REVIEW OF SUBMISSIONS ON:

DRAFT IMPORT HEALTH STANDARD FOR ORNAMENTAL FISH AND MARINE INVERTEBRATES FROM ALL COUNTRIES

Biosecurity New Zealand
Ministry of Agriculture and Forestry
Wellington
New Zealand

27 November 2009

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27 November 2009

Approved for general release

Mat Stone
Animal Import and Export Group Manager
MAF Biosecurity New Zealand

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EXECUTIVE SUMMARY

The current Import Health Standard (IHS) for Ornamental Fish and Marine Invertebrates from All Countries contains a list of eligible species that are eligible for import under this IHS. A number of species have been submitted for addition to this import health standard. The risks of these species have been assessed by MAF Biosecurity New Zealand and species:

- that are within genera already listed on the IHS, and;
- that have been deemed "low risk" (posing no additional risk under the current import requirements)

are added to the eligible species list as part of this amendment.

The draft Import Health Standard for Ornamental Fish and Marine Invertebrates from All Countries was notified for 4 weeks consultation on 8 May 2009, consultation closing on 5 June 2009.

6 Submissions were received.

Issues of direct relevance to the IHS highlighted by the submissions included:

- How to add species to this IHS;
- Clarification of high risk species and low risk species;
- Treatment or disposal of packaging and water;
- Clarifications of species names;
- Listing both old and new scientific names on the import health standard
- Additional species being pests or potential pests.

As a result of these submissions the following changes have been made to the provisional import health standard:

- Clause 10.3 of the provisional import health standard has been amended to state:

  All packaging (with the exception of shipping containers) and any solid waste (such as plants, etc) must be collected and disposed of by a process, such as autoclaving, deep burial, incineration, or steam sterilisation, approved by MAFBNZ. The operator of the transitional facility must maintain records of disposal that may be audited by MAFBNZ.

  Shipping containers must either be destroyed or treated as per the Approved Biosecurity Treatments for Risk Goods Directed for Treatment as listed on our website: http://www.biosecurity.govt.nz/border/transitional-facilities/bnz-std-abtrt.

- *Tropheus kasabe* and *Hypancystrus* L-260 have been added to the list of eligible species.

- *Spirographis spallanzanii*, *Loimia medusa* (i.e., *L. arborea*) and *Sabellastarte indica* (i.e., *S. spectabilis*) have been deleted from the provisional import health standard.

- The common name for *Spirobrachus gigantheus* has been changed to the Christmas Tree Worm.

- *Zooantharia sp* has been changed to *Zoanthiniaria* sp.

INTRODUCTION

The draft import health standard for the importation draft import health standard for ornamental fish and marine invertebrates from all countries was notified for 4 weeks consultation on 8 May 2009, consultation closing on 5 June 2009.

MAFBNZ received submissions from the following:

1.	Scott Rasmussen	9 May 2009
2.	Aquarius Imports, Steve Walls	29 May 2009
3.	Brooklands Aquarium Ltd, Warren Garrett	4 June 2009
4.	Michael Tan	5 June 2009
5.	Redwood Aquatics Aquarium, Bob Ward	5 June 2009
6.	Ministry of Fisheries, Andrew Hill	9 June 2009

This document summarises the issues raised in the submissions, and presents the MAFBNZ response to each. The full text of each submission is included in Appendix one.

REVIEW OF SUBMISSIONS

1. Scott Rasmussen

1.1 The submissions requests the addition of *Pterois volitans* – Volitan Lionfish

MAF Biosecurity New Zealand response:
When adding a new species to the import health standard there are different factors that need to be taken into account, including:

- Is the new species considered a new organism, as defined in the Hazardous Substances and New Organisms Act 1996 (HSNO Act)?
- Have the biosecurity risks associated with the import been assessed as required by the Biosecurity Act?

Appendix two outlines the process of adding new species to the Import Health Standard. Some species will be easier to get approval for import than others. Meeting the HSNO Act requirements will probably be the main challenge for future additions of species.

To add *Pterois volitans* to the import health standard the process in Appendix two should be followed. A HSNO determination from the Environmental Risk Management Authority (ERMA) is required before MAFBNZ can consider adding *Pterois volitans*. This determination will clarify whether there are any restrictions around the import of this species under the HSNO Act. Following the HSNO Determination, MAFBNZ will assess the request and prioritise it against other requests.

1.2 The submission requests the findings that have resulted in classifying *Lysmata grahami* (Cleaning Shrimp) and *Stenopus cyanoscelis* (Yellow-Belly Coral Banded Shrimp) as high risk.

MAF Biosecurity New Zealand response:
The draft "*Import risk analysis*: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans" identifies some species of fish and invertebrates (this includes *Lysmata grahami* and *Stenopus cyanoscelis*) as requiring advanced risk management measures to manage the associated risks. These species are categorised as "high risk" species.

The draft risk analysis identifies shrimp species as high risk species based on the World Organisation for Animal Health (OIE) consideration of all decapod crustaceans as susceptible to white spot syndrome virus (WSSV). New Zealand has valuable rock lobster fishery, and freshwater crayfish that are an important part of the environment. Therefore a conservative approach is warranted and it is necessary to assess these species of shrimps in association with WSSV.

The draft risk analysis document, suggests possible advanced risk management options to manage the risks of WSSV and subsequently render these shrimp eligible for import. This draft risk analysis was sent out for public consultation on 6 July 2009. Consultation closed on 14 September 2009.

2. Aquarius Imports, Steve Walls

2.1 With regard to clause 10.3 it's suggested to add a treatment option for the containers, by cleaning them with Virkon.

MAF Biosecurity New Zealand response:
Comments noted.

Clause 10.3 of the provisional import health standard has been amended to state:

> *Shipping containers must either be destroyed or treated as per the Approved Biosecurity Treatments for Risk Goods Directed for Treatment as listed on our website: http://www.biosecurity.govt.nz/border/transitional-facilities/bnz-std-abtrt.*

The options listed for used equipment associated with fresh or marine aquatic animals and activities include chlorine based disinfectants, but also list other less toxic treatment options.

3. Brooklands Aquarium Ltd, Warren Garrett

3.1 The submission raises concerns about clause 10.3 and requests the following changes to this clause:

- That the water that is imported in the containers with the fish no longer needs to be treated on arrival, as this is inconsistent with the way other waste water from the facility is treated. In addition, treatment of this water on arrival causes problems for some species of fish as these require mixing of the water with the water in tanks for a proper acclimatisation.
- Alternative waste disposal options. The draft standard only allows for the incineration of waste, such as plants and containers (including the plastic bags that contains the fish)

MAF Biosecurity New Zealand response:

- Regarding the treatment of water in the containers

The water being imported with the fish does not pose a higher risk than the actual fish themselves or other waste water. Therefore it is concluded that this water doesn't need to be treated differently from the other waste water. As per MAF Biosecurity Authority Standard 154.02.06 - Transitional facilities for ornamental fish and marine invertebrates. Clause 4.9:

> *All wastewater, when discharged from the quarantine facility shall enter directly into an approved municipal sewerage system, approved septic tank, or other approved disposal system.*
>
> *Alternatively, wastewater shall be treated by chlorination or with ultra-violet light.*

This standard can be found on our website at:
http://www.biosecurity.govt.nz/regs/trans

As the disposal of waste water is already covered in the Transitional Facility standard (154.02.06), and the water being imported with the fish does not pose a higher risk than the other waste water, the treatment of the water in containers is deleted from this import health standard.

- Regarding the waste disposal options

There are currently several waste disposal methods in use which are approved by MAFBNZ. These options include incineration, but also include autoclaving, deep burial and steam sterilisation. MAFBNZ may assess and approve equivalent methods of disposal if the existing options are not practical or not possible. The used method of disposal should be listed in the Quarantine Manual.

To make this standard consistent with current practise, clause 10.3 in the provisional Import Health Standard has been amended to state:

> *All packaging (with the exception of shipping containers) and any solid waste (such as plants, etc) must be collected and disposed of by a process, such as autoclaving, deep burial, incineration, or steam sterilisation, approved by MAFBNZ.*
>
> *The operator of the transitional facility must maintain records of disposal that may be audited by MAFBNZ.*

Also see MAFBNZ response to 2.1.

3.3 The submitter also provides some additional information on the correct scientific names of the following submitted species:

Genus	Species	New Valid Name	Common Name
Tropheus	sp red	Tropheus kasabae	Fire Fox Tropheus
Tropheus	Ikola	Tropheus polli	Big Yellow Band Tropheus
Hypancistrus	L-260		Queen Arabesque Plecostomus

L-260 is a valid species classified using the Loricariidae number system.

MAF Biosecurity New Zealand response:
Web based images of *Tropheus polli* (slate gray, or black with white body stripes) and *Tropheus ikola* (black with a wide yellow band around the middle) do not show any similarities between these two fish. It is therefore not accepted that these two classifications are the same species.

Tropheus sp. Red is accepted as probably being *Tropheus kasabe* and *Hypancystrus* L-260 is classified according to the Loricariidae number system.

Tropheus kasabe and *Hypancystrus* L-260 have been added to the provisional import health standard.

4. Michael Tan

4.1 The submissions indicates that *Enoplometoplus occidentalis* is incorrectly spelled.

MAF Biosecurity New Zealand response:
The correct spelling is *Enoplometopus occidentalis* and has been corrected.

4.2 This submission expresses concern with MAF Biosecurity New Zealand's assessment of certain shrimp species as high risk.

MAF Biosecurity New Zealand response:
The categorisation of shrimp species as high risk is documented in the draft "*Import risk analysis*: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans", which was sent out for public consultation on 6 July 2009. Consultation closed on 14 September 2009.

The information submitted with regard to White Spot Syndrome Virus will be considered as a submission to the risk analysis, and will be addressed in the review of submission on this risk analysis.

Also see MAFBNZ's response to 1.2.

4.3 The submitter raises contradictions between previous OIA requests and other MAF correspondence

MAF Biosecurity New Zealand response:
Nassarius sp. (snail) and *Trochus sp*. (snail) have not been added to the draft Import Health Standard as only genera were submitted. There is a big number of species within these genera. Just listing "*Genus* spp." does not comply with the HSNO act. When revising the genus list to a species list, it was agreed that any species not submitted by the close off date would have to go through a determination process (new or not new) with ERMA, and if new then a release application would be necessary. As no species were submitted before the close-off date the relevant species of *Nassarius* or *Trochus* must be submitted to ERMA for their consideration before they can be assessed and prioritised against other requests by MAFBNZ (see Appendix two).

Lysmata wurdemanni (shrimp) and *Linkia laevifata* (starfish) were submitted prior to the close off-date but were not included in the risk analysis. This has now been rectified and these species will be considered and added to the final supplementary Risk Analysis.

4.4 The submitter raises a photo of a hermit crab being submitted in 2005. The photo supplied only stated "hermit crab" rather than having the proper scientific name. The submitter questions why the submitter wasn't questioned advising them to add the scientific name.

MAF Biosecurity New Zealand response:
The submission was received in 2005. It is not clear whether or not MAFBNZ requested the scientific name. As per the information MAFBNZ and ERMA

provided to industry in 2005, the responsibility for determining and providing the correct scientific name was with the submitter, not MAFBNZ.

4.5 The submission states that MAF was going to allow all species of coral or anemones within a genus present in New Zealand to be imported and it appear this has not occurred.

MAF Biosecurity New Zealand response:
When reformatting the genera list to a genus it was agreed that if a genus of coral was listed on import records, MAFBNZ and ERMA would allow the importers to put forward all of the named species within that genera for addition to the list, provided they were truly tropical. This was due to the difficulty in identifying species within a genus. However, if a species had not been submitted by the close off date then it would have to go through the HSNO process (see Appendix two).

If a species of coral is missing from the standard it is therefore assumed that either the importers have not submitted that species before the close off date or the species is not truly tropical.

Anemones or other marine invertebrates were not part of this agreement.

4.6 The submission raises concerns about the process of adding new species to the new import health standard.

MAF Biosecurity New Zealand response:
As a part of this review of submissions MAFBNZ has clarified the process for adding new species to the Import Health Standard. See MAFBNZ's response to 1.1 and Appendix two.

4.7 The submission indicates that the new scientific name for *Wellsophyllia radiata* is now *Trachyphyllia geoffroyi*.

MAF Biosecurity New Zealand response:
According to current taxonomists, popular and scientific the *Wellsophyllia* genus was deleted and *Wellsophyllia radiata* was added to the *Trachyphyllia* genus. There currently is just one species in the genus, *Trachyphyllia geoffroyi*, with *Wellsophyllia radiata* no longer a valid scientific name.

Wellsophyllia radiata is unfortunately still used in the ornamental aquatics field.

References include:
http://www.marinespecies.org/aphia.php?p=taxdetails&id=204973
http://www.catalogueoflife.org/annual-checklist/2009/search_results.php?search_string=trachyphyllia&match_whole_words=on
Borneman, EH. 2001. *Aquarium corals, selection, husbandry and natural history*. TFH Publications, Neptune, New Jersey pp 301-303.

Trachyphyllia geoffroyi is already listed on the current import health standard.

4.8 The submission asks for both old and new scientific names to be listed on the import health standard.

MAF Biosecurity New Zealand response:
MAFBNZ uses the current valid scientific name at the time the IHS was drafted. To list all potential synonyms would be very involved, complicate the situation of identifying species and create a source of potential errors. Old names or common names may be duplicative or be associated with different scientific names to different people.

In addition the draft "*Import risk analysis*: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans" identifies some species of fish and invertebrates as requiring advanced risk management measures. These requirements are associated with fish or invertebrates identified by their valid scientific names. Adding more names might create doubt about advanced risk management measures being required or not.

The onus is on the Transitional Facility operator to show that imported fish comply with the names listed in the Import Health Standard. If they want to use names that are not included in the Import Health Standard then the Operator must supply evidence that the imported fish is the same as that listed on the Import Health Standard.

5. Redwood Aquatics Aquarium, Bob Ward

5.1 The submitter indicates that *Spirographis spallanzanii* (as listed on page 58 of the draft import health standard) has a synonym of *Sabella spallanzanii*.

MAF Biosecurity New Zealand response:
Different references confirm that *Spirographis spallanzanii* is in fact a synonym of *Sabella spallanzanii*, including:
http://www.sardi.sa.gov.au/__data/assets/pdf_file/0007/46789/sabella.pdf
http://www.issg.org/database/species/ecology.asp?si=1046&fr=1&sts

Sabella spallanzanii can form dense groups that could affect native species by competing for food and space. Recent studies have indicated some impact on the establishment of new generations of some species, and on nutrient flow. The presence of dense mats of this species could also have an impact on the aesthetics of an area for diving, potentially impacting on dive tourism activities. While they have not yet been recorded to have had significant impacts on fisheries or aquaculture, there is potential that dense beds could become a nuisance to recreational and commercial fishers through the clogging of dredges and fouling of other fishing gear.

Sabella spallanzanii is listed by MAF as an unwanted organism and MAF has embarked on a $3.6 million five-year local program to rid Lyttelton Port of this marine pest.

As *Spirographis spallanzanii* is in fact a synonym of *Sabella spallanzanii*, and the costs involved with current eradication programs for *Sabella spallanzanii, Spirographis spallanzanii* has been deleted from the provisional import health standard.

To prevent the import of any other organisms that might establish as new pests, MAFBNZ conducted a risk assessment of the pest and disease risks posed by the other marine invertebrates proposed to be added to the eligible species list (see Appendix three). The conclusion of this pest assessment is that the polychaetes *Loimia medusa* (i.e., *L. arborea*) and *Sabellastarte indica* (i.e., *S. spectabilis*) have non-negligible pest potential based on their general life-history characteristics. The assessment therefore recommends that these taxa not be considered for inclusion under the import health standard.

Loimia medusa (i.e., *L. arborea*) and *Sabellastarte indica* (i.e., *S. spectabilis*) have been deleted from the provisional import health standard.

5.2 The submitter raises concerns regarding the common name listed for *Spirobrachus gigantheus* commonly know as the Christmas Tree Worm. The common name currently listed is feather duster. But a feather duster relates to *Sabella sp*.

MAF Biosecurity New Zealand response:
Different references confirm that *Spirobrachus gigantheus* is commonly known as the Christmas Tree Worm, including:
http://marinebio.org/species.asp?id=543

The common name for *Spirobrachus gigantheus* has been changed to the Christmas Tree Worm in the provisional Import Health Standard.

5.3 The submitter raises concerns regarding the listing *Zooantharia sp*. The correct term should be order *Zoanthiniaria* as *Zoantharia* is a class, covering several orders including *Scleractina* which includes all corals and anemones.

MAF Biosecurity New Zealand response:
Comments noted. This is a typographical error and *Zooantharia sp* has been changed to *Zoanthiniaria* sp. in the provisional import health standard.

5.4 The submitter also notes that *Lysmata grabhami* is the same as *L. amboinensis*.

MAF Biosecurity New Zealand response:
L. amboinensis and the closely related *L. grabhami* look very similar but *L. grabhami* lacks the white spots on the tail seen in *L. amboinensis*.

L. amboinensis and L. grabhami are listed as separate species on several databases including:
http://www.marinespecies.org/aphia.php?p=taxdetails&id=241289
http://www.marinespecies.org/aphia.php?p=taxdetails&id=107524

http://www.ispecies.org/?q=lysmata+amboinensis&submit=Go
http://www.ispecies.org/?q=lysmata+grabhami

http://www.catalogueoflife.org/search_results.php?search_string=Lysmata+amboinensis&match_whole_words=on
http://www.catalogueoflife.org/search_results.php?match_whole_words=on&search_string=Lysmata+grabhami

MAFBNZ therefore regards *L. amboinensis* and *L. grabhami* as two separate species.

5.5 The submitter queries why "sp" and "spp" are still listed on the species lists as the standard should now be down to individual species.

MAF Biosecurity New Zealand response:
It is correct that just listing "*Genus* spp." does not comply with the HSNO act. This needs to be amended to just list specific species. However, the deletion of "sp" and "spp" from this standard would require further public consultation and therefore falls outside of the scope of the current amendment. This deletion will be implemented during the next amendment of the ornamental fish standard. This next amendment will commence after the current draft "*Import risk analysis*: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans" has been finalised.

6. Ministry of Fisheries, Andrew Hill

6.1 The submission indicates that Ministry of Fisheries isn't aware of any listed species being of concern.

MAF Biosecurity New Zealand response:
Comments noted.

6.2 The submission questions whether the inspectors [supervisors] have the taxonomic knowledge required to identify these species to genus or species level.

MAF Biosecurity New Zealand response:
As per MAF Biosecurity Authority Standard 154.02.06 - Transitional facilities for ornamental fish and marine invertebrates. clauses 4.6 and 6.4.2:

> *The operator (the person who has overall responsibility for the facility, its maintenance and operation in terms of section 40 of the Biosecurity Act, 1993) shall be responsible for the identification of the imported ornamental fish.*
>
> *If an imported ornamental fish is not on the approved species list then the operator shall notify the supervisor (who inspects the transitional facility and audits the operation of quarantine) within 7 days of importation. The operator shall re-export the fish or have them destroyed under the supervision of the supervisor.*
>
> *The supervisor shall be familiar with the species of fish commonly imported and shall have access to suitable reference texts.*

The supplier (the party responsible for the performance of the inspection and audit work under a contract with the MAF Biosecurity Authority) shall identify a person who has expertise in fish identification. If there is doubt about the identity of ornamental fish species, the supervisor may take the fish and the invoice list of species to this person. After inspection live fish shall be returned to the quarantine facility.

MAFBNZ is confident that these measures are sufficient to ensure that sufficient taxonomic knowledge is available.

APPENDIX ONE: COPIES OF SUBMISSIONS

1. Scott Rasmussen

From: Scott @ Zaita [mailto:scott@zaita.com]
Sent: Saturday, 9 May 2009 11:08 a.m.
To: Richard Soons
Subject: Comment: Draft IHS for Ornamental Fish and Marine Invertebrates from all countries

Hello Richard,

I would like to request the addition of:
Pterois volitans - Volitan Lionfish
to the IHS for Ornamental Fish and Marine Invertebrates from all countries on the grounds that this fish is already present in New Zealand waters.

You can find an image, and blurb about this fish in:
Coastal Fishes of New Zealand, An Identification Guide, by Malcolm Francis (National Institute of Water and Atmosphere Research Ltd).

More references to this fish being present in New Zealand can be found at:
http://www.fishbase.org/Summary/SpeciesSummary.php?id=5195
http://www.marinenz.org.nz/index.php/resources/image_detail/lion_fish/
http://www.seafriends.org.nz/issues/res/kermadec/g7lion.htm
http://www.wadedoak.com/_disc1/00003800.htm

Are you also able to provide me with the findings regarding the high risk of Lysmata grabhami (Cleaning Shrimp) and Stenopus cyanoscelis (Yellow-Belly Coral Banded Shrimp).

- --
Regards,
Scott Rasmussen
Scientific Programmer / Software Developer
Zaita Design
http://www.zaita.com

This message should be digitally signed to verify it's authenticity. If you would like secure email communication please reply with your attached public signature (GnuPG).

2. Steve Walls, Aquarius Imports

From: S Walls [mailto:strike@xtra.co.nz]
Sent: Friday, 29 May 2009 12:27 p.m
To: Richard Soons
Subject: Re new draft standards

Hi Richard

Thanks for the copies of the drafts.

I would like to make one suggestion.

1) 10.3 It states that containers are to be incinerated or treated with chlorine based disinfectants. I understand from speaking to MAF staff that your organisation uses Virkon. Would it be possible to include this as an option to chlorine given that is somewhat less toxic to handle. (I am referring to the ability to recycle the polystyrene shipping containers as opposed to recycling the shipping bags)

Thanks

Steve Walls
Aquarius Imports

3. Warren Garrett, Brooklands Aquarium Ltd

BROOKLANDS V.I.P PET PRODUCTS

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E-mail: sales@brooklands.co.nz.

4th June 2009

Richard Soons
Border Standards Directorate
MAF Biosecurity New Zealand
Ministry of Agriculture & Forestry
PO Box 2526
WELLINGTON

RE: DRAFT IMPORT HEALTH STANDARD FOR THE IMPORTATION INTO N.Z. OF ORNAMENTAL FISH AND MARINE INVERTEBRATES FROM ALL COUNTRIES

Issued pursuant to Section 22 of the Biosecurity Act 1993
Dated: 07 May 2009

Dear Richard

Thank you for the opportunity to respond to the proposed changes to the above Import Health Standard. We see the proposed additions to the species list as being a positive step, which we are very pleased with.
The following are a few suggestions that we would like to submit:

Part C: Clearance Procedure

10.3 ***During the unloading , the water in the containers shall be treated with a chorine based disinfectant …….***

During unloading, why should the water in the containers be treated differently to the any other waste water from the facility? If any pathogens are present in this water surely the fish themselves are also carriers and so once released in the tanks the entire body of water in the facility would pose the same risk? On arrival this waste water should be treated in the same way as any other waste water from the facility as outlined in the standard.

Also with many species an important step in acclimatisation is actually mixing the water from the shipping bag with "new water". If one was to introduce these fish straight into new water, the shock would be enough to kill many delicate species. This step obviously means mixing water from the bag with water in the aquarium.

10.3 ***Any plants and the containers themselves are to be incinerated or similarly treated with chlorine based disinfectant.***

The incineration of plastic bags and other waste has proven to be an issue for our local NZFAS Inspector. Apart from incineration not being environmentally friendly, there have also been logistical problems in working in with the local incineration facility. We would like to suggest that a provision for waste disposal using a MAF approved "Hazardous Bio Waste Facility", such as those operated by Waste Management be included as alternative option.

Part D: Appendix One: Ornamental Fish and Marine Invertebrates

Freshwater Ornamental Fish

Please see attachment with our comment highlighted in green. These three species were submitted in the FNZAS list of species existing in NZ before July 1998 and have not been added to the proposed list.
The reason given is *"No valid scientific name"*.

The correct valid name for the two "Tropheus" were not given by the FNZAS. These fish are now known as *Tropheus kasabae* and *Tropheus polli*.
The genus Tropheus was listed on the old IHS.

The Queen Arabesque Plecostomus is a valid species but classified with the German *"L - number"* (Loricariidae number system).

Thank you for giving consideration to our submission on the Draft Import Health Standard.

Should you have any queries re our comments please don't hesitate to contact me.

Yours Sincerely

Warren Garrett
General Manager
Brooklands Aquarium Ltd

Genus	Species	New Valid Name	Common Name	MAF Comment	Our Comment
Tropheus	sp red	Tropheus kasabae	Fire Fox Tropheus	No valid scientific name	Note new valid name
Tropheus	Ikola	Tropheus polli	Big Yellow Band Tropheus	No valid scientific name	Note new valid name
Hypancistrus	L-260		Queen Arabesque Plecostomus	No valid scientific name	L number species - no species name yet

4. Michael Tan

Submission to Ministry of Agriculture and Forestry. Re: Import Health Standard for Ornamental Fish and Marine Invertebrates

Author: Michael Tan

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To:
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Border Standards Directorate
MAF Biosecurity New Zealand
Ministry of Agriculture and Forestry
PO Box 2526
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New Zealand

Copy to:
Hon. David Carter
Minister of Agriculture, Biosecurity and Forestry
david.carter@national.org.nz
Hon David Carter MP
Parliament Buildings
Wellington
New Zealand

This is a formal submission regarding the review of the "Import Health Standard for Ornamental Fish and Marine Invertebrates" (IHS herein). This submission will look primarily at the following species of marine invertebrates deemed "high-risk" by the risk analysis performed on submitted species. These species are as follows:

1. *Enoplometoplus occindnetalis* (incorrect scientific name; should be *Enoplometopus occindnetalis* - described by J.W. Randall, 1840 [ZipecodeZoo, 2005])
2. *Lysmata grabhami*
3. *Rhynchocinetes uritai*
4. *Saron sp.*
5. *Stenopus cyanoseclis*

However, other aspects relating to past correspondence between MAF, Biosecurity New Zealand and other parties will be explored within this submission.

Reason for being deemed "high-risk"

An e-mail from Richard Soons of the Ministry of Agriculture and Forestry (MAF herein) dated the 16th of April 2009 stated the reason for the above species being "high-risk". The rationale was that the above species were susceptible to White Spot Syndrome Virus (WSSV herein).

WSSV

WSSV belongs to the genus *Whispovirus sp.* and the family *Nimaviridae* (Phuoc, et al., 2009). Wang, Poulos and Lightner (2000) state that WSSV can be found in nearly all shrimp producing countries. According to Wang et al. (2000), WSSV is lethal to all cultivated *penaeid* shrimp species. Lo et al. (1996) states that WSSV can potentially be characterised by the "presence on the inner surface of the exoskeleton of white spots." This may make surveillance of WSSV in MAF quarantine potentially manageable due to the dichromatisms that occur with infected organisms.

Penaeid shrimp species and other potential hosts of WSSV

According to Briggs, M., Funge-Smith, S., Subasinghe, R.P. & Phillips, M. (n.d.), WSSV infected only those shrimps from the genus *Penaeus sp.* (*P. vannamei, P. monodon, P. styirostris, P. japonicus, P. setiferus* and others). Briggs et al. go on to state that WSSV infects "*Metapenaeus ensis, Metapenaeus monoceros* and various crab species, while *Palaemon setiferus, Euphausia superba, Metapenaeus dobsoni, Parapenaeopsis stylifere, Solenocera indica, Squila mantis, Macrobrachium rosenbergii* and various crab species can act as latent carriers." However, *Artemia sp.* appear unaffected (Briggs et al.). As we can see, all of the above come from the *Penaeidae* family of invertebrates which does not include any ornamental shrimp species.

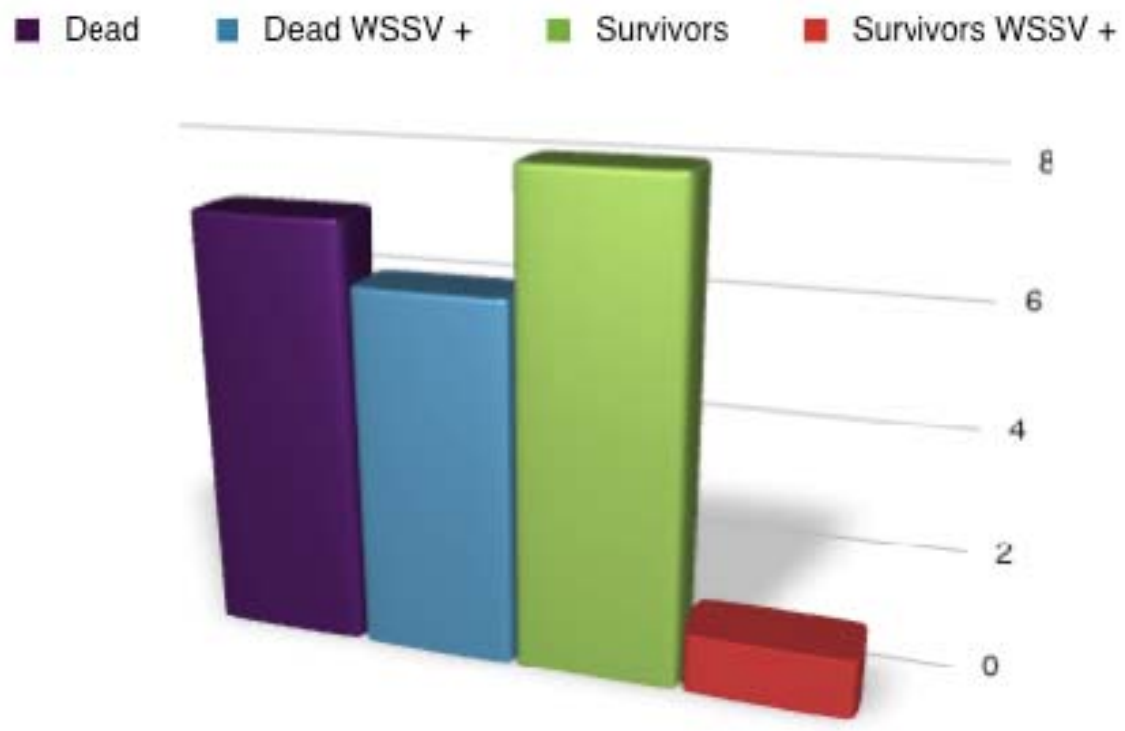
As we can see, no ornamental species appear to be overly susceptible, or believed to be carriers of WSSV naturally. WSSV in almost all destructive circumstances appears only in cultured *penaeid* shrimp species.

WSSV affecting *E. occindnetalis, L. grabhami*, *R. uritai, Saron sp. and S. cyanoseclis*

The affects of WSSV on ornamental marine shrimp species has not been studied (Laramore, 2007). Ornamental marine shrimp species will be defined as "any species of ornamental marine shrimp commonly collected for the global marine aquarium industry."

WSSV only naturally occurs in shrimp species from the family *Penaeidae* (Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009; Laramore, 2007). Susan E. Laramore conducted a study on *L. wurdemanni* to examine the susceptibility of WSSV on ornamental marine shrimp species. Laramore's experiment involved the deliberate infection of WSSV on captive raised *L. wurdemanni* and *Litopenaeus vannamei* (also known as *Penaeus vannamei;* also a non-ornamental marine shrimp species). It was found that juveniles were not susceptible to WSSV; this is shown through none of the surviving *L. wurdemanni* juveniles testing positive for WSSV (Laramore). Comparatively, only one surviving adult *L. wurdemanni* tested positive for WSSV through polymerase chain reaction (Laramore). Juvenile *L. wurdemanni* which died during experimentation did not test positive for WSSV (Laramore). Laramore however goes on to show that all surviving and dead *Litopenaeus vannamei* tested positive for WSSV. This therefore shows the susceptibility of *Penaeid* shrimp to WSSV.

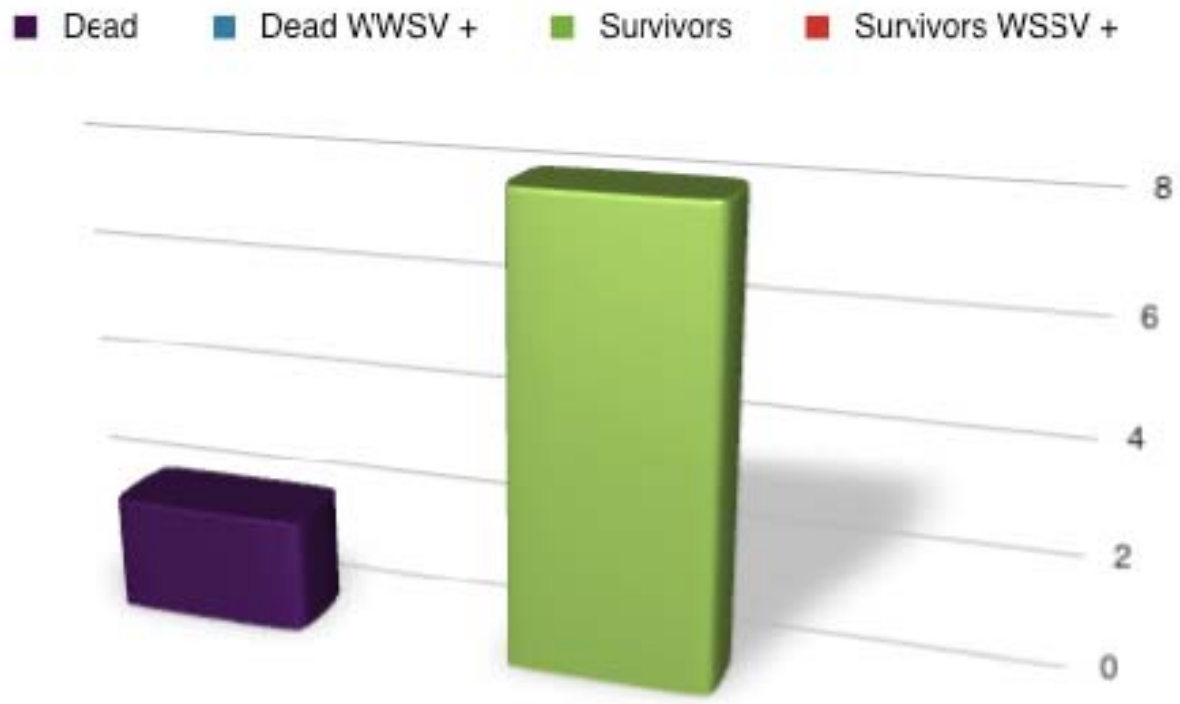
Laramore (2007) states that "*Lysmata* [*sp.*] are more resistant to WSSV than *L. vannamei*". Laramore goes on to state that there have been no reports of natural WSSV infection in *Lysmata sp.* or any other ornamental shrimp species. However, while only one surviving adult *L. wurdemanni* was shown to be infected, it would be unreasonable to assume that all ornamental marine shrimp species could be carriers. This is supported by Laramore's findings which showed that of all subjects exposed to the same method of WSSV infection, only one survivor actually tested positive for WSSV infection, while 40% died from infection.



***Lysmata wurdemanni* experiment ONE. N = 15 (Laramore, 2007)**

All *L. wurdemanni* challenged in experiment one were adults which were fed WSSV infected flesh. Out of fifteen individuals, only seven, or 46.67% actually proved to be infected with WSSV. Six out of the seven dead adults tested positive for WSSV. The other however, is suspected to have perished through environmental stress. Out of the eight surviving adults, only one tested positive for WSSV. This shows us that *Lysmata sp.* do seem somewhat resistant to WSSV. This raises the point that nearly all infected individuals would perish before making arriving at our borders.

Additional quarantine using suggested measures below should suffice is identifying any others which arrive.



***Lysmata wurdemanni* experiment TWO. N = 10 (Laramore, 2007)**

Experiment two challenged juvenile individuals by directly injecting them with WSSV. As shown, eighty percent survived to experiment. However, the 20% which did die are suspected to have perished as they were too delicate to handle the environment in which housed or through the damage caused through the injection process. This is supported by the fact that none of those challenged in experiment two, whether perished or alive did not test positive for WSSV. So, even though directly injected with WSSV, not one specimen tested positive for WSSV which raises questions about the risk analysis process conducted by MAF, NIWA and the Department of Conservation.

***Lysmata wurdemanni* experiment THREE. N = 10 (Laramore, 2007)**

Experiment three challenged juvenile *L. wurdemanni*. There were no mortalities and no survivors tested positive for WSSV, despite being directly injected with WSSV. Like experiment two, experiment three raises questions about the risk analysis process conducted by MAF, NIWA and the Department of Conservation.

Lysmata sp. are from the family *Hippolytidae; Enoplometoplus sp.* (*Enoplometopus sp.* [ZipecodeZoo, 2005]) are from the family *Enoplometopoidea*; *Rhynchocinetes sp.* are from the family *Rhynchocinetidae*; *Saron sp.* are from the family *Alpheoidea* and *Stenopus sp.* are from the family *Stenopodidae*. As we can see, none of the species deemed "high-risk" due to susceptibility to WSSV are from the family *Penaeidae.* This is an important point which was obviously missed during the risk analysis process. The above information therefore definitively proves that the above genus' and their respected species have not been reported to be naturally affected by or susceptible to WSSV. This is because WSSV only occurs naturally in *Penaeidae* shrimps (Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009; Laramore, 2007).

These shrimp and lobster species submitted for the new draft IHS must be reconsidered for the IHS based on this submission. It would also be wise to allow all species under these genus' to be considered for placement on the new IHS for similar reasons to the currently submitted species.

Possible MAF quarantine procedures for *Lysmata amboinensis, L. debelius, Periclimenes brevicarpalis, L. grabhami, Saron sp., Stenopus hispidus, S. cyanoseclis, Rhynchocinetes uritai, Enoplometoplus occindnetalis* and other potential additions within the identified genus'

Assuming the above are added onto the the new IHS, the following recommendations are made to ensure, in the highly unlikely event of WSSV infection on imported specimens, that WSSV does not pass through MAF quarantine.

o In the event of an imported shrimp or lobster species suffering greater than sixty percent mortalities during MAF quarantine, specimens from that species will be selected either by the importer or MAF supervisor for testing. If tests show a positive result for WSSV, the MAF supervisor may at his or her discretion, order all of that species to be destroyed. The shipment will be delayed until the results of the testing. The reasoning for sixty percent mortality rates while in quarantine is that shrimps are very delicate organisms. Therefore, the slightest delay or change in climate during shipping could exponentially increase dead on arrival specimens which may lead to the MAF supervisor attributing these dead on arrivals to WSSV.

o Some importers utilise natural sea water (NSW) in the MAF quarantine facilities. However, the use of the equipment to collect NSW could lead to the spread of pathogens from a shipment in quarantine to our oceans. It is therefore recommended that importers be required to use only artificial salt water (ASW) in their MAF quarantine facilities. The ASW must be mixed within the confines of the quarantine facility. This will severely limit the contact between a shipment in quarantine and our oceans; therefore preventing any foreign pathogens from effecting the local marine habitats.

o

Contradictions with previous Official Information Act 1982 (OIA herein) requests and other MAF correspondence

On the 13th of May 2008, correspondence from Richard Fraser (advisor, Animal Imports) of MAF was received electronically and in hard copy form. This OIA request had specific questions relating to the current (at the time) and the draft IHS.

Question three of this OIA request asked "When will the approved list for ornamental fish and marine invertebrates come up for review?". Mr. Fraser responded that a risk assessment for new species was opened for public consultation on the 2nd of November 2007 and closed on the 16th of December 2007. According to Mr. Fraser, as a result of the consultation, another "139 fish species (81 freshwater and 58 marine species) and 76 marine invertebrates have been agreed with the Environmental Risk Assessment Authority (ERMA) and the Hazardous Substance and New Organisms (HSNO) Act 1996."

Question four of this OIA request asked "What species of marine fish and marine invertebrates will come up for review?". Mr. Fraser responded by saying that, "As mentioned in the previous answer 139 fish species and 76 invertebrates will be included in the new IHS." However, as we can see from the draft IHS released on the 8th of May 2009, this list of new species which were to be "included" in the new IHS is considerably different. One must therefore question the risk analysis process between the 13th of May 2008 and the 8th of May 2009 which has resulted in some very suspect changes to the new 'approved' species list. An example of these suspect changes include the 'disapproval' of many species which were previously 'approved' under the OIA request dated the 13th of May 2008 such as the 'new' shrimp species cited to be susceptible to WSSV. Another intriguing discrepancy is the difference between the numbers of submitted species on the 'approved' new species list dated the 13th of May 2008 and the 'approved' new species list accompanying the draft IHS. For example, the list dating the 13th of May 2008 includes, but is not limited to the following species:

1. *Lysmata wurdemanni* (shrimp)
2. *Nassarius sp.* (snail)
3. *Trochus sp.* (snail)
4. *Linkia laevifata* (starfish)

However, these four invertebrate species have not even been mentioned in the draft IHS dated the 8th of May 2008 and their current status under the draft IHS is unknown. It is believed that *L. wurdemanni* should be added due to reasons cited in this submission relating to WSSV. So, have these four species and others not stated above been risk assessed or not? The document dated the 13th of May 2008 states that they are, however, the draft IHS either says that they were 'high-risk' or were not included at all. It is imperative that these discrepancies are investigated promptly.

In 2005, a photo of *Calcinus elegans* (a hermit crab species) showing that it is in New Zealand was submitted to MAF for approval after their correspondence with the Federation of New Zealand Aquatic Societies (FNZAS herein) regarding the change to the approved species list. However, the photo supplied only stated it was a "hermit crab" rather than having the correct scientific name. Why was there no consultation with the person who submitted the photo to MAF advising them to add the correct scientific name rather than just the 'common' name? It is believed that these hermit crabs are extremely beneficial to the marine aquarium hobby and not even having them included on any list is very disappointing.

It has also been suggested in a letter by Mr. Soons that MAF were to allow all species of corals and some other invertebrates such as anemones within a genus into New Zealand. This was because it was extremely difficult to differentiate between species and their survival in the wild should they be released was deemed "negligible." However, this has not occurred. As we can see, only one species of *Acanthastrea sp.* (*A. lordhowensis*) has been added to the draft IHS. There are in fact nine other species of *Acanthastrea sp.* should have been added to the draft IHS, according to MAF's reasoning above. These nine other species are; *A. amakusensis*; *A. bowerbanki*; *A. echinata*; *A. hemprichii*; *A. hillae*; *A. ishigakiensis*; *A. maxima*; *A. minuta* and *A. rotundaflora* (Integrated Taxonomic Integration System, 2000).

Species

What measures are being taken to allow for new species to be added to the new IHS each year? It is imperative for the survival of the marine aquarium hobby that new species can be easily added each year. What is the risk analysis process? Maybe importers could complete the risk analysis in their own time and submit them to MAF for approval. This way the approved list will always be constantly updated.

It is also noted that *Wellsophyllia sp.* was not added as it was an invalid scientific name. However, MAF fail to realise that *Wellsophyllia radiata* is actually the former scientific name of *Trachyphyllia geoffroyi.* However, many *Trachyphyllia geoffroyi* corals shipped from Indonesia are shipped as *Wellsophyllia radiata* on their CITES documents (Fenner, n.d.). This has the potential to and actively does cause confusion at the border. It would be considered wise to include both *Wellsophyllia radiata* and *Trachyphyllia geoffroyi* on the new IHS in order to avoid confusion at the border.

Conclusion

There is little or no evidence which suggests that any ornamental marine shrimp species are naturally affected by WSSV. This is because WSSV only naturally affects shrimps from the family *Penaeidae* (Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009; Laramore, 2007). No shrimps from this family are collected for the marine aquarium hobby. This submission suggests that MAF re-look at the risk analysis of the submitted species identified within this submission. It also suggests that MAF review all species within the submitted genus' as they all have similar structural, physiological and behavioural characteristics. However, if MAF are truly worried about the impact of WSSV in New Zealand, the suggested quarantine procedures should suffice in identifying and preventing it's spread into New Zealand waters through the marine aquarium hobby.

It is also suggested that the discrepancies between past OIA requests and recent information released by MAF are addressed. As stated previously, there are many species which had been 'approved' but are no longer so. Why have these been left off? Why are there differences between the OIA request dated the 13th of May 2008 and the current draft IHS? These issues must be addressed before the new IHS comes into fruition.

Furthermore, the easiness of adding new species to the IHS each year needs to be addressed in order to keep the marine aquarium hobby alive. Also, MAF should review the approved species list yearly, with assistance from importers, in order to keep scientific names constantly updated. This is because there are currently no measures in place to change a scientific name should it change and become outdated.

Reference List

Briggs, M., Funge-Smith, S., Subasinghe, R.P. & Phillips, M. (n.d.). Introductions and movements of two penaeid shrimp species in Asia and the Pacific. *FAO Fisheries Technical Paper.* n.v.(476).

Fenner, B. (n.d.). *Open-brain, rose coral, family Trachyphylliidae*. Retrieved June 4, 2009 from http://www.wetwebmedia.com/trachyphlliidae.htm

Integrated Taxonomic Integration System. (2000). *Acanthastrea - Milne-Edwards and Haime, 1848*. Retrieved May 12, 2009 from http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=53501

Laramore, S.E. (2007). Susceptibility of the peppermint shrimp *Lysmata wurdemanni* to the white spot syndrome virus. *Journal of Shellfisheries Research*. 26(2). 623-628.

Lo, C.f., Leu, J.H., Chen, C.H., Peng, S.E., Chen, Y.T., Chou, C.M., et al. (1996). White spot syndrome (WSBV) in penaeid shrimp using polymerase chain reaction. *Diseases of Aquatic Organisms.* 25(n.i.) 133-141.

Phuoc, L.E., Corteel, M., Thanh, N.C., Nauwynck, H., Pensaert, M., Alday-Sanz, V., et al. (2009). Effect of dose and challenge routes of *Vibrio spp.* on co-infection with white spot syndrome virus in *Penaeus vannamei*. *Aquacultue*. 290(1-2). 61-68.

Wang, Q., Poulos, B.T., & Lightner, D.V. (2000). Protein analysis of geographic isolates of shrimp white spot syndrome virus. *Archives of Virology*. 145(2). 263-274.

ZipcodeZoo. (2005). *Enoplometopus occidentalis (Hawaiian Lobster)*. Retrieved April 20, 2009 from http://zipcodezoo.com/Animals/E/Enoplometopus_occidentalis/

5. Bob Ward, Redwood Aquatics Aquarium

From: Redwood Aquatics [mailto:redwoodaquatics@xtra.co.nz]
Sent: Friday, 5 June 2009 3:49 p.m.
To: Richard Soons
Subject: Re: Consultation of draft IHS: Ornamental Fish and Marine Invertebrates from all countries - SUBMISSION
Importance: High

Dear Richard,

Comments and Suggestions on the Draft Standard 8th May 2009.

"Spirographis Spazlanzanii" (page 58) is listed as a risk item. Has a synonum of "Sebella Spallanzanii"

Reference page 7 issue 27 MAF Bio magazine

Reference page 6 issue 77 MAF Bio magazine

Reference page 19 issue 85 MAF Bio magazine

Letter from Bio-security New Zealand to me dated 7th June 2005 - This letter refers to another species of Sabella, which is of concern to me.

Importation Impact Assessment Report – October 1993:

(1) I applied for the consideration to import Sabella sp (Tubeworm) and was turned down. This invertebrate is continuing to be imported up to the present day. I did notify Bio-Security New Zealand recently, to no avail. It must be noted the existing standard allows for only one type of tubeworm, which is documented as Spirobrachus Giganteus. This is commonly known as Xmas Tree worm. The only reason for its inclusion on the standard was as a result of the risk analysis carried out on a list of hard corals on the 13th November 1995 ref 1/115-04-06 to be added to the existing corals on the standard. As one of the corals to be approved was the Porites coral, it has the spirobranchus as a symbiotic worm living in the coral. To approve the Porites onto the standard necessitated the approval of the tubeworm. The standard at present listed the scientific name for this invertebrate and a common name as Feather Duster,

which is incorrect. A feather duster relates to Sabella sp – two of which are listed on the draft standard. Note Bio-security New Zealand has allocated $3.5 million to eradicate spirographis from Lyttelton Harbour.

(2) The other entry is the word Zoantharia sp. This comes from the old standard where invertebrates were covered by orders - refer "tree of life" on sheet enclosed.

Zoantharia is a classification covering several orders which involves several thousand invertebrates. The word does not represent a particular species as ERMA would have. The old standard was incorrect, it listed order Zoantheria as covering only a small group of organisims known as Zoathids. The correct documentation should have been order Zoanthiniaria as Zoantharia is a class, allowing for the importation of several orders. Amongst which is Corallimorpharia which are false corals or mushroom anemones. I endeavoured to have this rectified years ago but nobody wanted to know. The class also covers order Scleractinia which is all corals etc and anemones.

(3) Lastly, the shrimp Lysmata grabhami is the same shrimp listed on the standard as Lysmata Amboinensis. Note this had an extensive risk analysis in the same application. Refer sheet supplied. The shrimp would be of more benefit than removal as it plays an important part in disease control and wound healing on marine fish. We are not allowed to apply any medications to fish, we can at best use natural means to keep fish in quarantine in good health.

Why is "sp" and "spp" still showing in the standard? The standard should be down to individual species level now.

Regards

Bob Ward

Director, Redwood Aquatics Aquarium & Water Garden Centre

****

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****

On the lookout for marine invaders

The Ministry of Fisheries is establishing a surveillance network to detect marine pest incursions to New Zealand. Baseline surveys of the biodiversity in ports and marinas will be undertaken, and an ongoing surveillance regime for marine pests will be implemented to enable rapid response to incursions.

A world first

The Ministry of Fisheries is establishing what is believed to be a world-first surveillance network as part of marine biosecurity research funded under the *Biodiversity Strategy*. The network will cover the areas of New Zealand's coast most at risk of invasion, and those areas where establishment of a marine pest would have the severest consequences.

Baseline surveys

Exotic marine species can arrive in ships' ballast water, attached to vessel hulls (hull fouling), on fishing or marine farming equipment, in aquarium material, or by deliberate introduction. Current knowledge of New Zealand's marine biota is limited, especially compared to the terrestrial environment. To detect incursions of exotic species, we need to know what is here already, both native and introduced. Researchers will undertake baseline surveys for indigenous and non-indigenous organisms at our highest risk points of entry.

High risk areas

Marine pests are most likely to arrive in ports and marinas due to high levels of vessel traffic. New Zealand has over 20 ports that together receive over 2,500 visits by international vessels annually. Ships transport huge volumes of ballast water between ports for vessel stability. The annual discharge of foreign ballast water in New Zealand is estimated to be between 4 and 6 million tonnes. Much of the international focus has been on ballast water as the main culprit for the translocation of species. However, about 70 percent of the exotic species introduced to New Zealand accidentally probably arrived as hull fouling organisms.

The Mediterranean fanworm (Sabella spallanzanii) *could cause serious problems if it established in New Zealand, by displacing native species and fouling vessels and marine structures. The Mediterranean fanworm is transported attached to vessel hulls (adults) and in ballast water (juveniles). Photo courtesy of the Australian Institute of Marine Science.*

Ports and marinas are highly modified environments. Their enclosed nature results in decreased water circulation and water exchange with outside areas. In undisturbed natural habitats, native species can inhibit colonisation by exotics. However, the altered environmental conditions and artificial structures present in ports and marinas appear to make it easier for many exotic species to establish a foothold. From these arrival points, exotic species can spread into adjacent communities, or be translocated around the coast.

The less successful exotic species that established in New Zealand have not spread far from the point of introduction, and hence have a very localised distribution. However, several invasive marine species have arrived in New Zealand, and spread rapidly from the point of introduction.

Surveillance network

Ongoing and regular surveillance for marine invaders will be carried out in a network of complementary sites. This network will cover ports and marinas, other high-risk areas, and high value areas. It may include sentinel sites, aquaculture areas, and additional harbours.

Sentinel sites will be located between the high risk areas and areas of significant value. These sites are important for detecting the spread of pests from the point of establishment, and for protecting our highly valued areas from marine invaders. High value areas to be included in the surveillance network will be selected on the basis of ecological values (e.g. biodiversity and productivity, presence of rare species, uniqueness) and production values.

Debra Wotton, Scientist – Marine Biosecurity, Ministry of Fisheries, phone 04 470 2595, fax 04 470 2669, debra.wotton@fish.govt.nz

Aligning quarantine requirements with international requirements

Representatives of MAF, New Zealand Immigration Service and New Zealand Customs accompanied the Ministry of Transport to a facilitation meeting in Montreal in mid February. The meeting, run by the International Civil Aviation Organisation (ICAO), was to review possible changes to requirements and recommended practices on the facilitation of international aircraft, passenger and cargo movements.

Of particular interest to MAF was the revision of the requirements for: disinsection of aircraft; documentation and processing of inbound passengers; and documentation and processing of inward bound cargo.

To protect New Zealand's economy and environment, MAF intervenes extensively with arriving aircraft, passengers and cargo. MAF needs to ensure that while facilitation of passengers and goods is an important facet of border control, it should be tempered with appropriate restrictions that protect New Zealand's biosecurity.

ICAO is a United Nations organisation. For the past 20 years it has endeavoured to persuade contracting states, of which New Zealand is one, to reduce red tape. International standards on facilitation have been adopted to place an upper limit on what states may demand.

Working papers for the meeting are available from the ICAO website (below).

Michael Alexander, Programme Manager (Border Management), phone 04 474 4280, fax 04 470 2730, mikea@maf.govt.nz

www.icao.int/cgi/goto.pl?icao/en/conf/index.html

BIOSECURITY NEW ZEALAND

Ref: permit 2005025852

7 June 2005

Robert Ward
Redwoods Aquatics and Aquarium and Fish Farm
PO Box 5114
Papanui

CHRISTCHURCH

Dear Robert Ward

IMPORTATION OF LIVE ROCK

You will have recently received notice that your import permit has been amended to ensure that live rock[1] is not imported into New Zealand. Live rock is not permitted due to the concern that seaweed species, other marine plants and animals may be introduced to New Zealand through this pathway.

Please note we have recently amended import health standards to ensure no live, fresh or frozen seaweed can be imported and live rock seemed to be one remaining pathway that needed to be addressed. We considered that the present control on hitchhiker species coming in on live rock was not adequate - although live rock was 'treated' in registered quarantine facilities, this treatment of drying out the rock does not ensure that seaweed will not grow from fragments and spores when the 'rocks' are put back into aquaria.

Hitchhikers are a major concern with live rock consignments. Hitchhikers on live rock include mobile species such as starfish, crabs and worms (that may or may not be removed by the drying out process) as well as attached invertebrates like sabellid fan worms. *Sabella spallanzanii* which has been introduced to Australia is an environmental pest and has been listed as an Unwanted Organism in New Zealand. The sabellids on live rock imported to New Zealand could have similar invasive characteristics to *Sabella spallanzanii* if it escaped into the marine environment. Another listed Unwanted Organism is *Caulerpa taxifolia*. This escaped from an aquarium in the Mediterranean and has now covered huge areas of seabed there. It is also present in Australia where it is currently subject of expensive control programmes. Much live rock is imported into New Zealand from Pacific regions where *Caulerpa* species are present.

[1] 'Live rock' is defined as rock or other hard substrate including coral with marine plants and animals encrusting or living in it, that is valued in marine aquarium for the ornamental and interesting nature of the encrusting plants and animals such as corals , anemomes and fan worms that display showy tentacles.

PRE-CLEARANCE DIRECTORATE
Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere
ASB Bank House, 101-103 The Terrace, PO Box 2526, Wellington, New Zealand
Telephone: 64-4-474 4100, Facsimile: 64-4-498 9888, Web: www.biosecurity.govt.nz

MINISTRY OF AGRICULTURE AND FISHERIES NEW ZEALAND
.E MANATU AHUWHENUA AHUMOANA AOTEAROA
Ref: I 115-04-6

13 November 1995

Steve Atkins
P O Box 20 002
WELLINGTON

Rolf Jansen
P O Box 96 020
AUCKLAND

Dear Steve and Rolf

APPROVAL TO INTRODUCE ORNAMENTAL MARINE INVERTEBRATES

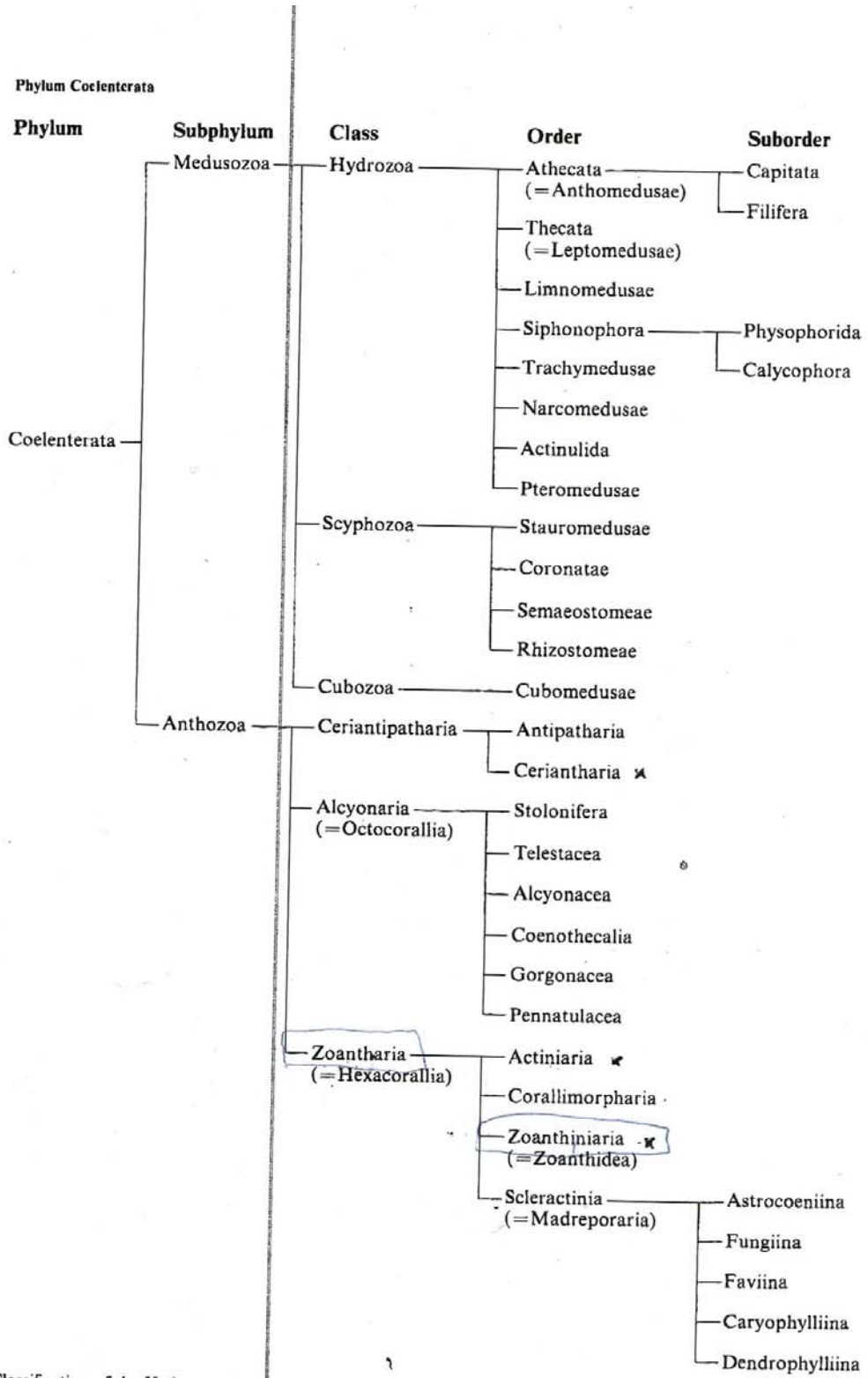
Further to my letter of 3 November, 1995, I confirm that two species were left of the list of organisms approved for introduction into New Zealand. They were *Ophiolepis superba* and *Sarcophyton glaucum*. The full list is therefore:

a reef corals - all species in the genera listed below **except** *Acropora palmata*. (Refer Appendix 1 for a full list of species in each genus.)

Porites
Galaxea
Favites
Leptoria
Leptastrea
Gardineroseris
Pocillopora
Pachyseris
Echinopora
Catalaphyllia
Leptoseris
Oxypora
Acanthastrea
Platygyra
Merulina
Symphyllia
Lobophyllia
Diploastrea
Hydnophora
Favia
Tubipora
Montipora
Plerogyra
Physogyra
Stylophora
Goniastrea
Pavona
Alveopora
Polyphyllia
Cynarina
Caulastrea
Oulophyllia
Turbinaria
Pectinia
Euphyllia
Seriatopora

Acropora, except *A. palmata*, a venomous species which is already on the not permitted section of the list in the import health standard.

MAF Regulatory Authority
ASB Bank House, 101–103 The Terrace, PO Box 2526, Wellington, New Zealand
Telephone 0-4-474 4100, Facsimile 0-4-474 4257



Classification of the Hydrozoa follows Petersen (1979 and personal communication) supplemented by Totton (1965) for the Siphonophora. The Scyphozoa are arranged according to Russell (1970) and the Anthozoa as in Moore (1956) supplemented by Friese (1972) for the Actiniaria.

Genus: *Lima*

Common names: none supplied

Submitter: Redwood Aquatics **References supplied:** none

Examples: *L. hians* **Location:** Not supplied

Description

A bivalve similar to scallops but usually with long, colourful tentacles.

Recommendation

No information was supplied with this submission so no assessment can be made of the potential impact of this species. Therefore, this genus is not recommended to be added to the list of aquarium fish permitted entry.

Genus: *Lysmata*

Common names: Cleaner shrimps

Submitter: S. Atkins **References supplied:** 13

Examples: *L. amboinensis* **Location:** Caribbean, subtropical Pacific.

Description

These shrimps belong to the family Hippolytidae and are found in tropical and subtropical areas. These shrimps live in small swarms and are peaceful. Many are hermaphroditic. They will reproduce regularly in aquaria but larvae are difficult to rear. They are omnivorous and feeds largely on organic detritus. Many are very active in the aquarium. *L. amboinensis* is a well known species and is readily identified by its creamy base colour and two distinctive orange stripes along the dorsal area - hence its common name, orange skunk cleaner shrimp.

Recommendation

As some of these shrimps come from subtropical areas, there is a possibility that they could survive in warmer areas of our coastal areas. Of the species submitted, only *L. amboinensis* (formerly *L. grabhami*) is a circumtropical species (23-27 °C). Therefore this species only is recommended to be added to the permitted list of marine invertebrates.

6. Andrew Hill, Ministry of fisheries

From: Hill, Andrew [mailto:Andrew.Hill@fish.govt.nz]
Sent: Tuesday, 9 June 2009 1:16 p.m.
To: Richard Soons
Subject: IHS for Ornamental Fish and Marine Inverts

Hi Richard

Sorry I haven't responded sooner to your request for comments on the Import Health Standard (IHS) for Ornamental Fish and Marine Invertebrates from All Countries.

I have run this past a couple of folk here and no one is aware of any species listed that would be of concern. The only additional comment was whether inspectors have the knowledge to recognise these species, even down to the genus level, given the level of taxonomy required. Presumably samples can be taken to refer to an expert if identification is in question?

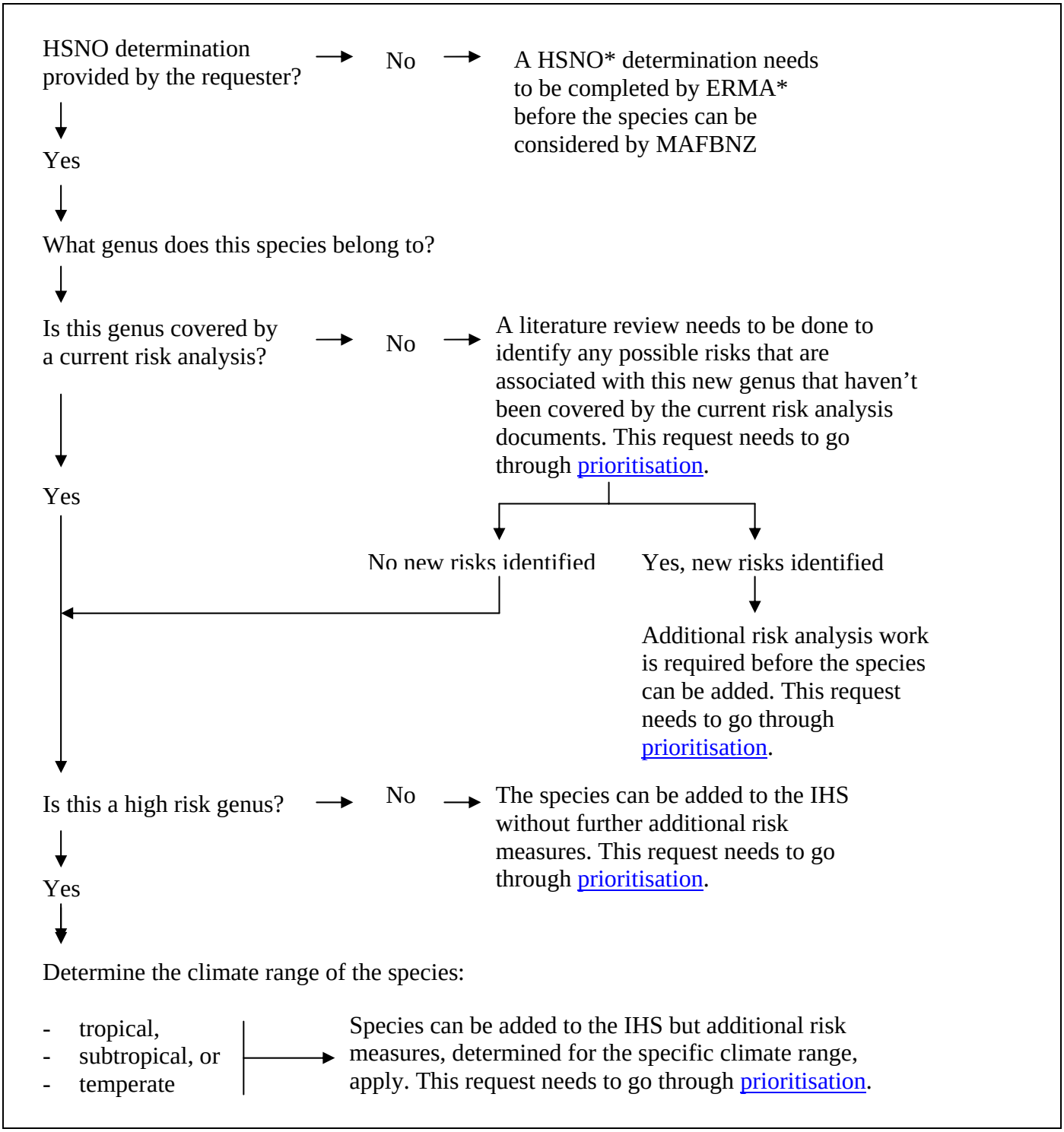
Cheers
Andy

Andrew Hill | Senior Fisheries Analyst | Deepwater

MINISTRY OF FISHERIES | Te Tautiaki i nga tini a Tangaroa

Tel +64 4 819 4609

APPENDIX TWO: PROCESS FOR ADDING NEW SPECIES TO THE IMPORT HEALTH STANDARD FOR ORNAMENTAL FISH AND MARINE INVERTEBRATES FROM ALL COUNTRIES



* HSNO - Hazardous Substances and New Organisms Act 1996
** ERMA - Environmental Risk Management Authority

APPENDIX THREE: HIGH-LEVEL ASSESSMENT OF PEST AND DISEASE RISKS POSED BY MARINE INVERTEBRATES IN THE AQUARIUM TRADE

M E M O R A N D U M

To:	Richard Soons, Senior Adviser, Animal Imports
Cc:	Bex Longford, Christine Reed, Simon Phillips, Victoria Lamb, Colin Johnston, Andrew Bell
From:	Daniel Kluza, Senior Adviser, Risk Analysis (marine)
Date:	16 November 2009
Subject:	High-level assessment of pest and disease risks posed by marine invertebrates in the aquarium trade

Purpose

Six species of marine invertebrate have been proposed for addition to the ornamental fish and marine invertebrates Import Health Standard (http://www.biosecurity.govt.nz/files/biosec/consult/draft-fisornic.all-marine-invertebrates.pdf). At the request of the Border Standards Directorate (Animal Imports Group), the Risk Analysis Group (marine) conducted a rapid risk assessment of the pest and disease risks posed by:

- *Cypraea histrio* — minstrel/histrio/stage cowry, a gastropod mollusc;
- *Dardanus gemmatus* — jeweled anemone hermit crab, a decapod crustacean;
- *Hippopus hippopus* — bear paw/horse's hoof/strawberry clam, a bivalve mollusc;
- *Loimia medusa* (junior synonym of *L. arborea*) — spaghetti/feather star red/medusa worm, a terebellid polychaete worm;
- *Sabellastarte indica* (synonimized with *S. spectabilis*) — featherduster/fan/tube worm, a sabellid polychaete worm);
- *Ophiomastix* species — tiger brittle star, an ophiuroid starfish.

The assessment that follows is high-level, based on freely available scientific documents, online databases and reports, and information holdings within Marine Risk Analysis. The scope of this assessment is limited to the potential pest and disease risks these organisms may pose to the New Zealand environment.

Key Findings

1. *Cypraea histrio*—a tropical gastropod, native to the Indian Ocean (OBIS 2009a, WoRMS 2009a). New Zealand coastal waters are likely to be too cold for its survival, however it is uncertain whether this is the case for the Kermadec Islands. Very little information exists on the pathogens and parasites of *Cypraea* species (and cowries in general); marine

birnavirus is known from *Cypraea*, but frequency of occurrence is apparently low (Inaba et al. 2009).

2. *Dardanus gemmatus*—an Indo-Pacific hermit crab, known from South Africa, Madagascar, Hawaii and Polynesia (OBIS 2009b, WoRMS 2009b). Two *Dardanus* species occur in New Zealand (*D. hessii* and *D. arrosor*), both of which have an Indo-West Pacific distribution (Forest and McLay 2001). There is little explicit information on the environmental tolerances of *D. gemmatus*, however the New Zealand distributions of *D. hessii* (Kermadec Islands) and *D. arrosor* (northeast and northwest coasts of North Island; e.g., Northland, Hauraki Gulf, Bay of Plenty) demonstrate the tropical-subtropical distribution characteristic of the genus. If these environmental tolerances are consistent within *Dardanus* hermit crabs, environmental conditions in New Zealand may be favourable for establishment and survival of *D. gemmatus*.

   Hermit crabs have associations with a variety of parasites, pathogens and hitchhiker organisms. The most commonly encountered parasites of hermit crabs (and of decapod crustaceans in general) are rhizocephalans and isopods (family *Bopyridae*; Markham 1986, 2001), but there appear to be few (if any) records of other parasites from *Dardanus* hermit crabs. Across all groups of hermit crabs (Superfamily Paguroidea), bopyrid isopods account for 57% of described parasites and rhizocephalan barnacles make up a further 21% of hermit crab parasite fauna (McDermott et al., unpublished data, cited in Boyko and Williams 2009).

   Pathogens and diseases associated with hermit crabs are also poorly known. Fungal disease has been noted in *Pagurus* species (Smolowitz et al. 1992), and *Eupagurus bernberdus* has been identified as a potential vector for white spot syndrome baculovirus (Ruangsri and Supamattaya 1999).

   The empty gastropod shells used by hermit crabs provide an attachment and/or burrowing substrate for many organisms. Over 400 species of invertebrates have been found as facultative and incidental associates of hermit crabs, with other crustaceans (e.g., barnacles, amphipods), polychaete worms and cnidarians accounting for ~ 75% of associated taxa (Williams and McDermott 2004).

3. *Hippopus hippopus*—a giant clam, native to the Indo-West Pacific (OBIS 2009c, WoRMS 2009c). The pest risk of this species appears to be negligible, as New Zealand coastal waters are likely to be too cold for its survival. Bacterial (*Rickettsia* sp.) and protozoan (*Perkinsus* sp., *Marteilia* sp.) diseases are known from *H. hippopus* (Humphry 1995, Hine and Thorne 2000). Note that this species is listed in CITES Appendix II, hence related permits/documentation may be necessary for importation.

4. *Loimia medusa*—a cosmopolitan tropical and subtropical polychaete species that also occurs in some temperate areas (Seitz and Schaffner 1995, OBIS 2009d, WoRMS 2009d). The broad geographic and temperature range across which *L. medusa* is found suggests that this species has the potential to become established in the New Zealand coastal environment. Other polychaetes with similar life-history characteristics (infaunal, tube-building/burrowing surface deposit feeders, e.g., *Marenzelleria* spp., *Alitta succinea*) have become invasive outside their native ranges (Didziulis 2006, Global Invasive Species Database 2009).

   Parasites associated with polychaetes include copepods, flatworms and bacteria (Douglass and Jones 1991, Kim 2001, Zrzavy 2001). There appear to be no notable diseases of

polychaetes, yet polychaetes themselves can transmit disease—*Hermodice carnunculata* is a known reservoir and vector for the coral-bleaching pathogen *Vibrio shiloi* (Sussman et al. 2003), and white spot syndrome virus (WSSV) has been demonstrated to be passively vectored by polychaetes (Vijayan et al. 2005).

5. *Sabellastarte indica*—a polychaete known from tropical waters of the Atlantic, Indian and Pacific Oceans, but also occurring in temperate areas such as South Africa, southern Japan, and the China Sea (OBIS 2009e, WoRMS 2009e). Better known under the name *S. spectabilis*, this polychaete is a very popular marine ornamental species (Bybee et al. 2006). The geographic distribution and temperature range across which *L. medusa* is found suggests that this species has the potential to become established in the New Zealand coastal environment, particularly in the northern portions of the North Island (e.g., waters around Northland and the Bay of Plenty). To date, *S. indica* is not known as an invasive species, however invasive behaviours are known from other sabellid polychaetes (e.g., *Sabella spallanzanii*; Global Invasive Species Database 2009).

6. *Ophiomastix* sp.—this genus of brittle stars is comprised of approximately 16 benthic inshore/littoral species, of which the majority have tropical Indo-Pacific distributions (OBIS 2009f, WoRMS 2009f). The genus is not known from New Zealand, and coastal waters here are likely to be too cold for survival of this species. Myzostomid worms parasitize brittle stars (and other echinoderms), however these appear to be very species-specific host associations (Lanterbeq et al. 2006) and there are no records of these parasites in *Ophiomastix* species.

   In the aquarium trade, "tiger" is used as a descriptor for many species of brittle stars. An internet search for online marine invertebrate vendors resulted in a variety of taxonomic-common name combinations describing "tiger" brittle stars:

Common name	**Taxonomic identification**
Tiger Brittle	*Ophiolepsis*[1]*/Ophioderma* sp.
Tiger Brittle Starfish	*Ophiactis* sp.
Tiger Brittle Starfish	*Ophiocoma* sp.
Tiger Striped Brittle Star Fish	*Ophiocoma* sp.
Fancy Tiger-Striped Serpent Sea Star	*Ophiolepsis*[1] *superba*
Tiger Banded Sea Star	*Opiolepis*[1] *superba*

   Four different genera of brittle stars (other than *Ophiomastix*) fall under the general descriptor of "tiger", highlighting the uncertainty around the identity of taxa within suborder Ophiurina. Moreover, the potential pest and disease risks of misidentified taxa are likely to be different from those of the presumed species, and therefore remain unconsidered.

[1][*sic*] correct spelling is *Ophiolepis*.

7. Recommendations and considerations:

    a. *Cypraea histrio* and *Hippopus hippopus* appear to have negligible pest potential. Parasite and pathogen risks should be looked at in greater detail should these molluscs be further considered for inclusion in the IHS, and Investigation and Diagnostic Centre (IDC) expertise should be consulted.

    b. *Dardanus gemmatus* appears to have a non-negligible pest potential, as well as parasite and pathogen risks. Gastropod shells used by hermit crabs are noteworthy for associated 'hitchhiker'/biofouling flora and fauna; further consideration of including *D. gemmatus* in the IHS needs to account for these potential taxa and their respective pest, parasite and pathogen risks.

    c. The polychaetes *Loimia medusa* (i.e., *L. arborea*) and *Sabellastarte indica* (i.e., *S. spectabilis*) have non-negligible pest potential based on their general life-history characteristics. Moreover, polychaetes have the potential to vector bacterial and viral pathogens. Risk Analysis (Marine) recommends that these taxa not be considered for inclusion under the IHS.

    d. The *Ophiomastix* brittle star appears to have negligible pest potential. Associated parasite and pathogen risks also appear to be negligible. If the *Ophiomastix* species is to be considered for inclusion under the IHS, disease risks should be explored by IDC experts. Given the potential for misidentification, Risk Analysis (Marine) recommends a taxonomic verification check.

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