *Amblyomma sphenodonti* in association with tuatara on off-shore islands (such as the Mercury Islands, Alderman Islands, Trios Group, and Stephens Island) has been noted and the notifiable organisms register will be amended to reflect the presence of this tick in New Zealand. As indicated above, this is not considered to alter the conclusions of the draft import risk analysis.

3 Copies of Submissions

3.1 Barbara Watkins, New Zealand Herpetological Society Incorporated.

The committee of the New Zealand Herpetological Society thanks you for the opportunity to comment on the Draft risk analysis of; Specified members of the order Squamata from government approved zoological collections in Australia.

Our members' interest lies primarily in the protection of New Zealand's endemic reptiles, the preservation of their ecology and habitats, and to assist any duly authorised body advocating their protection from potential pathogens and predators.

As we represent the private keepers of many New Zealand endemic lizards we do not have the veterinary expertise and have only a limited knowledge of detailed reptilian pathology. This obviously limits the extent of our input into your request for submissions.

From the draft manual we gather that the majority of the potential risk organisms are unlikely to be present in reptiles imported into New Zealand from the proposed Australian sources.

Those that contain a possible risk should be housed, as you suggest in your draft, in a regulated containment area in duly authorised institutions that have sufficiently qualified staff and veterinary services. Any public display should be so constructed as to allow viewing but prohibit personal contact by the public.

We consider that any importation of, "new", reptile spp. should be derived from well regulated and monitored facilities and that acceptable sanitary certification is gained prior to any exotic reptiles being introduced into New Zealand.

Of the animals requested, ERMA has already approved the importation of nine. Six of these have been imported in the past and several of these spp. are readily available in the "Pet" trade. We consider that stringent control should be given for the remaining five spp. and all future imports into N.Z. We are unsure if any disease organisms are already present on previously imported reptiles, which are held by members of the general public, and are listed by Bio Security as not currently present within the N.Z. biota.

It is of concern that NZ appears not to have sufficient skilled personnel and professional expertise to establish suitable containment and monitoring facilities in many of the zoos that are desirous of importing exotic Squamata spp.

We do not wish to turn back the clock and request the removal of the hundreds of exotic lizards that have become part of the current N.Z. scene, but we do not believe that the door should be opened to any more importations when our indigenous taxa are not sufficiently catered for, the exception would be aseptically preserved tissue and specimens for scientific study, along with their usual permits and safeguards.

3.2 Kevin Hackwell, Royal Forest and Bird Protection Society

Introduction.

Forest & Bird appreciates the opportunity to comment on this Import Risk Analysis. The Society is concerned that every possible precaution should be taken where there is a real risk that importation of lizard species to New Zealand could involve the introduction of a range of potential diseases or parasites which could have a negative impact on New Zealand's unique fauna, particularly our unique amphibian and reptile fauna.

Amphibians and reptiles have had a long evolutionary history in New Zealand. The tuatara, frogs and geckos have their origins in Gondwana and were in the New Zealand region before its separation from West Antarctica 80 million years ago. The tuatara is sometimes portrayed as being essentially unchanged since the Late Triassic-Early Jurassic, 230-200 million years ago when sphenodontians were abundant.

Since its isolation in the New Zealand region, the lizard fauna has evolved spectacularly and is now recognised as being of comparable diversity to the land bird fauna. The remarkably high population densities reached by many of the reptiles and amphibians means their role in the New Zealand ecology is significant. With just one exception (*Oligosoma suteri*), all New Zealand's lizard species bear live young.

It is vital that our unique amphibian and reptile fauna are not put at risk. The importation of new species of lizard into New Zealand also has the potential to have a significant impact wider endemic and native fauna and fauna should these species or their diseases and parasites escape or are released into the general environment.

Specific comments on the Import Risk Analysis.

a.) Specificity of the Import Risk Analysis.

Section 2.1 is not clear as to whether this risk analysis is for **any** species within the class Squamata, or whether it is **only** for the particular species listed.

The document can be read and understood to be for either of these two alternatives:

i.) that although the overall risk analysis will apply to any species from the Order Squamata from Australia, for the purposes of determining the potential risks only those species listed on page 3 were considered, or:

ii.) that the risk analysis will only apply to the species from Australia listed on page 3.

b.) Lack of clarity as to which species are already present in New Zealand.

It is very disappointing that while the IRA considers 14 species, it does not specify how many of these are already present in New Zealand. Forest & Bird understands that some of the 14 species are already in New Zealand – with some under containment – and others are not present in New Zealand and therefore would be considered ‘new organisms’ under the HSNO legislation

c.) The reasons for considering an Import Risk Analysis for specified members of the Order are not clear.

The document does not make it clear whether Biosecurity NZ is responding to a specific set of requests by “curators of zoological collections” (and if so which zoological collections) to import these species, or whether Biosecurity NZ has taken the initiative itself in response to more general ongoing individual requests to import lizards.

It is also not clear whether the import risk analysis will only be confined to imports organised by New Zealand zoological collections. While ‘zoological collections’ may be expected to have in place reasonably effective containment, which may considerably reduce the potential risk of the imported lizards interacting with indigenous fauna, this is not the case for owners of pet lizards and those involved in the pet trade.

The impression given on page 4 is the import health standard may only apply to applications by ‘zoological collections’, but on page 38 it is stated that imported lizards that are not “new organisms” can be sold as pets. The likelihood that following importation many of the species being considered in this IRA could routinely be in contact with native amphibians and reptiles or released into the environment could change the results of many of the risk assessments that have been carried out.

d.) Impacts of new organisms on “naïve” indigenous fauna not adequately considered

Many of assessments stated that there was no evidence of the potential disease or parasite organisms being present in New Zealand lizards. They then concluded that because these diseases or parasites did not cause significant health problems for their host species, there would be little likelihood of them being a problem should they infect New Zealand lizards. This reasoning led to many of the assessments concluding that the overall risk assessment was negligible and therefore no risk management would be required.

Forest & Bird is very disappointed with the logic used and the failure to reasonably apply a precautionary approach to the assessments. Diseases which were very common and non-lethal in their country of origin can have very serious impacts when introduced to populations that have evolved in isolation. When Europeans first encountered the people of the Pacific, including Maori, they introduced new strains of the common cold and a range of other diseases. Although these diseases were considered relatively benign by the Europeans who had developed a significant degree of immunity to them, they caused significant mortality in the Pacific and Maori populations which had little immunity to them.

Exactly the same sort of problem is likely to occur when new disease or parasitic organisms encounter New Zealand lizards which have no previous history of exposure to them.

e.) Government “approval” of Australian zoological collections not enough.

The fact that an Australian zoological collection may be “government approved”, is not in itself an adequate safeguard that it will be disease free. The proper criteria is surely that the collection must be demonstrably disease free. Any standard should require that such a collection has to be able to show that active monitoring has revealed that the collection has been free of all risk organisms for at least 90 days prior to the date of export.

f.) Inconsistencies in the assessments’ structure

The New Zealand status of the assessed organism is very important to the assessment. However, sometimes the report would specify that no reports of [the organism] being present in New Zealand have been located. Other times it would instead state that [the organism] is

not included in the register of unwanted organisms. Both pieces of information should have been provided for each assessed organism.

g.) Risk management options not adequate

The options for risk management usually started with the sentence:

“It is suggested that **one** or a **combination** of the following sanitary measures could be considered in order to effectively manage the risk” [our emphasis].

The measures which are then presented are not either/or options. In almost every case they are clearly measures which should all be implemented (for example *Salmonella* spp; p38 and ticks; p77).

Forest & Bird would like to be kept informed about the further development of this Import Risk Analysis.

3.3 Melinda Habgood, Society for research on amphibians and reptiles in New Zealand (Inc.)

Re: SRARNZ Submission on: Import risk analysis: Specified members of the Order: Squamata from government-approved zoological collections in Australia.

I am writing to you on behalf of the Society for Research on Amphibians and Reptiles in New Zealand (SRARNZ). The objectives of SRARNZ are to promote the scientific study of all aspects of the biology of the amphibians and reptiles of the New Zealand region and to promote the conservation of the region's indigenous herpetofauna. Membership of SRARNZ is made up of scientifically-interested amateurs and professional staff of institutions including museums, universities and government agencies.

Thank you for requesting a submission from SRARNZ on the MAF Policy in regards to import risk analysis on specified members of the Order Squamata. We appreciate the extension you granted us. After consulting with our Council members the following two points were highlighted.

(1) p. 58-63, Identification of haemoparasites in New Zealand lizards

Several species of lizard in which haemoparasites have been identified were absent from the list. *Hepatozoon lygosomarum* was found in McCann's skink (*Oligosoma maccanni*), the Otago skink (*O. otagense*), and the grand skink (*O. grande*; Reardon and Norbury, 2004). There was a significant relationship between *H. lygosomarum* prevalence and the prevalence of its supposed ectoparasite vector *Ophionyssus scincorum*, and a weak relationship with the prevalence of the ectoparasite *Odontacarus lygosomae*. Although the impact of these parasites on their host lizards remains unclear, threatened lizards (such as *O. otagense* and *O. grande*) on mainland New Zealand are under high physiological stress and would be most at risk should new haemoparasites enter New Zealand. Because it is unknown which ectoparasites could be used as vectors for haemoparasites (other than *Plasmodium* spp. and Haemosporidia), and the consequences of these parasites remains unclear, it would be worth re-evaluating whether the consequence of these parasites in the commodity is negligible. Risk management by testing lizards for such haemoparasites before importation could be easily achieved whilst testing for *Plasmodium* spp. and Haemosporida.

(2) p. 71-74, Ectoparasites

Several species of reptiles in which ectoparasites have been identified were absent from the list. However, it is unlikely that any of the additions would change either the risk assessment or management. It is worth noting (for consideration of wording) that there is an endemic, hostspecific *Amblyomma* species (*Amblyomma sphenodonti*, the tuatara tick) that is absent from the list. The species previously belonged to the *Aponomma* genus, but was reclassified in 2002 (Klompen et al., 2002), although recent genetic analysis of the relationship between *Am. sphenodonti* and other *Amblyomma* species suggest that a new genus may be warranted (Miller et al., 2007). *Amblyomma sphenodonti* would not be found on imported reptiles, and risk management procedures for other ectoparasites should adequately cover any risks.

References

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Miller, H.C., Conrad, A.M., Barker, S.C., Daugherty, C.H., 2007. Distribution and phylogenetic analyses of an endangered tick, *Amblyomma sphenodonti*. New Zealand Journal of Zoology 34, 97-105.

Reardon, J.T., Norbury, G., 2004. Ectoparasite and hemoparasite infection in a diverse temperate lizard assemblage at Macraes Flat, South Island, New Zealand. Journal of Parasitology 90, 1274-1278.

On behalf of SRARNZ, thank you for considering the comments within this submission.

Yours sincerely,

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SRARNZ Secretary