# *Import risk analysis:* Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans

*REVIEW OF SUBMISSIONS ON SUPPLEMENTARY RISK ANALYIS*

5 May 2010

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Policy and Risk
MAF Biosecurity New Zealand

# Import risk analysis: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans

## *REVIEW OF SUBMISSIONS ON SUPPLEMENTARY RISK ANALYSIS*

5 May 2010

Approved for general release

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Manager, Risk Analysis
MAF Biosecurity New Zealand

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# Executive Summary

In November 2005 MAF released for public consultation a risk analysis on the eligible genera list from the import health standard for the importation of ornamental freshwater and marine animals. The risk analysis presented a number of measures to manage the risks posed by the 13 hazards identified. MAF received eight submissions on the 2005 risk analysis.

Following this, as a result of discrepancies being identified in the list of eligible species, a review of the list was carried out under the Hazardous Substances and New Organisms Act 1996 (HSNO), to include all species that were present in New Zealand before 1 July 1998. The amended eligible list was finalised in March 2007, and it included a further 158 genera of aquatic animals that had not been on the 2005 list, either due to omissions or taxonomic changes. The effect was that MAF had to carry out a supplementary risk analysis on these 158 genera of aquatic animals.

In June 2009 MAF released a review of the 13 submissions that were received on the 2005 risk analysis, as well as the supplementary risk analysis on the 158 additional genera. Submissions were invited on the supplementary risk analysis up to 14 September 2009.

During this public consultation period, MAF received one request for clarification on the review of submissions on the 2005 RA. In response, MAF is able to confirm that the statement *"largely because one Auckland importer who considered he could import what he liked into the country anyway."* that appeared in the 2005 submission from Redwood Aquatics does not refer to any importer currently in operation.

MAF received six submissions on the supplementary risk analysis. Key issues highlighted in these submissions include: -

- Submitters considered the risks posed by foreign shipping, particularly biofouling and ballast water, as being significant for the marine environment and they questioned why marine fish are subject to import controls when shipping does not appear to be under the same scrutiny. In response, MAFBNZ has provided information on work that is underway on biofouling risk analysis and ballast water controls.
- Submitters questioned, as they had in submissions on MAF's 2005 risk analysis, the value of pre-export certification, which they consider add expense but provide little benefit.
- Submitters discussed quarantine periods and the difficulty of having different quarantine periods for freshwater versus marine fish import facilities.
- Submitters indicated that, in their opinion, marine fish represent a lower risk than freshwater fish.
- Two submitters indicated that ornamental shrimp should not be regarded as high risk.
- Antiparasitic treatments to mitigate two of the risks appear to be acceptable to the industry.
- A number of submitters suggested that the document should be separated into marine, freshwater and goldfish sections. In response, the conclusions and amendments are presented in this review in marine fish, freshwater fish and marine invertebrate sections.

- A number of submitters queried the inclusion of goldfish due to the wide range of hazards requiring mitigation, although one submitter was in favour of permitting entry under the suggested conditions.

As a result of the submissions and MAFBNZ review of data in both the 2005 risk analysis and the 2009 supplementary risk analysis it is recommended that a number of changes be made to the recommendations of the supplementary risk analysis as follows:

1. The requirement for pre-export visual inspection and certification of clinical freedom from pest and disease should be removed as long as there is inspection on arrival in New Zealand.
2. All freshwater fish should be subject to a standard 4-week quarantine period (with additional risk management measures for named high-risk species).
3. *Zanclus cornutus* is considered a tropical species.
4. *Enteromyxum leei* risk factors were amended to include only temperate species of the listed genera. On the basis of this amended risk profile, *Chromis viridis, Amphiprion akindynos, Thalassoma lunare, Thalassoma lutescens* and *Lipophrys nigriceps* have been reclassified as low-risk species as regards infection with *Enteromyxum leei*.
5. Host species list amended to reflect *Scleropages formsus* is present on permitted list.
6. Host species list amended to remove *Cephalopholis* spp. and *Chromileptes* spp. from the iridovirus section.
7. Host species list amended to remove reference to *Elacatinus oceanops* from the *Argulus foliaceus* section.
8. Amended Table 5 (Sec. 16.4.3: Risk management options for high risk species by hazard) hazard 9 *Lactococcus garviae* to remove reference to tropical species.
9. Amended high risk species management options section:
    a. split into freshwater fish, marine fish and marine invertebrates
    b. amended high risk marine fish risk measures
        i. Aquabirnavirus: identified subtropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for aquabirnaviruses with negative results;
        ii. Iridovirus: identified subtropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for iridoviruses with negative results;
        iii. Nodavirus: identified tropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying nervous signs, colour change or behavioural abnormalities. identified subtropical and temperate high risk marine species require batch or source population testing for nodaviruses with negative results;
        iv. *Lactococcus garviae*: identified subtropical high risk marine species are subject to a 3-week quarantine, with investigation of batches

displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for *Lactococcus garviae* with negative results;

v. *Glugea heraldi*: identified subtropical & temperate high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of grey, proliferative skin lesions;
vi. *Aphanomyces invadans*: identified high risk marine species are subject to a 3-week quarantine period with investigation of any fish displaying clinical signs of skin ulceration;

10. For marine fish not specifically identified as high-risk species the quarantine period will remain at three weeks, with biosecurity clearance being issued to all surviving fish free of clinical signs of pest and disease at the end of that period.
11. For freshwater fish not specifically identified as high risk species it is proposed that the quarantine period be set at four weeks. Whilst no specific testing triggers have been established, the supervisor may initiate testing at their discretion if there appears to be a serious disease issue, otherwise biosecurity clearance should be issued to all surviving fish free of clinical signs of pest and disease.
12. Ornamental marine decapods are subject to a 3-week quarantine period with investigation of batches showing clinical signs of white spot syndrome.

Nothing in the above amendments, or the conditions specified in the draft supplementary risk analysis, is intended to remove the ability of the supervisor to investigate batches of high risk or low risk fish for pathogens of biosecurity significance to New Zealand if they consider it necessary to do so, however, it is intended that the above amendments and the conditions in the supplementary risk analysis would be a default first position.

# 1. Introduction

On 29 June 2009 the supplementary risk analysis was released for public consultation. Submissions closed on 14 September 2009.

MAF Biosecurity New Zealand received the following submissions:

| Name | Organisation Represented | Date Received |
|---|---|---|
| Warren Garrett | Brooklands Aquarium Ltd. | 11 September 2009 |
| Steve Walls | Aquarius Imports | 14 September 2009 |
| Michael Tan | | 14 September 2009 |
| David Cooper | Mahurangi Technical Institute | 20 July 2009 |
| Alois Wolloner | | 15 September 2009 |
| Richard Woolley | Highway Fisheries Ltd. | 14 September 2009 |

MAFBNZ thanks each submitter for taking the time to make their submissions and assist in the process of ensuring New Zealand's biosecurity system is workable and effective.

This document reviews each submission in turn. MAF responses and actions are numbered sequentially throughout this document.

The risks posed by marine fish and ornamental fish are discussed in more detail following issues raised in submissions.

The conclusions reached by MAF Biosecurity New Zealand in considering the issues raise are summarised in a separate section and are also included in the executive summary.

The full text of each submission is included in Appendix 1.

# 2. Review of submissions

## 2.1. WARREN GARRETT, BROOKLANDS AQUARIUM LTD.

### Submission

This submitter indicates that the ornamental aquatic animal import industry is more easily regulated and controlled than other significant hazards such as foreign vessel movements and ballast water exchange**.**

> ***MAFBNZ response 1*** MAFBNZ is active in managing all biosecurity risks in the marine environment, including vessel biofouling and ballast water issues. Mandatory controls on ballast water discharges in New Zealand by ships with ballast water taken up in foreign ports were introduced in 1998. These implemented international guidelines for ballast water management. Cabinet has also agreed that New Zealand will accede to the Ballast Water Management Convention once legislative amendments are in place which will further strengthen mitigating biosecurity risks from ballast water.
>
> An import health standard (IHS) for biofouling is under development and consultation on this work will be undertaken early in 2010. The IHS will result in mandatory measures being in place to manage biofouling on all arriving craft. At the same time New Zealand is actively working through the International Maritime Organisation to put in place international guidelines to manage biofouling on ships.

### Submission

The submission questions the classification of diseases as "exotic" to New Zealand, indicating in their opinion that given the limited amount of information specifically related to New Zealand, it is questionable whether an assumption can be made that certain groups of diseases are absent from this country.

> ***MAFBNZ response 2*** Both the 2005 risk analysis and the 2009 supplementary risk analysis MAFBNZ relied on the available literature. There are a number of sources of information that detail the current state of knowledge regarding the detection of species of parasites and pathogens from fish in New Zealand. Where this information was used it is included in the references. There has been both active and passive surveillance for aquatic animal diseases in New Zealand for many years, both from a diagnostic and a research perspective.
>
> For diseases of aquatic animals there is a combination of active and passive surveillance for some pathogens and only passive surveillance for others. Under such circumstances, MAFBNZ considers it reasonable to conclude that the absence of reports indicates absence from New Zealand.

### Submission

The submitter considers that since the 2005 risk analysis and the 2009 supplementary analysis are based on literature mainly from overseas, its relevance may be questioned.

***MAFBNZ response 3*** Since risk analyses assess the risk posed by pathogens that are exotic to New Zealand, it is inevitable that relevant clinical reports, epidemiological studies and research documents will largely be from overseas countries where the pathogens are present.

### Submission

The submission states that the absence of any outbreaks of notifiable disease at their transitional facility over a considerable period of time indicates that current import standards are working especially given the New Zealand climate and the importation of tropical fish.

***MAFBNZ response 4*** The purpose of the 2005 risk analysis and the 2009 supplementary risk analysis included defining which species of fish posed greatest risk of carrying specific pathogens. This allowed diagnostic efforts to be targeted appropriately, which will result in faster and more cost-efficient quarantine than the blanket enforcement of a broad range of compulsory diagnostic tests in the event of 20% mortality in any species.

***MAFBNZ response 5*** The supplementary risk analysis already takes into account the New Zealand climate and does classify the vast majority of tropical fish as of low risk.

### Submission

The submitter questions whether the import requirements for low risk species are relevant to the import health standard or the transitional facility review.

***MAFBNZ response 6*** MAFBNZ considers that pre-clearance quarantine procedures implemented for low risk species are still relevant to the import health standard. The standard of the facility holding the live aquatic animals is relevant to the Transitional Facility standard. The biosecurity requirements specific to the import of live animals is relevant to an import health standard.

### Submission

The submitter queries whether health certification will mitigate the risk or just add a financial and bureaucratic burden to the importers, and queries the utility of a visual inspection of the fish at export.

***MAFBNZ response 7*** This comment relates to section 17 of the supplementary risk analysis where it was suggested where the exporting country is able to demonstrate freedom from one of the pathogens listed in the risk analysis, that entry requirements for that (or those) pathogens could be replaced by a health certificate. This option was listed together with lifelong entry into containment facilities to provide alternate methods to achieve equivalence with the quarantine and testing requirements listed. Such a certificate would only be issued by the Competent Authority of the exporting country, that country having declared itself free of the pathogen of concern having met specific requirements and to the satisfaction of New Zealand. Such certification could therefore be taken to indicate a negligible likelihood of the pathogen of concern being present in the animals.

In addition this section also indicated that it is undesirable for fish clinically affected with ubiquitous or opportunist pathogens or parasites to be imported into New Zealand. To prevent this it was suggested that an individual, authorised by the competent authority of the exporting country, should inspect the shipments and certify the animals to be free of "clinical signs of pest or disease". MAFBNZ notes the submitters' views on the utility of a visual inspection. However, there must be a visual inspection of the animals at some point during the export/import process. Given the necessity to inspect shipments upon arrival for compliance with species lists, and the entry of the animals into post-arrival quarantine for a certain period of time, MAFBNZ concludes that this inspection of the animals may be better achieved in New Zealand.

**MAFBNZ action 1**
The requirement for pre-export visual inspection and certification of clinical freedom from pest and disease will be removed as long as there is inspection on arrival in New Zealand.

### Submission

The submitter supports a 4-week quarantine period, stating that it would not be viable to have some fish undergoing a 3-week quarantine and other fish undergoing a 4-week quarantine.

The submitter further indicates that the standard use of a 4 week quarantine period would remove the need to specifically list a number of hazards and instead introduce a requirement for "investigation of batches showing clinical signs or sudden unexpected mortality."

***MAFBNZ response 8*** MAFBNZ notes the submitter's preference to standardise the quarantine period for all freshwater fish at 4 weeks. The 3 week quarantine period was suggested to try and reduce cost of quarantine for low risk species. If the consensus across importers is that mixed quarantine periods are not worth any potential cost savings then a standard period will be proposed for freshwater fish, based on the longest period specified in the risk analyses, namely 4 weeks.

**MAFBNZ action 2**
Of the six submissions to this document four expressed a specific opinion on freshwater quarantine periods. Of these three were in favour of a four week quarantine standard and one suggested the retention of the existing six week quarantine. The intent of import health standards should be as minimally trade restrictive as possible. This document indicates that a four week period would be acceptable for biosecurity purposes and thus it is suggested that there is a standard 4-week quarantine period for freshwater fish.

***MAFBNZ response 9*** Removal of the listing of the specific hazards as suggested, and a return to "investigation of batches showing clinical signs or sudden unexpected mortality" would make the import standard more simple, but is in essence a return to the original broad and more expensive diagnostic process which these risk analyses have sought to make more specific. To achieve a more targeted and specific investigation process would still require the listing of each high risk species by pathogen of concern and clinical signs of interest. As one of the complaints of the original system was the cost of the broad range of diagnostic tests required, MAFBNZ considers it appropriate to retain the more specific detail contained in the supplementary risk analysis, based on the

objective of narrowing down the range of diagnostic tests required to effectively manage the risks.

### Submission

The submitter suggests a 2-week quarantine period for marine species based on the low volume of imports and high value making release less likely, thus proposing marine species are low risk. The submission notes that marine quarantine is currently shorter than freshwater quarantine, and suggests this should continue to be reflected in quarantine periods. In addition the submission highlights risks from foreign shipping and ballast water exchange to the marine environment.

***MAFBNZ response 10*** The 2005 risk analysis suggested that both freshwater and marine fish be subject to a standard 4-week quarantine period (with an exception for species susceptible to Enteromyxum leei). This was commented on by submitters at that time. The marine species listed and pathogens of concern have been re-examined following submissions. For further information please refer to **MAFBNZ discussion point – marine fish**

***MAFBNZ response 11*** Please see ***MAFBNZ response* 1** as regards risks from foreign shipping and ballast water.

### Submission

The submitter considers that the importation of goldfish under conditions suggested in the supplementary risk analysis would not be viable. It is also suggested that goldfish be placed in their own section so as to reduce the number of hazards in what would become a non-goldfish ornamental fish section.

***MAFBNZ response 12*** The measures necessary to mitigate risk associated with the import of live goldfish are rigorous, as it is widely accepted that goldfish do potentially carry a number of pathogens of biosecurity significance to New Zealand. It was acknowledged in the supplementary risk analysis that this would, in all likelihood, result in significant import costs.

***MAFBNZ response 13*** Whilst the placement of goldfish in its own section might simplify certain sections of the supplementary risk analysis, as long as any resultant import standard covers all species, there would be no overall advantage in reformatting the supplementary risk analysis at this time.

### Submission

The submitter requests clarification of the duration of validity of source population and batch testing/certification.

***MAFBNZ response 14*** Source population freedom from disease would generally be established under the conditions specified in any direct agreement between the Competent Authorities of the exporting country and New Zealand, or could be based on standards set by the World Organisation for Animal Health (OIE). Generally, this is based on a disease testing history for a country, zone, compartment or farm, ongoing surveillance and the presence of biosecurity mechanisms to protect that country, zone, compartment or farm. Thus as long as the country, zone, compartment or farm continued to satisfy the requirements to claim freedom from a certain pathogen, certification would be considered valid.

Batch testing would be used where the source population could not meet the requirements to claim freedom from specific diseases, and thus a representative number of fish in each batch would need to be tested to show that each individual shipment was free of the disease of concern.

### Submission

The submitter indicates that the use of praziquantel or fenbendazole to mitigate the risk of entry of *Bothriocephalus acheilognathi* would be acceptable. Similarly the submitter indicates that the use of levamisole to mitigate the risk of entry of *Capillaria philippinensis* would be acceptable.

***MAFBNZ response 15*** Willingness to utilise these mainstream antiparasitic treatments as part of the import requirements is noted.

### Submission

The submitter indicates that, in their opinion, the likelihood of the intentional release of ornamental shrimps is extremely low, they would be unlikely to survive in New Zealand waters, there is greater risk from ballast water exchange and that the suggested risk management measures would mean ornamental shrimp importation would not be commercially viable.

***MAFBNZ response 16*** As regards the risk from ballast water exchange please refer to ***MAFBNZ response 1***

***MAFBNZ response 17*** As there were a number of submissions which raised risk mitigation measures for ornamental shrimp, this has been re-examined. For further information please refer to **MAFBNZ discussion point – ornamental shrimp**

### Submission

The submitter questioned the relevance of including Appendix 3 (Guidelines for testing animals in quarantine).

***MAFBNZ response 18*** The appendix was included in the supplementary risk analysis to provide an example of the kind of guidance that could be prepared and offered to supervisors of transitional facilities in an effort to standardise the decision making process across all transitional facilities. Such an appendix would not be included in an import standard, but could be further developed in association with importers and transitional facility supervisors.

## 2.2. STEVE WALLS, AQUARIUS IMPORTS

### Submission

The submitter indicates that they considered consultation across all areas of the supplementary risk analysis to be beneficial, but decided that this had been discouraged in the introductory letter, where MAFBNZ stated "please note that the review of submissions in appendix one is a final document and we are not seeking further comment on that appendix".

> ***MAFBNZ response 19*** Appendix one of the document released for public consultation in June 2009 was a review of submissions received by MAF during public consultation of the 2005 risk analysis on ornamental fish. The issues raised in those submissions have been responded to already, but where appropriate this review has gone back to the original risk analysis and review of submissions in appendix one when considering the submissions.

### Submission

The submitter indicated that in their submission to the 2005 risk analysis, they did not find enough time to make specific comment on the hazards identified.

> ***MAFBNZ response 20*** The original premise in the writing of the supplementary risk analysis was that in the consultation process on the 2005 risk analysis "no stakeholders questioned the hazards identified" as there had been no specific comment. In this case the submission period was extended and it is hoped that where necessary comments have now been made. Where appropriate this review has returned to the 2005 risk analysis to re-examine some of the hazards in light of points raised in submissions to the supplementary risk analysis.

### Submission

The submitter raises a point with the 2005 risk analysis regarding the table 1.1 (pages 207-209) which highlighted parasites and pathogens introduced into New Zealand, and indicated that they considered the information misleading as the instances were linked with some non-ornamental species and goldfish. The submitter accepts goldfish are ornamental but indicates that they are not permitted legal entry into New Zealand at this time. The submitter feels that this presents an adverse image of the ornamental fish import industry.

> ***MAFBNZ response 21*** MAFBNZ's intention in preparing table 1.1 of the 2005 risk analysis was simply to illustrate the potential of live animal movements to transfer biosecurity hazards. The introduction of the 2005 risk analysis presented a referenced discussion on the evidence for linking the movement of ornamental fish globally with the spread of certain pathogens. Table 1.1 dealt with fish diseases found in both Australia and New Zealand that have been assumed to have been introduced. However, the only diseases reported as being found in quarantine were those affecting grass carp. Goldfish were only one of a number of potential host species mentioned in the table, and the diseases of this species are now relevant as a result of the supplementary risk analysis.

### Submission

The submitter indicated that the supplementary risk analysis was quite complicated and suggested that the document and future work be set out in sections covering tropical fish, marine fish and goldfish separately.

> ***MAFBNZ response 22*** As regards the reformatting of the supplementary risk analysis, please refer to ***MAFBNZ response 13.***
>
> The suggestion regarding the formatting of ongoing work is noted and will be considered in future. MAFBNZ would like to highlight that not all freshwater ornamental fish imported are "tropical" and since there is a suggested placement of species in the low risk group, mainly on the basis of their propensity for tropical waters (some exceptions do apply) that it is not appropriate to refer to all freshwater ornamental fish as "tropical fish".

### Submission

The submitter queries why goldfish are being considered for importation, and then suggests import conditions for these comprising a 9-week quarantine period and separation of shipments of goldfish from all other species (both temporally and spatially within transitional facilities).

> ***MAFBNZ response 23*** Goldfish are not regarded as a new organism under the HSNO Act and MAFBNZ has received a number of applications to import this species into New Zealand. Since the majority of diseases had been considered already MAFBNZ decided that goldfish would be examined during the supplementary risk analysis.
>
> ***MAFBNZ response 24*** MAFBNZ notes the suggested risk mitigation measures for goldfish. The quarantine period will be based on the epidemiology of the pathogens of concern, and it may be difficult to justify extending the quarantine period beyond a certain point. The suggestions on temporal and spatial segregation of goldfish are noted and they are considered sensible - it should be noted that the transitional facility standard already requires separation of shipments and species. Where that is not possible and cross contamination occurs, the whole shipment would have to be considered to require measures applicable to the most hazardous species present.

### Submission

The submitter states that current quarantine periods have served the industry well and indicates that upon enquiry had been told there had been no reports of exotic disease outbreak in a quarantine facility.

> ***MAFBNZ response 25*** Please refer to ***MAFBNZ response 4***.

### Submission

The submitter queries the removal of *Scleropages formosus*, and asks why it has been singled out.

> ***MAFBNZ response 26*** *Scleropages formosus* was inadvertently left off a list used to inform the development of the supplementary risk analysis. The error is regretted, but *Scleropages formosus* is present on the current permitted list.

### Submission

The submitter queries the listing of *Apistogramma ramirezi* as a hazard, based on the age of the research and the localisation of the inspected sample. The submitter indicates that the 2009 Biosecurity Australia risk analysis on iridoviruses in freshwater ornamental fish references the same literature but states there is a lack of evidence on the prevalence of iridoviruses in cichlids.

> ***MAFBNZ response 27*** The species *Apistogramma ramirezi* (*Mikrogeophagus ramirezi*) was linked with iridoviruses in the original 2005 risk analysis, and the species taken forward as a high risk species on that basis. In brief re-examination of this position the following points are worthy of consideration: -
>
> - The age of the research does not make it invalid; the virus has been reported in the family of fish and must be considered further.
> - As there is no restriction on country of origin, the risk analysis must consider reports from any country as relevant.
> - The 2009 Biosecurity Australia risk analysis referred to above classified cichlid iridoviruses as overall moderate risk.
> - The same document indicates the identification of an iridovirus from a cichlid of the *Apistogramma* genus in a 2005 survey in Australian quarantine facilities.
>
> Based on these points it is considered appropriate that *Apistogramma ramirezi* (*Mikrogeophagus ramirezi*), and the *Apistogramma* genus remain classified as high-risk.

### Submission

The submitter indicated that variable quarantine periods and controls were confusing and re-iterated their desire to retain the current 6-week quarantine period for freshwater fish and 3-week quarantine period for marine fish. In addition the submitter restated that, in their opinion, there had been no disease issues in their or other transitional facilities.

> ***MAFBNZ response 28*** This view on the 6-week and 3-week quarantine periods is noted; however, the submitter is also referred to ***MAFBNZ response 4.***

## 2.3. MICHAEL TAN

### Submission

The bulk of this submission challenged MAFBNZ's classification of ornamental shrimp as high-risk. It included a discussion on white spot syndrome virus and reasons why the submitter considered the suggested risk management measures to be inappropriate. This portion of the submission will be used to inform ***MAFBNZ discussion point – ornamental shrimp.***

Other points in the submission are addressed here.

### Submission

The submitter agrees that there should be a compulsory quarantine period for imported ornamental aquatic animals, but disagrees with the requirement for inspection and certification of freedom from clinical signs of pests and disease at the point of export.

The submitter is referred to ***MAFBNZ response 7*** and the resultant **MAFBNZ action 1**

### Submission

The submitter provided information on sources of information related to volumes of trade.

> ***MAFBNZ response 29*** MAFBNZ thanks the submitter for this information.

### Submission

The submitter highlights an apparent inconsistency in the classification of *Zanclus cornutus* as subtropical. Since FishBase lists a water temperature range of 24-28°C for this species, the submitter suggests that this species is reclassified as tropical.

> ***MAFBNZ response 30*** MAFBNZ thanks the submitter for highlighting an inconsistency. In review of the Fishbase material, which has potentially conflicting information, and of other aquarium species literature it is accepted that *Zanclus cornutus* is a tropical species and its classification will be amended accordingly.

***MAFBNZ Action 3***
*Zanclus cornutus* will be classified as a tropical species.

### Submission

The submitter queries the inclusion of *Chromis viridis* and *Amphiprion akindynos* as at risk from the myxosporean, *Enteromyxum leei*. The submitter quotes a personal communication from industry source(s) who state that risk is so low as to be negligible.

> ***MAFBNZ response 31*** *Enteromyxum leei* was identified as a hazard in *Chromis* and *Amphiprion* species in the 2005 risk analysis and was taken forward into the supplementary risk analysis on that basis. As indicated earlier, where necessary and appropriate, this reviewer will re-examine hazards from the 2005 risk analysis.
>
> Pertinent points from the 2005 risk analysis are:
>
> - *E. leei* displays low host specificity

- Blenniidae and Labridae are particularly susceptible
- It has a direct life cycle
- Transmission requires extended periods of exposure
- The statement "It is unlikely that a 3-week quarantine would be effective in disclosing infection, nor for that matter even after a 6-week quarantine period"

Examination of the papers by Diamant (1997)[1] and Padros et al. (2001)[2]: raise the following points:

- Transmission is direct by ingestion
- Host specificity is low
- Cases are reported in association with high host densities

Examination of the literature suggests that this myxosporean, as with many marine myxosporeans, has a low host specificity. The species targeted in the 2005 risk analysis are those from which the parasite has been detected which probably reflects those species most commonly held in aquaria. MAFBNZ agrees that it may be overly risk-averse to target this one marine myxosporean, especially as extended quarantine periods may not be effective in mitigating any risk. From the literature it is considered that transmission of the disease is most likely in closed systems, rather than following the release of an infected individual, so the risk is primarily to the marine aquarium keeper. As prolonged release of the parasite would be needed it is proposed that the risk factor be amended to include only temperate species of the listed genera. It is therefore proposed that the species *Chromis viridis, Amphiprion akindynos, Thalassoma lunare, Thalassoma lutescens* and *Lipophrys nigriceps* be removed from the high-risk list and placed on the low-risk list as they are subtropical rather than temperate.

***MAFBNZ Action 4***

*Enteromyxum leei* risk factors be amended to include only temperate species of the listed genera. On the basis of this amended risk profile for *Enteromyxum leei,* reclassify *Chromis viridis, Amphiprion akindynos, Thalassoma lunare, Thalassoma lutescens* and *Lipophrys nigriceps* as low-risk species as regards infection with *Enteromyxum leei*.

[1] Diamant A (1997) Fish-to-fish transmission of a marine myxosporean, Dis. Aquat. Org., 30, 99-105
[2] Padros F, Palenzuela O, Hispano C, Tosas O, Zarza C, Crespo S, Alvarez-Pellitero P (2001) *Myxidium leei* (Myxozoa) infections in aquarium-reared Mediterranean fish species, Dis. Aquat. Org., 47, 57-62

## 2.4. DAVID COOPER, MAHURANGI TECHNICAL INSTITUTE

### Submission

This submission fully supports the comments in the supplementary risk analysis relating to the potential for goldfish to carry various diseases and also supports the risk management measures suggested.

> ***MAFBNZ response 32*** MAFBNZ notes the support for the risk mitigation suggested for goldfish imports.

### Submission

The submitter suggests that importation should only be permitted from sources shown to be free of the diseases noted.

> ***MAFBNZ response 33*** The risk mitigation measures suggested for goldfish already include the requirement to demonstrate freedom from aquabirnaviruses, iridoviruses, cyprinid herpesvirus-3, spring viraemia of carp virus and *Aeromonas salmonicida*. For the remaining hazards the measures suggested, namely quarantine, inspection, investigation of particular clinical signs and anti-parasitic treatment are considered appropriate, achievable and less trade restrictive than requiring the demonstration of freedom from them.

### Submission

The submitter suggests restricting import of goldfish to those from a single supplier in Australia.

> ***MAFBNZ response 34*** The measures suggested in the supplementary risk analysis are those that MAFBNZ considers to be necessary, effective and least trade restrictive, in line with international obligations. Provided exporters meet the requirements considered necessary to manage the identified risks, there is no justification for applying further measures such as a requirement to limit availability to a single exporter.

### Submission

The submitter suggests pre-export quarantine (in Australia).

> ***MAFBNZ response 35*** As the import standard is for all countries, such pre-export quarantine cannot be limited to Australia. For equivalence purposes, there is no reason why the quarantine period could not take place off-shore, provided all requirements for testing, inspection and treatment were met and could be verified by a Competent Authority recognised by New Zealand, and that the animals were shipped without any breach of quarantine. Such a situation could be presented as an equivalence request.

## 2.5. ALOIS WOLLONER

### Submission

The submitter maintains their position that the costs of diagnostic testing associated with the import of ornamental aquatic animals should be borne by MAF. The submitter indicates that they do not make significant profits and additional costs will suppress trade.

> ***MAFBNZ response 36*** The attribution of costs for diagnostic tests to permit the import of live animals into New Zealand is directly to the person wishing to import the live animals. This is consistent across the spectrum of live animal imports and is no different for live aquatic animals. MAFBNZ will not bear the cost of meeting import standards for any importer.

### Submission

The submitter attached a copy of the submission from Michael Tan on ornamental shrimp.

> ***MAFBNZ response 37*** This submission is being considered in **MAFBNZ discussion point – ornamental shrimp**, and the submitter is referred to that.

### Submission

The submitter offered the opinion, as they submitted on the 2005 risk analysis, that health certification would not be effective, for several reasons, including the likely need for separation of species in the pre-export facility and the impression that the exporters would simply sign such health certificates themselves.

The submitter is referred to ***MAFBNZ response 7*** and **MAFBNZ action 1**

> ***MAFBNZ response 38*** Further, as indicated in the supplementary risk analysis, any signatory would need to be approved by the Competent Authority of the exporting country, so self-certification by the exporter would not be acceptable. MAFBNZ notes the comment regarding separation of species in the exporting warehouse and recognises this limiting factor. Nevertheless, this remains an option, and the submitter is referred to ***MAFBNZ response 14*** which details the potential validity of a Competent Authority from a country declared free of specific pathogens to issue a health certificate to that effect, and which might simplify biosecurity clearance in New Zealand.

### Submission

The submitter suggested that fish are not imported from subtropical countries and that New Zealand is well served with a 3-week quarantine for marine species.

> ***MAFBNZ response 39*** MAFBNZ notes the submitters support for the 3-week quarantine period, and a reluctance to increase to 4 weeks. The term subtropical is used in the risk analysis regarding the temperature tolerance of the animal species rather than the country from which the animals are imported. The submitter is referred to ***MAFBNZ discussion point – marine fish***

### Submission

The submitter suggested that goldfish be subject to a separate analysis.

> ***MAFBNZ response 40*** The submitter is referred to ***MAFBNZ response 13***.

### Submission

The submitter recommended that the quarantine period for marine fish remain 3 weeks and that for freshwater fish be 6 weeks, or be reduced to 4 or 5 weeks.

***MAFBNZ response 40*** MAFBNZ thanks the submitter for their suggestions on lengths of quarantine periods. The intent is that quarantine periods are effective, but not onerous. For further discussion on these points the submitter is referred to **MAFBNZ response 8** , **MAFBNZ action 2**

### Submission

The submitter requested that MAFBNZ take into account the following factors:

- The extremely low volume of ornamental aquatic animals entering New Zealand compared with the rest of the world;
- New Zealand currently has the longest quarantine periods globally;
- Marine fish are unlikely to survive if released;
- Ballast water and foreign shipping are a greater risk; and
- The fact that New Zealand importers tend to develop relationships with their exporters.

***MAFBNZ response 41*** MAFBNZ notes these factors and refers the submitter to ***MAFBNZ response 1*** and ***MAFBNZ discussion point – marine fish.*** While the importer/exporter relationship is to be encouraged, any import standard would be for listed species from any country, so there would be no obligation to use only existing exporters. Thus this point would be beyond the scope of the import standard and the risk analysis process.

### Submission

The submitter indicates that training or information provided to the importers on the main pathogens of biosecurity significance would be of use in reducing risk.

***MAFBNZ response 42*** MAFBNZ agrees that such information is valuable at a number of levels. MAFBNZ has already been involved in providing training for transitional facility supervisors.

### Submission

The submitter queries the ability to add species to the approved list.

***MAFBNZ response 43*** MAFBNZ has recently published a review of submissions on the Draft Import Health Standard for Ornamental Fish and Marine invertebrates from all Countries (dated 27 November 2009). This review of submissions lists the process for adding species to the permitted list. It requires a determination from ERMANZ in the first instance, followed by a risk assessment of the species. Such risk assessment work would need to be prioritised into the work stream. This review of submission can be found on the MAFBNZ website by using the following link:
http://www.biosecurity.govt.nz/files/biosec/consult/ros-fisornic.all.pdf

## 2.6. RICHARD WOOLLEY, HIGHWAY FISHERIES LTD.

### Submission

The submitter highlights the relatively low volume of ornamental aquatic animals that enter New Zealand each year as compared with the global market.

> ***MAFBNZ response 44*** MAFBNZ is familiar with the relative size of New Zealand in the global market for ornamental fish. However, regardless of the volume of trade, there remains an obligation to assess the risks posed by imported goods and to effectively manage the risks identified.

### Submission

The submitter indicates that freshwater host factors are fair and acceptable.

> ***MAFBNZ response 45*** MAFBNZ notes the submitters' acceptance of the freshwater host factors.

### Submission

The submitter indicates that they feel that the tropical marine species identified as high-risk have been unjustly affected by the supplementary risk analysis. This is based on the climate in New Zealand, the value of the individual fish making release unlikely and the lack of information on relationships to native New Zealand species.

> ***MAFBNZ response 46*** MAFBNZ thanks the submitter for their views on tropical marine species and refers the submitter to ***MAFBNZ discussion point – marine fish.***
>
> As regards the relationships to native New Zealand species, there are clear linkages between *Hippocampus* spp. and members of the Labridae and Pomacentridae families. In other cases, and where marine species are identified with a specific and serious hazard, it is prudent to exercise some precaution when importing live animals.

### Submission

The submitter considers that there should be a process to update hazards more regularly.

> ***MAFBNZ response 47*** While more frequent reviewing updating of import standards may be desirable to ensure the list of hazards is completely up to date, the benefit of applying the necessary resources to that work would have to be compared to the benefits to be gained from applying that resource in another commodity area at the border. MAFBNZ will maintain a watching brief and has the ability to act quickly if a potentially serious hazard came to light.

### Submission

The submitter indicates that an acceptable level of protection (ALOP) has not been stated in the risk analysis, and indicates that in their opinion this is a requirement of the risk analysis process. The submitter requests that an ALOP is stated.

> ***MAFBNZ response 48*** There is insufficient data available for any country to define its appropriate level of protection with precision. Thus the appropriate

level of protection is essentially conceptual in nature, and a country's appropriate level of protection can be inferred over time from the total picture of the decisions that are made by that country on sanitary and phytosanitary measures.

### Submission

The submitter indicated that in section 16.4 of the supplementary risk analysis, three options had been outlined but that only option 2 had been explored in detail. The submitter indicates that a ban on species is overly risk averse and that option 3 needs to be elaborated.

***MAFBNZ response 49*** MAFBNZ agrees that the discussion in that section of the supplementary risk analysis could have been clearer. However, the submitter did correctly identify the three main options open for discussion, and MAFBNZ notes the view expressed about the option of a ban on species.

The intention of presenting option 3 in the supplementary risk analysis was to raise the concept of a biosecurity plan as a potential method of achieving equivalence, which may be explored more fully in the development of a draft import health standard.

### Submission

The submitter queries the utility of the suggested pre-export inspection and health certification of freedom from clinical signs of pest and disease. The submitter indicated that their understanding was that MAFBNZ would require a health certificate stating common parasites and pathogens were not present on the fish.

The submitter is referred to **MAFBNZ response 7** and corresponding **MAFBNZ action 1**

***MAFBNZ response 50*** **.** The intention behind inspection and certification would be to ensure best practice by preventing the movement of clinically affected fish. The certification suggestion referred to "clinical signs" rather than just the presence of common parasites or pathogens, as the latter could not be certified based on visual inspection only.

### Submission

The submitter indicated acceptance of post-arrival inspection at the transitional facility as it is already a requirement of the import standard.

***MAFBNZ response 51*** Acceptance of post-arrival inspection in line with current procedures is noted.

### Submission

The submitter suggests that the following statement in the supplementary risk analysis indicates a desire on the part of MAF to shifting the reporting onus to the facility supervisor, rather than the operator:

"At the end of the quarantine period or at any time within it if warranted, the supervisor should determine the total number of sick and dead fish per species from facility records and physical inspection. Percentages of affected fish should be calculated; these must include sick and dead fish"

***MAFBNZ response 52*** It was not the intent of this sentence to shift reporting responsibilities from the operator to the supervisor. This section seeks to make

clear that the supervisor should analyse the reports from the operator, with physical inspection of the tanks where necessary, to identify species with significant mortalities, and that this could happen at any time throughout the quarantine periods as well as just before release of the animals.

### Submission

The submitter indicates that allowing supervisor discretion in disease investigation initiation (based on stated guideline principles) rather than a rigid percentage mortality figure would be a good example of working together to meet the standards, but that this falls down if different levels of discretion are displayed by different supervisors in the same facility. The submitter then goes on to state that the guidelines example provided as an appendix requires further discussion.

> ***MAFBNZ response 53*** MAFBNZ considers that consistency across supervisors would be important and the aim of a guidance document similar to the one presented in Appendix 3 of the supplementary risk analysis was to begin to address that. It is unclear at this stage what form such guidelines would take; however, they would probably not be part of the import health standard, but could be developed alongside it, preferably in association with the supervisors and operators, and potentially adapted for each facility.

### Submission

The submitter asked for clarification of the term "batch" especially as related to "destroy the batch".

> ***MAFBNZ response 54*** In the case of this section, the term batch should be taken to mean all animals of the same species in the same shipment and any other species in the same water. This emphasises the importance of maintaining separate equipment for each tank, avoiding mixing species where possible and the advantage of separate water supplies.

### Submission

The submitter indicates that for clarity the terms "certificate", "health certificate" and "zoosanitary health certificate" should be clarified as to whether they refer to different levels of certification.

> ***MAFBNZ response 55*** MAFBNZ regrets any confusion created by the use of these three terms which can all be taken to mean the same thing in the supplementary risk analysis.

### Submission

The submitter indicated an error in naming, namely that *Trichogaster chuna* is synonymous with *Colisa chuna.*

> ***MAFBNZ response 56*** MAFBNZ thanks the submitter for highlighting the error, which will be addressed.

***MAFBNZ action 5***
*Trichogaster chuna* will be deleted from the list of high-risk species. *Colisa chuna* will be retained.

### Submission

The submitter suggests setting the minimum quarantine period at 4 weeks, and requiring levamisole and praziquantel/fenbendazole treatment of all fish. In their opinion this would reduce the complexity of the hazard list down to seven hazards requiring additional management measures.

The suggestion to set a minimum quarantine period of 4 weeks is noted, as is the willingness to treat all incoming fish with levamisole and praziquantel/fenbendazole. However, suggested additional risk mitigation measures in the supplementary risk analysis are not limited to a 4-week quarantine period, but include diagnostic investigation of species according to clinical presentation. To retain this level of risk mitigation the species of interest would need to be specified clearly, and to avoid an expensive blanket approach to the diagnostic testing the presenting signs of concern were specified. Operators, following approval from their supervisor, may treat all incoming fish with levamisole and praziquantel or fenbendazole if they wish, but the intent of the supplementary risk analysis was not to force that level of expense on the operator. Similarly by specifying clinical syndromes of concern by species it was hoped to limit the diagnostic expense. The submitter is also referred to ***MAFBNZ response 8*** and **MAFBNZ action 2**

### Submission

The submitter suggests assessing the risks of eyed egg import, especially for *Carassius auratus*, as an alternative to import of the live animal.

> ***MAFBNZ response 57*** MAFBNZ thanks the submitter for this helpful suggestion. However, the risk assessment work for this would need to be prioritised into the work programme.

### Submission

The submitter indicates that it is not practical to maintain a 3-week quarantine period for some freshwater fish and a 4-week quarantine period for others, and indicates that a 4-week quarantine period would be more suitable.

MAFBNZ thanks the submitter for this comment which is addressed further in **MAFBNZ action 2**

### Submission

The submitter believes that the extended quarantine period of 6 weeks for some named marine species is unreasonable given other mitigating factors and needs to be revised.

> ***MAFBNZ response 58*** The submitter is referred to ***MAFBNZ response 31*** and ***MAFBNZ Action 3***

### Submission

The submitter indicates that batch or source population testing would stop the importation of risk species, but allow the import of high-value brood stock for affluent companies and requests more information on batch and source population testing.

> ***MAFBNZ response 59*** For a discussion on batch and source population testing the submitter is referred to ***MAFBNZ response 14.*** This response indicates, as the submitter correctly assumes, that a batch test is valid for a single shipment of that species, whereas source population freedom would not require

testing for each shipment, but would remain valid for as long as the conditions required to declare freedom from the specified disease, in a country, zone, compartment or farm, were met.

### Submission

The submitter indicated that treatment with praziquantel to mitigate the risk of *Bothriocephalus acheilognathi* and treatment with levamisole to mitigate the risk of *Capillaria philippinensis* is acceptable, but that clear details need to be specified in the import standard.

***MAFBNZ response 60*** MAFBNZ notes the acceptance of treatment options. To achieve adequate risk mitigation, treatments will have to meet specific requirements that will be specified in any import standard.

# 3. MAFBNZ discussion point – marine fish

A number of submissions addressed the quarantine period for marine fish. The supplementary risk analysis suggested increasing the quarantine period for high risk marine species to 4 weeks, bringing it into line with the high-risk freshwater species. Some submissions requested a decreased quarantine period of two weeks; others suggested maintaining the current quarantine period of three weeks for all marine fish.

Arguments presented include:

- The risks from international shipping and ballast water exchange are higher than for marine fish
- The marine fish importation industry is one of low volume
- The fish are of high individual value and are unlikely to be intentionally released
- The current marine quarantine period is too long
- Released marine fish are unlikely to survive given the New Zealand climate

The first point has been addressed in ***MAFBNZ response 1***.

MAFBNZ recognises that a number of characteristics of marine ornamental animals imports potentially mean that this pathway presents generally lower risks than some species of freshwater ornamental animals. These characteristics include a generally lower volume of trade, higher value of individual animals with a resulting lower likelihood of release, and a more complicated release pathway into an environment in which the animals could survive.

However, it should be noted that some species of freshwater ornamental animals may also be imported in low volumes and have a high individual value, but where a risk analysis indicates they represent a higher biosecurity risk it is appropriate to apply a higher level of risk management measures. In the interests of consistency, the marine ornamental animals specifically identified as higher risk need to be treated in a similar way.

In addition, once an organism of concern (host or pathogen) is released into the marine environment there is usually little that can be done to eradicate that species, whereas under some circumstances release into a freshwater environment may at least be contained in a particular water body, which may mean more options are available for responding to an incursion.

Once live aquatic organisms have been given biosecurity clearance and are released from transitional facilities there is no longer control over those organisms, thus any risk analysis must consider, to some degree, release of the fish into the environment.

Nevertheless, the 2005 risk analysis which identified the hazards in marine fish has been re-examined, as have the import requirements of other countries. As a result, MAFBNZ has concluded the following:

- Considering the hazards identified, it is necessary to have import requirements for marine ornamental animals;
- Such import requirements will almost certainly include a compulsory quarantine period and additional measures for identified higher risk marine ornamental animals;
- Australia currently has a seven day quarantine period for marine fish, but requires a period of holding pre-export. In addition, all shipments must be accompanied by a health certificate from the Competent Authority of the exporting country attesting to the source

(not collected in an area with significant disease issues or within 5km of a fish farm) and health of the fish and all importers must apply for and hold a valid import permit;

- Similar certification was considered in both the 2005 and 2009 risk analysis documents, however, submissions in both cases were opposed to this. Even if a decision is made not to make certification a general requirement, it remains an option to demonstrate freedom from a particular pathogen and thus excuse that species from further risk mitigation for that pathogen;
- If a decision is made not to require certification, it would be reasonable that the quarantine period be in excess of the Australian two week total for pre-export quarantine and post-import quarantine;
- Following submissions to the 2009 supplementary risk analysis it is reasonable to reclassify the risk factors for *Enteromyxum leei* for marine fish (***MAFBNZ response 31*** and **MAFBNZ Action** ) and as a result there would be no marine fish species classified as high risk for this particular pathogen. If at any time in the future a temperate water marine fish was added to the permitted list and was identified as being particularly at risk of infection with *E. leei*, then it would be subject to additional risk mitigation measures, which should be a six week quarantine period with investigation of batches displaying clinical signs of enteritis;
- The hazards identified by the 2005 risk analysis, and affecting named species of marine fish are thus aquabirnavirus, iridovirus, nodavirus (grouper nervous necrosis virus), *Lactococcus garviae, Glugea heraldi* and *Aphanomyces invadans*;
- These hazards have been re-examined, looking at the data supplied in the 2005 risk analysis, the 2009 supplementary risk analysis and any additional information supplied by submissions;
    - **Aquabirnavirus:** The 2005 risk analysis states that it is expected that the stress of collection, transport and quarantine would be expected to result in clinical expression with a rapid time course and it is "likely that the fish will die well before the end of [3-week] quarantine". The main risk is posed by temperate cyprinids, however the propensity of the virus for vertical transmission increases the risk in all fish species. It is therefore proposed that **identified subtropical high risk marine species are subject to 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for aquabirnaviruses with negative results;**
    - **Iridovirus:** Relevant factors identified in the 2005 risk analysis include the propensity of the Iridoviridae to spread, potentially catastrophic consequence of introduction, time course of disease in stressed conditions rapid (up to 14 days) in non-ornamental susceptible fish. Latest host susceptibility information was examined and it is proposed that ***Cephalopholis* spp. and *Chromileptes* spp. are removed from the susceptible host list**. It is further proposed that **identified subtropical high risk marine species are subject to 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for iridoviruses with negative results;**

- **Nodavirus:** The 2005 risk analysis identified grouper nervous necrosis virus as a hazard in some marine fish. Factors relevant to a re-examination include the potential for horizontal transmission to local susceptible species, a rapid time course up to 14 days, a moderate consequence for potentially valuable marine species and potential for vertical transmission. Risk mitigation is therefore still considered necessary and it is proposed that **identified tropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying nervous signs, colour change or behavioural abnormalities. identified subtropical and temperate high risk marine species require batch or source population testing for nodaviruses with negative results[3];**
- ***Lactococcus garviae*:** This bacterium remains a significant pathogen overseas in the marine environment. The 2005 risk analysis highlights potential moderate consequence for trout and freshwater prawns in New Zealand, but this consequence is based on the availability or use of vaccines and/or antibiotics. Without these and their use is not without complication and expense, the consequence could be considered to be greater. It is recognised that the 2009 supplementary risk analysis (Table 4, page 73) indicated high-risk species to be temperate and subtropical species, thus it is proposed that **identified subtropical high risk marine species are subject to 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for *Lactococcus garviae* with negative results;**
- ***Glugea heraldi*:** The 2005 risk analysis indicated that this pathogen is specific to *Hippocampus* spp., transmission is direct and horizontal, clinical signs are apparent to the naked eye, the incubation period is not known but the analysis indicated that, in concert with the life cycle of other microsporidians, it is likely to be less than three weeks. It is therefore proposed that **identified subtropical & temperate high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of grey, proliferative skin lesions;**
- ***Aphanomyces invadans*:** Relevant factors from the 2005 risk analysis are that this pathogen has low host specificity once introduced into an area, utilises direct horizontal transmission, infection is common in warm water fish exposed to low water temperatures and clinical signs appear generally quickly by 10 days, but may take up to 30 days in the snakehead (*Channa striata*). This pathogen may affect both marine and freshwater fish. A 4-week quarantine period would mitigate this risk to a high degree, however in the case of marine fish MAFBNZ recognises that submissions have indicated variable quarantine periods are not viable for most transitional facilities, thus it is proposed that **identified high risk marine species are subject to a 3-week quarantine period with investigation of any fish displaying clinical signs of skin ulceration;**

[3] Due to the removal of the tropical species from the high-risk group for *L. garviae*, there are currently no marine species on the permitted list which require specific mitigation against this risk. However the hazard will remain in the supplementary risk analysis for future reference if susceptible subtropical or temperate species are added.

- For marine fish not specifically identified as high-risk species it is proposed that the quarantine period remain at three weeks, with biosecurity clearance being issued to all surviving fish free of clinical signs of pest and disease

# 4. MAFBNZ discussion point – ornamental shrimp

One submission addressed the rating of ornamental decapods as high risk on account of white spot syndrome virus (WSSV). The same document was copied and attached to another submission, accompanied by some original comments by the author of that submission. These comments reiterated those in the main ornamental shrimp submission by Michael Tan.

- The submitter indicated that according to their research on white spot syndrome virus, the following are factors to be considered:
- WSSV naturally infects only Penaeidae;
- Ornamental shrimp are not members of the Penaeidae;
- There have been no reports of WSSV in wild ornamental shrimp;
- There is a negligible likelihood the ornamental shrimp will carry WSSV on entry to New Zealand;
- The chance of release of shrimp is negligible;
- The submitter agrees that the potential consequence of WSSV establishment in New Zealand is serious;
- The submitter argues that risk measures are not justified until the wild populations of ornamental shrimp are shown to have WSSV infection;
- The infection trial paper[4] detailed:
    - infection was carried out by feeding or injecting WSSV infected tissue and the submitter indicated in their belief that any organism can be infected with any pathogen via such routes;
    - no WSSV was detected in *Lysmata* shrimp injected with WSSV infected material;
    - dead adult *Lysmata* shrimp were found to be WSSV positive, as was one survivor in the feeding experiment;
    - *Lysmata wurdemanni* is more resistant to WSSV than the highly susceptible *Litopenaeus vannamei*;
    - as only one adult *Lysmata* survivor was positive for WSSV it is unreasonable to assume a carrier status;
    - infected individuals would die before the border;
- The submitter agreed that a ban would be overly restrictive, that batch certification would be expensive and impractical, and objected to the sacrificial testing of 87% of the imported shrimp;
- The use of certificates to specify that ornamental shrimp are not sourced from a penaeid farm is not necessary as all ornamental shrimp are wild caught not farm raised;

[4] **Laramore SE** (2007) Susceptibility of the peppermint shrimp *Lysmata wurdemanni* to white spot syndrome virus. *Journal of Shellfish Research* 26(2): 623-627

- The submitter disagrees with the quarantine period and reiterates that WSSV affects only penaeids

The submitter suggests that ornamental shrimp held in quarantine could be tested for WSSV if mortality rates exceed 60%, and suggests that only artificial seawater is used in transitional facilities to prevent any risk of pathogen introduction from the use of contaminated equipment during the collection of natural sea water

***MAFBNZ commentary***

MAFBNZ notes that the 2009 supplementary risk analysis clearly indicated that WSSV is primarily a disease of crabs and penaeid shrimp, however, a number of studies were quoted in the 2009 supplementary risk analysis to indicate that other species could be infected through feeding or by injection. It should also be reiterated at this point that the OIE regards all decapod crustaceans as susceptible to infection with WSSV.

MAFBNZ agrees that ornamental shrimp on the permitted import list are not members of the Penaeidae.

MAFBNZ agrees that there have been no reports of WSSV detection in wild populations of ornamental shrimp, there are also no reports of surveillance of wild ornamental shrimp populations and thus a lack of reports may not reflect an absolute absence of infection. In addition, wild shrimp dying of WSSV are not likely to be available for testing due to predation. Thus it cannot be argued that MAFBNZ must wait for wild populations of ornamental shrimp to display WSSV infection before instituting risk mitigation.

The Laramore paper clearly demonstrates that at least one ornamental decapod (*Lysmata wurdemanni*) is susceptible to WSSV by feeding; a natural route of transmission. Injection challenges are not a natural route of infection and MAFBNZ tends to disregard their findings. Contrary to the submission statement, it is not possible to infect an animal with a pathogen and result in lasting infection or clinical signs if that animal is truly not susceptible to the pathogen. In this case mortality resulted, a clear indication of susceptibility to the pathogen.

This paper indicated that a single exposure to WSSV in feed resulted in a mortality rate of 40% in adult *L. wurdemanni*, with 1 survivor being positive for the virus (7% of the exposed population), although it is unclear whether this individual animal would have died as a result of infection as the experiment was terminated on day 25 post infection. The paper also indicated that there was 20% mortality by day 11 post infection and the 40% mortality was reached by day 23 post infection. The author of the paper clearly indicates that "the finding that adult *Lysmata* are susceptible to WSSV has implications for the ornamental industry".

MAFBNZ agrees that evidence indicates *L. wurdemanni* is less susceptible to WSSV than *L. vannamei*, but contends it is still susceptible to infection.

MAFBNZ disagrees that infected individuals would necessarily die before the New Zealand border, unless there was a specific period of certified pre-export quarantine. However, submissions on the 2005 risk analysis and 2009 supplementary risk analysis indicated that many believed that such a system involving certification by the exporting country would not work.

Given all the above, MAFBNZ must conclude that there is a non-negligible likelihood of ornamental shrimp carrying WSSV on entry to New Zealand. The species is regarded as susceptible by the OIE and has been shown to be so by experimental recreation of a normal route of infection.

MAFBNZ notes that ornamental shrimp are expensive to buy and that the likelihood of their release is thus lower. As stated in ***MAFBNZ discussion point – marine fish***, once live aquatic organisms have been given biosecurity clearance and are released from transitional facilities there is no longer control over those organisms, thus any risk analysis must consider, to some degree, release of the animal into the environment.

The import of another shrimp, *Macrobrachium rosenbergii*, is subject to extensive WSSV risk mitigation, although MAFBNZ recognises that ornamental shrimp are not destined for aquaculture or breeding.

The 2009 supplementary risk analysis included various options for risk management. As the submitter noted a ban on the species was regarded as being overly trade restrictive. An option of batch testing was explored but eliminated from the options as impractical for a number of reasons.

The submitters views are noted on the value of certification that ornamental shrimp were not sourced from penaeid farms. Such certification would not just have covered farmed ornamental shrimp, were they to be available, but would also have covered ornamental shrimp that were wild introductions into penaeid farms and recovered from the farm as a by-product. However, in line with other areas in this review of submissions this option may not be considered viable at this time.

MAFBNZ thanks the submitter for suggesting alternative risk mitigation, based on 60% mortality during quarantine, although the submitter did not suggest an alternative quarantine period. The comment regarding artificial and natural seawater in transitional facilities is noted, however, this is best addressed through equipment hygiene requirements in the transitional facility standards.

On re-examining WSSV in ornamental shrimp, and taking into consideration some degree of diminished likelihood of release it is concluded that:

- evidence exists that ornamental shrimp could contain WSSV on entry to New Zealand;
- consequences of introduction of WSSV could be severe;
- one must consider some likelihood of release post quarantine;
- mortalities as a result of infection are likely to have occurred well before the end of the suggested four-week quarantine, with 20% by day 11 and 40% by day 23 in the case of *Lysmata wurdemanni*;

It is therefore proposed, and to bring ornamental shrimp into line with high risk marine fish, that **ornamental marine decapods are subject to a 3-week quarantine period with investigation of batches showing clinical signs of white spot syndrome.**

# 5. Conclusions

Following consideration of submissions received during public consultation the following are a summary of the proposed actions, amended host susceptibility list and amended summary of risk management measures by high risk species (separated by freshwater fish, marine fish and marine decapods) together with accompanying (amended) risk management measures by hazard.

1. The requirement for pre-export visual inspection and certification of clinical freedom from pest and disease will be removed as long as there is inspection on arrival in New Zealand.
2. There should be a standard 4-week quarantine period for freshwater fish.
3. *Zanclus cornutus* is considered a tropical species.
4. *Enteromyxum leei* risk factors are amended to include only temperate species of the listed genera. On the basis of this amended risk profile for *Enteromyxum leei*, reclassify *Chromis viridis, Amphiprion akindynos, Thalassoma lunare, Thalassoma lutescens* and *Lipophrys nigriceps* as low-risk species as regards infection with *Enteromyxum leei*.
5. Amend host species list to reflect *Scleropages formsus* is present on permitted list.
6. Amend host species list to remove *Cephalopholis* spp. and *Chromileptes* spp. from the iridovirus section.
7. Amend host species list to remove reference to *Elacatinus oceanops* from the *Argulus foliaceus* section.
8. Amend Table 5 (Sec. 16.4.3: Risk management options for high risk species by hazard) hazard 9 *Lactococcus garviae* to remove reference to tropical species.
9. Amend high risk species management options section:
    a. split into freshwater fish, marine fish and marine invertebrates
    b. amend high risk marine fish risk measures
        i. Aquabirnavirus: identified subtropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for aquabirnaviruses with negative results;
        ii. Iridovirus: identified subtropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for iridoviruses with negative results;
        iii. Nodavirus: identified tropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying nervous signs, colour change or behavioural abnormalities. identified subtropical and temperate high risk marine species require batch or source population testing for nodaviruses with negative results;

iv. *Lactococcus garviae*: identified subtropical high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality. Identified temperate high risk marine species require batch or source population testing for *Lactococcus garviae* with negative results;
v. *Glugea heraldi*: identified subtropical & temperate high risk marine species are subject to a 3-week quarantine, with investigation of batches displaying clinical signs of grey, proliferative skin lesions;
vi. *Aphanomyces invadans*: identified high risk marine species are subject to a 3-week quarantine period with investigation of any fish displaying clinical signs of skin ulceration;

10. For marine fish not specifically identified as high-risk species it is proposed that the quarantine period remain at three weeks, with biosecurity clearance being issued to all surviving fish free of clinical signs of pest and disease.
11. For freshwater fish not specifically identified as high risk species it is proposed that the quarantine period be set at four weeks. Whilst no specific testing triggers have been established, the supervisor may initiate testing at their discretion if there appears to be a serious disease issue, otherwise biosecurity clearance should be issued to all surviving fish free of clinical signs of pest and disease.
12. Ornamental marine decapods are subject to a 3-week quarantine period with investigation of batches showing clinical signs of white spot syndrome.

## 5.1. AMENDED HOST SUSCEPTIBILITY LIST

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| **1. Aquabirnaviruses** | | | |
| Anguilidae | Other sources | No | |
| *Apistogramma ramirezi* | Risk analysis | Yes | Now *Mikrogeophagus ramirezi* |
| Atherinidae | Other sources | No | |
| *Barbodes* spp. | Risk analysis | No | |
| *Barbus* spp | Risk analysis | No | |
| Bothidae | Other sources | No | |
| *Brachydanio rerio* | Risk analysis | Yes | Now *Danio rerio* |
| *Capoeta* spp. | Risk analysis | Yes | |
| Carangidae | Other sources | Yes | *Gnathodon* spp. |
| *Carassius auratus* | Risk analysis | Yes | |
| Catostomidae | Other sources | No | |
| *Cephalopholis* spp. | Risk analysis | Yes | |
| Cichlidae | Other sources | Yes | Numerous species |
| Clupeidae | Other sources | No | |
| Cobitidae | Other sources | Yes | *Acantopsis* spp., *Syncrossus* spp., *Pangio* spp. and *Botia* spp. |
| *Colisa lalia* | Risk analysis | Yes | |
| Coregonidae | Other sources | No | |
| *Cromileptes* spp. | Risk analysis | Yes | |
| Cyprinidae | Other sources | Yes | Numerous species, including *Tanichthys albonubes* |
| *Epinephelus* spp. | Risk analysis | Yes | |
| Esocidae | Other sources | No | |
| Moronidae | Other sources | No | |
| Paralichthyidae | Other sources | No | |
| Percidae | Other sources | No | |
| *Plecoglossus* spp. | Risk analysis | No | |
| Pleuronectidae | Other sources | No | |
| Poecilidae | Other sources | Yes | *Poecilia* spp., *Xiphophorus* spp., *Aplocheilichthys* spp. and |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| | | | *Lacustricola* spp. |
| *Pterophyllum scalare* | Risk analysis | Yes | |
| *Puntius* spp. | Risk analysis | Yes | |
| Sciaenidae | Other sources | Yes | *Pareques* spp. |
| *Scleropages formosus* | Risk analysis | Yes | |
| Soleidae | Other sources | No | |
| *Symphysodon discus* | Risk analysis | Yes | |
| Thymallidae | Other sources | No | |
| *Varicorhinus* spp. | Risk analysis | No | |
| *Xiphophorus xiphidium* | Risk analysis | No | Other *Xiphophorus* spp. on list |
| *Zanclus cornutus* | Risk analysis | Yes | |
| **2. Iridoviruses** | | | |
| *Acipenser* spp. | Other sources | No | |
| *Apistogramma ramirezi* | Risk analysis | Yes | Now *Mikrogeophagus ramirezi* |
| *Aplocheilichthys normani* | Risk analysis | Yes | |
| *Carassius auratus* | Risk analysis | Yes | |
| *Colisa lalia* | Risk analysis | Yes | |
| *Epinephelus* spp. | Risk analysis | Yes | |
| *Etroplus maculatus* | Risk analysis | Yes | |
| *Galaxias* spp. | Other sources | No | |
| *Gambusia* spp. | Other sources | No | |
| *Girella* spp. | Other sources | No | |
| *Helostoma* spp. | Risk analysis | Yes | |
| *Ictalurus melas* | Other sources | No | Otherwise known as *Ameiurus melas* |
| *Labroides dimidiatus* | Risk analysis | Yes | |
| *Lateolabrax* spp. | Other sources | No | |
| *Lethrinus* spp. | Other sources | No | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *Micropterus* spp. | Other sources | No | |
| *Morone* spp. | Other sources | No | |
| *Oncorhynchus mykiss* | Other sources | No | |
| *Oplegnathus* spp. | Other sources | No | |
| *Pagrus* spp. | Other sources | No | |
| *Paralichthys* spp. | Other sources | No | |
| *Parapocryptes serperaster* | Risk analysis | No | |
| *Parapristipoma* spp. | Other sources | No | |
| *Perca fluviatilis* | Other sources | No | |
| *Plectorynchus* spp. | Other sources | No | |
| *Poecilia reticulata* | Risk analysis | Yes | |
| *Pseudocaranx* spp. | Other sources | No | |
| *Pseudosciaena* spp. | Other sources | No | |
| *Pterophyllum scalare* | Risk analysis | Yes | |
| *Rachycentron* spp. | Other sources | No | |
| *Sciaenops* spp. | Other sources | No | |
| *Scophthalmus maximus* | Other sources | No | |
| *Sebastes* spp. | Other sources | No | |
| *Seriola* spp. | Other sources | No | |
| *Siluris glanis* | Other sources | No | |
| *Trachinotus* spp. | Other sources | No | |
| *Trachurus* spp. | Other sources | No | |
| *Trichogaster* spp. | Risk analysis | Yes | |
| *Xiphophorus helleri* | Risk analysis | Yes | |
| **3. Grouper Nervous Necrosis Virus** | | | |
| *Cephalopholis* spp. | Risk analysis | Yes | |
| *Cromileptes* spp. | Risk analysis | Yes | |
| *Dicentrarchus labrax* | Other sources | No | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *Epinephelus* spp. | Risk analysis | Yes | |
| *Hippoglossus hippoglossus* | Other sources | No | |
| *Lates calcarifer* | Other sources | No | |
| *Oplegnathus fasciatus* | Other sources | No | |
| *Paralichthys olivaceus* | Other sources | No | |
| *Pseudocaranx dentex* | Other sources | No | |
| *Scophthalmus maximus* | Other sources | No | |
| *Takifugu rubripes* | Other sources | No | |
| *Verasper moseri* | Other sources | No | |
| **4. Viral Haemorrhagic Septicaemia Virus** | | | |
| *Ammodytes* spp. | Other sources | No | |
| *Anguilla* spp. | Other sources | No | |
| *Anoplopoma* spp. | Other sources | No | |
| *Aplodinotus* spp. | Other sources | No | |
| *Aulorhynchus* spp. | Other sources | No | |
| *Barbodes* spp. | Risk analysis | No | |
| *Barbus graellsii* | Risk analysis | No | |
| *Barbus* spp. | Risk analysis | No | |
| *Capoeta* spp. | Risk analysis | Yes | |
| *Clupea* spp. | Other sources | No | |
| *Coregonus* spp. | Other sources | No | |
| *Cymatogaster* spp. | Other sources | No | |
| *Dicentrarchus* spp. | Other sources | No | |
| *Dorosoma* spp. | Other sources | No | |
| *Esox* spp. | Other sources | No | |
| *Fundulus* spp. | Other sources | No | |
| *Gadus* spp. | Other sources | No | |
| *Gasterosteus* spp. | Other sources | No | |
| *Hypomesus* spp. | Other sources | No | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *Lepomis* spp. | Other sources | No | |
| *Melanogramma* spp. | Other sources | No | |
| *Merlangius* spp. | Other sources | No | |
| *Merluccius* spp. | Other sources | No | |
| *Micropterus* spp. | Other sources | No | |
| *Morone* spp. | Other sources | No | |
| *Moxostoma* spp. | Other sources | No | |
| *Neogobius* spp. | Other sources | No | |
| *Oncorhynchus* spp. | Other sources | No | |
| *Paralichthys olivaceus* | Other sources | No | |
| *Pomatoschistus* spp. | Other sources | No | |
| *Pomoxis* spp. | Other sources | No | |
| *Puntius* spp. | Risk analysis | Yes | |
| *Salmo* spp. | Other sources | No | |
| *Salvelinus* spp. | Other sources | No | |
| *Sardinops* spp. | Other sources | No | |
| *Scomber* spp. | Other sources | No | |
| *Scophthalmus maximus* | Other sources | No | |
| *Scophthalmus* spp. | Other sources | No | |
| *Sebastes* spp. | Other sources | No | |
| *Sprattus* spp. | Other sources | No | |
| *Thaleichthys* spp. | Other sources | No | |
| *Theragra* spp. | Other sources | No | |
| *Thymallus* spp. | Other sources | No | |
| *Trisopterus* spp. | Other sources | No | |
| *Varicorhinus* spp. | Risk analysis | No | |
| ***5. Cyprinid herpesvirus-3 (koi herpesvirus)*** | | | |
| *Carassius auratus* | Supplementary assessment | Yes | There are other susceptible species, but they are not on the eligible list, and for brevity are not included |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| ***6. Spring viraemia of carp virus*** | | | |
| *Carassius auratus* | Supplementary assessment | Yes | There are other susceptible species, but they are not on the eligible list, and for brevity are not included |
| ***7. Edwardsiella ictaluri*** | | | |
| *Ameiurus catus* | Other sources | No | |
| *Ameiurus nebulosus* | Other sources | No | Not imported but is endemic in areas of north |
| *Anguilla japonica* | Other sources | No | |
| *Clarias batrachus* | Other sources | No | |
| *Danio devario* | Risk analysis | No | Now *Devario devario*. Other *Devario* spp. on list |
| *Eigemannia viriscens* | Other sources | Yes | |
| *Ictalurus furcatus* | Other sources | No | |
| *Ictalurus punctatus* | Risk analysis | No | |
| *Oncorhynchus* spp. | Other sources | No | Experimental infection |
| *Pangasius hyophthalmus* | Other sources | No | |
| *Puntius conchonius* | Risk analysis | Yes | |
| ***8. Edwardsiella tarda*** | | | |
| *Anguilla* spp. | Other sources | No | |
| *Apistogramma ramirezi* | Other sources | Yes | Now *Mikrogeophagus ramirezi* |
| *Betta splendens* | Risk analysis | Yes | |
| *Carassius auratus* | Other sources | Yes | |
| *Cyprinus carpio* | Other sources | No | |
| *Dicentrarchus labrax* | Other sources | No | |
| *Evynnis japonica* | Other sources | No | |
| *Hyphessobrycon* spp. | Risk analysis | Yes | |
| *Ictalurus* spp. | Other sources | No | |
| *Metyynis* | Risk analysis | No | 2 other *Metynnis* spp. on list |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *schreitmuelleri* | | | |
| *Micropterus salmoides* | Other sources | No | |
| *Morone saxitilis* | Other sources | No | |
| *Mugil cephalus* | Other sources | No | |
| *Oncorhynchus mykiss* | Other sources | No | |
| *Oreochromis niloticus* | Other sources | No | |
| *Oxyeleotris marmoratus* | Other sources | No | |
| *Pagrus major* | Other sources | No | |
| *Paralichthys olivaceus* | Risk analysis | No | |
| *Paralichthys* spp. | Other sources | No | |
| *Pimelodus quelen* | Risk analysis | No | 2 other *Pimelodus* spp. on list |
| *Pterophyllum scalare* | Risk analysis | Yes | |
| *Puntius conchonius* | Other sources | Yes | Other *Puntius* spp. also on list |
| *Salmo salar* | Other sources | No | |
| *Salvelinus fontinalis* | Other sources | No | |
| *Seriola gaingu* | Other sources | No | |
| *Tilapia mossambica* | Other sources | No | |
| *Trichogaster trichopterus* | Risk analysis | Yes | |
| ***9. Lactococcus garviae*** | | | |
| *Coris aygula* | Risk analysis | Yes | Only ornamental species from which bacteria isolated<br>Causes disease in eels, flatfish, rainbow trout, sturgeon, turbot, and yellowtail and is found in intestines of wild fish. |
| ***10. Aeromonas salmonicida*** | | | |
| *Carassius auratus* | Supplementary | Yes | There are other susceptible species, |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| | assessment | | but they are not on the eligible list, and for brevity are not included |
| ***11. Flavobacterium psychrophilum*** | | | |
| *Carassius auratus* | Supplementary assessment | Yes | There are other susceptible species, but they are not on the eligible list, and for brevity are not included |
| ***12. Aphanomyces invadans*** | | | |
| *Acantopagrus australis* | Other sources | No | |
| *Alosa sapidissima* | Other sources | No | |
| *Anabas testudineus* | Other sources | No | |
| *Archosargus probatocephalus* | Other sources | No | |
| Bagridae | Other sources | Yes | *Mystus* spp. and *Pseudomystus* spp. on list |
| *Bairdiella chrysoura* | Other sources | No | |
| *Barbonymus gonionotus* | Risk analysis | No | Other *Barbonymus* spp. on list |
| *Bidyanus bidyanus* | Other sources | No | |
| *Breevortia tyrannus* | Other sources | No | |
| *Carassius auratus* | Supplementary assessment | Yes | |
| *Catla catla* | Other sources | No | |
| *Channa striatus* | Other sources | No | |
| *Chrysichthys nigrodigitatus* | Other sources | No | |
| *Cirrhinus mrigala* | Other sources | No | |
| *Clarias batrachus* | Other sources | No | |
| *Colisa lalia* | Risk analysis | Yes | |
| *Epinephelus* spp. | Other sources | Yes | |
| *Esomus* sp. | Other sources | Yes | |
| *Etroplus suratensis* | Risk analysis | Yes | |
| *Fluta alba* | Other sources | No | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *Glossogobius* spp. | Other sources | No | |
| *Heteropneustes fossilis* | Other sources | No | |
| *Johnius* spp. | Other sources | No | |
| *Labeo rohita* | Other sources | No | Other *Labeo* spp. on list |
| *Lates calcarifer* | Other sources | No | |
| *Lepomis macrochirus* | Other sources | No | |
| *Liza* spp. | Other sources | No | |
| *Macquaria ambigua* | Other sources | No | |
| *Macropodus opercularis* | Supplementary assessment | Yes | |
| *Mastacembelus* spp. | Other sources | Yes | *M. armatus* and *M. erythrotaemia* listed |
| *Micropterus salmoides* | Other sources | No | |
| *Mugil* spp. | Other sources | No | |
| *Mystus* spp. | Other sources | Yes | *M. micracanthus, M. tengara* and *M. vittatus* listed |
| *Osphronemus goramy* | Risk analysis | Yes | |
| *Oxyeleotris mormoratus* | Other sources | No | |
| *Platycephalus fuscus* | Other sources | No | |
| *Plecoglossus altivelis* | Other sources | No | |
| *Pogonias cromis* | Other sources | No | |
| *Psettodes* spp. | Other sources | No | |
| Puntius *spp.* | Risk analysis | Yes | *P. conchonius, gonionotus, sarana, schwanfeldii, sophore* and *ticto* specifically named |
| *Rhodeus ocellatus* | Other sources | No | |
| *Rohtee* sp. | Other sources | No | |
| *Scardinius erythrophthalmos* | Other sources | No | |
| *Scatophagus argus* | Other sources | Yes | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *Sillago ciliate* | Other sources | No | |
| Siluridae | Other sources | Yes | *Kryptopterus* spp. & *Ompok* spp. listed |
| *Terapon* sp. | Other sources | No | |
| *Toxotes chatareus* | Other sources | No | Other *Toxotes* sp. on list |
| *Trichogaster* spp. | Risk analysis | Yes | *T. trichopterus* & *T. pectoralis* named |
| *Upeneus bansai* | Other sources | No | |
| *Valamugil* spp. | Other sources | No | |
| *Wallago atul* | Other sources | No | |
| *Xenentodon cencila* | Other sources | No | |
| ***13. Enteromyxum leei*** | | | |
| *Amphiprion frenatus* | Risk analysis | Yes | |
| Blenniidae | Risk analysis | Yes | *Lipophrys nigriceps, Escenius* spp. & *Meiacanthus* spp. on list |
| *Chromis chromis* | Risk analysis | No | Other *Chromis* spp. on list |
| *Coris julius* | Risk analysis | No | Other *Coris* spp. on list |
| *Sparus aurata* | Other sources | No | |
| *Takifugu rubripes* | Other sources | No | |
| *Thalassoma* spp. | Other sources | Yes | Padros, I., Palenzuela, O., Hispano, C., Tosas, O., Zarza, C., Crespo, S., Alvarez-Pellitero, P. (2001) *Myxidium leei* (myxozoa) infections in aquarium reared Mediterranean fish species, *Dis. Aquat. Org* **47:** 57-62 |
| ***14. Hoferellus carassii*** | | | |
| *Carassius auratus* | Supplementary assessment | Yes | There are other susceptible species, but they are not on the eligible list, and for brevity are not included |
| ***15. Bothriocephalus acheilognathi*** | | | |
| *Alburnus alburnus* | Risk analysis | No | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *Astyanax fasciatus* | Other sources | Yes | 1 other *Astyanax* sp. on list also. |
| *Barbodes* spp. | Risk analysis | No | |
| *Barbus* spp. | Risk analysis | No | |
| *Capoeta* spp. | Risk analysis | Yes | |
| *Carassius auratus* | Supplementary assessment | Yes | |
| *Carassius carassius* | Risk analysis | No | |
| *Chondrostoma nasus* | Risk analysis | No | |
| *Ctenopharyngodon idella* | Risk analysis | No | |
| *Cyprinus carpio* | Risk analysis | No | |
| *Fundulus zebrinus* | Risk analysis | No | |
| *Gambusia* spp. | Risk analysis | No | |
| *Gila cypha* | Risk analysis | No | |
| *Herichthys cyanoguttatum* | Other sources | Yes | Salgado-Maldondo, G., Pineda-Lopez, R.F. (2003) The Asian fish tapeworm *Bothriocephalus acheilognathi*: a potential threat to native freshwater fish species in Mexico. *Biological Invasions* **5:** 261-268. |
| *Herichthys labridens* | Other sources | No | |
| *Hypseleotris klunzingeri* | Risk analysis | No | |
| *Lepomis gibbosus* | Risk analysis | No | |
| *Leuciscus cephalus* | Risk analysis | No | |
| *Pimephales promelas* | Risk analysis | No | |
| *Poecilia* spp. | Risk analysis | Yes | *P. reticulata* named and on list |
| *Puntius* spp | Risk analysis | Yes | *P.binotatus* named but not on list |
| *Retropinna semoni* | Risk analysis | No | |
| *Rhinichthys osculus* | Risk analysis | No | |
| *Varicorhinus* spp. | Risk analysis | No | |
| *Xiphophorus* spp. | Risk analysis | Yes | *X. maculatus* named and on list |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| ***16. Argulus foliaceus*** | | | |
| Acipenseridae | Risk analysis | No | |
| *Barbus esocinus* | Risk analysis | No | |
| *Barbus grypus* | Risk analysis | No | |
| Cyprinidae | Risk analysis | Yes | Twenty one genera on list, includes *Carassius auratus* |
| Gasterosteidae | Risk analysis | No | |
| Gobiidae | Risk analysis | Yes | Three freshwater genera on list |
| Salmonidae | Risk analysis | No | |
| ***17. Glugea heraldi*** | | | |
| *Hippocampus* spp. | Risk analysis | Yes | |
| ***18. Capillaria philippinensis*** | | | |
| *Cyprinus carpio* | Risk analysis | No | |
| *Puntius gonionotus* | Risk analysis | No | Other *Puntius* spp. on list |
| *Hypseleotris* spp. | Other sources | No | |
| *Ambassis* spp. | Other sources | No | |
| *Eleotris* spp. | Other sources | No | |
| *Aplocheilichthys panchax* | Other sources | Yes | Bhaibulaya, M., Indra-Ngarm, S., Ananthapruti, M. (1979) Freshwater fishes of Thailand as experimental intermediate hosts for *Capillaria philippinensis*. *Int. J. Parasit.* **9:** 105-108 |
| *Gambusia holbrookii* | Other sources | No | |
| *Rasbora borapetensis* | Other sources | Yes | |
| *Trichopsis vittata* | Other sources | Yes | |
| ***19.* White spot syndrome virus** | | | |
| *Enoplometopus occidentalis* | Supplementary assessment | Yes | |
| *Lysmata grabhami, L. amboinensis, L. debelius* | Supplementary assessment | Yes | |
| *Periclimenes* | Supplementary | Yes | |

| Host | Source data (see note at foot of table) | Present on proposed permitted list? | Additional information (if applicable) |
|---|---|---|---|
| *brevicarpalis* | assessment | | |
| *Stenopus hispidus, S. cyanoscelis* | Supplementary assessment | Yes | |
| *Rhynchocinetes uritai* | Supplementary assessment | Yes | |
| *Saron marmoratus* | Supplementary assessment | Yes | |
| All other freshwater, marine and brackishwater decapoda | Other | No | |

Note: "Other sources" used to derive hosts lists include:

- OIE aquatic animal health code and Manual of diagnostic tests for aquatic animals
- Woo PTK (ed.) (2006), Fish Diseases and Disorders Volume 1 Protozoan and Metazoan Infections. *CABI Publishing*, Wallingford, Oxon
- Woo, PTK and Bruno DW (Eds.) (1999), Fish Diseases and Disorders Volume 3 Viral, Bacterial and Fungal Infections. *CABI Publishing*, Wallingford, Oxon
- Buller, NB (2004), Bacteria from Fish and Other Aquatic Animals: A Practical Identification Manual. *CABI Publishing*, Wallingford, Oxon
- Scientific Opinion of the Panel on Animal Health and Welfare on a request from the Commission on possible vector species and live stages of susceptible species not transmitting disease as regards certain fish diseases, The EFSA Journa (2007) 584, 1-163
- Previous diagnostic submissions to the MAFBNZ Animal Health Laboratory, Wallaceville
- Selected peer reviewed papers as indicated in the table.

## 5.2. AMENDED RISK FACTOR TABLE (*ENTEROMYXUM LEEI*)

| | | | | | | |
|---|---|---|---|---|---|---|
| **13** | *Enteromyxum leei* | Low | Moderate | ▪ Causes clinical disease at high infection rates (enteritis);<br>▪ Horizontal transmission;<br>▪ Narrow host range (direct life cycle);<br>▪ Restricted to Mediterranean region, possible USA involvement (other *Enteromyxum* sp.?);<br>▪ Establishment of host is probably needed to establish infection | N/A | Susceptible eligible temperate fish of the genera listed in Section 8 – hazard 13 |

## 5.3. AMENDED RISK MANAGEMENT OPTIONS FOR HIGH RISK SPECIES – FRESHWATER FISH

| FAMILY | GENUS | SPECIES | CLIMATE | HAZARDS REQUIRING MITIGATION (11.x) | | |
|---|---|---|---|---|---|---|
| POECILIDAE | *Poecilia* | *latipinna* | subtropical | **1** | **2** | **15** |
| | | *reticulata* | tropical | | **2** | **15** |
| | | *sphenops* | tropical | | **2** | |
| | | *velifera* | tropical | | **2** | |
| | *Xiphophorus* | *hellerii* | tropical | | **2** | **15** |
| | | *maculatus* | tropical | | **2** | **15** |
| | *Aplocheilichthys* | *normani* | tropical | | **2** | |
| | *Lacustricola* | *pumulis* | tropical | | **2** | |
| CICHLIDAE | *Apistogramma* | spp. (74) | tropical | | **2** | |
| | | *borellii* | subtropical | **1** | **2** | |
| | | *commbrae* | subtropical | **1** | **2** | |
| | | *pleurotaenia* | subtropical | **1** | **2** | |
| | *Etroplus* | *maculatus* | tropical | | **2** | **12** |
| | | *suratensis* | tropical | | **2** | **12** |
| | *Pterophyllum* | *altum* | tropical | | **2** | |
| | | *leopoldi* | tropical | | **2** | |
| | | *scalare* | tropical | | **2** | |
| | *Herichthys* | *cyanoguttatus* | subtropical | **15** | | |
| HELOSTOMATIDAE | *Helostoma* | *rudolfi* | tropical | **2** | | |
| | | *temminkii* | tropical | **2** | | |
| OSPHRONEMIDAE | *Osphronemus* | *goramy* | tropical | **12** | | |
| | *Macropodus* | *opercularis* | subtropical | **12** | | |
| BELONTIIDAE | *Colisa* | *chuna* | tropical | **2** | **12** | |
| | | *lalia* | tropical | **2** | **12** | |
| | *Trichogaster* | *labiosus* | tropical | **2** | **12** | |
| | | *leerii* | tropical | **2** | **12** | |
| | | *microlepis* | tropical | **2** | **12** | |
| | | *pectoralis* | tropical | **2** | **12** | |
| | | *trichopterus* | tropical | **2** | **12** | |
| TOXOTIDAE | *Toxotes* | *jaculatrix* | tropical | **12** | | |
| CYPRINIDAE | *Danio* | *kyathit* | subtropical | **1** | | **16** |

| FAMILY | GENUS | SPECIES | CLIMATE | HAZARDS REQUIRING MITIGATION (11.x) |
|---|---|---|---|---|
| | *Esomus* | *danricus* | tropical | 12 |
| | *Labeo* | *chrysophekadion* | tropical | 12 |
| | | *erythropterus* | tropical | 12 |
| | *Capoeta* | *semifasciolatus* | subtropical | 1 4 15 16 |
| | *Puntius* | spp. (16) | tropical | 12 |
| | | *conchonius* | subtropical | 1 4 7 8 12 15 16 18 |
| | | *denisonii* | subtropical | 1 4 7 8 12 15 16 18 |
| | | *gelius* | subtropical | 1 4 7 8 12 15 16 18 |
| | | *ticto* | subtropical | 1 4 7 8 12 15 16 18 |
| | *Tanichthys* | *albonubes* | subtropical | 1 |
| | *Carassius* | *auratus* | temperate | 1 2 5 6 10 11 12 14 15 16 |
| TERNOPYGIDAE | *Eigenmannia* | *viriscens* | subtropical | 7 |
| CHARACIDAE | *Astyanax* | *fasciatus* | subtropical | 15 |
| | | *mexicanus* | subtropical | 15 |
| | *Hyphessobrycon* | *anisitsi* | subtropical | 8 |
| | | *luetkenii* | subtropical | 8 |
| BAGRIDAE | *Mystus* | *micracanthus* | tropical | 12 |
| | | *tengara* | tropical | 12 |
| | | *vittatus* | tropical | 12 |
| | *Pseudomystus* | *siamensis* | tropical | 12 |
| SILURIDAE | *Kryptopterus* | *bicirrhis* | tropical | 12 |
| | *Ompok* | *bimculatus* | tropical | 12 |
| | | *sabanus* | tropical | 12 |
| MASTACEMBELIDAE | *Mastacembelus* | *armatus* | tropical | 12 |
| | | *erythrotaenia* | tropical | 12 |

**1 Aquabirnaviruses**
SUBTROPICAL – Quarantine for 4 weeks with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality.

TEMPERATE – Batch or source population testing for aquabirnaviruses with negative results.

**2 Iridoviruses**
TROPICAL - Quarantine for 4 weeks with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality.

SUBTROPICAL & TEMPERATE - Batch or source population testing for iridoviruses with negative results.

**4 Viral haemorrhagic septicaemia virus**
SUBTROPICAL & TEMPERATE - Batch or source population testing for VHSV with negative results.

**5 Cyprinid herpesvirus-3 (koi herpesvirus)**
TEMPERATE – Verifiable certification of continuous separation from *Cyprinus carpio* species; otherwise batch or source population testing with negative results.

**6 Spring viraemia of carp virus**
TEMPERATE – Verifiable certification of continuous separation from *Cyprinus carpio* species; otherwise batch or source population testing with negative results.

***7* Edwardsiella ictaluri**
SUBTROPICAL – Quarantine for 4 weeks with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality.

TEMPERATE – Batch or source population testing for *E. ictaluri* with negative results.

***8* Edwardsiella tarda**
SUBTROPICAL – Quarantine for 4 weeks with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality.

TEMPERATE – Batch or source population testing for *E. tarda* with negative results.

***10* Aeromonas salmonicida**
TEMPERATE – Batch or source population testing for *A. salmonicida* with negative results.

***11* Flavobacterium psychrophilum**
TEMPERATE - Quarantine for 4 weeks with investigation of batches displaying clinical signs of skin ulceration, haemorrhage and fin rot.

***12* Aphanomyces invadans**
NAMED TROPICAL/SUBTROPICAL/TEMPERATE - Quarantine for 4 weeks with investigation of batches displaying clinical signs of ulcerated or congested skin lesions.

***14* Hoferellus carassii**
TEMPERATE – Quarantine for 4 weeks with investigation of batches displaying clinical signs of enlarged abdomen *and* ad-hoc screening of any samples submitted to the diagnostic laboratory for other reasons.

***15* Bothriocephalus acheilognathi**
NAMED TROPICAL/SUBTROPICAL/TROPICAL – Pre-biosecurity clearance treatment with praziquantel at ≥ 1 mg/L for 24 hrs or ≥ 4 mg/L for 12 hours to be completed 96 hrs before clearance or 40mg/kg fenbendazole orally on two occasions 4 days apart.

***16* Argulus foliaceus**
SUBTROPICAL/TEMPERATE – Quarantine for 4 weeks, with visual inspection. If inspection reveals infestation, ectoparasiticide to be used, and fish visually inspected to be clear before biosecurity clearance issued. Quarantine period may be extended if required until fish are free of parasites.

***18* Capillaria philippinensis**
SUBTROPICAL – Pre-biosecurity clearance treatment with levamisole bath (1 mg/L) for 24 hours.

## 5.4. AMENDED RISK MANAGEMENT OPTIONS FOR HIGH RISK SPECIES – MARINE FISH

| FAMILY | GENUS | SPECIES | CLIMATE | HAZARDS REQUIRING MITIGATION (11.x) |
|---|---|---|---|---|
| SYGNATHIDAE | *Hippocampus* | *coronatus* | subtropical | **17** |
| | | *reidi* | subtropical | **17** |
| | | *spinosissimus* | subtropical | **17** |
| | | *whitei* | temperate | **17** |
| SCATOPHAGIDAE | *Scatophagus* | *argus* | tropical | **12** |
| LABRIDAE | *Labroides* | *bicolor* | tropical | **2** |
| | | *dimidiatus* | tropical | **2** |
| | | *pectoralis* | tropical | **2** |
| | | *phthirophagus* | tropical | **2** |
| SERRANIDAE | *Cephalopholis* | *miniata* | tropical | **3** |
| | | *urodeta* | tropical | **3** |
| | *Chromileptes* | *altivelis* | tropical | **3** |
| | *Epinephelus* | *merra* | tropical | **2** **3** **12** |

**2 Iridoviruses**
TROPICAL - Quarantine for 3 weeks with investigation of batches displaying clinical signs of septicaemia or sudden unexplained mortality.

SUBTROPICAL & TEMPERATE - Batch or source population testing for iridoviruses with negative results.

**3 Grouper nervous necrosis virus**
TROPICAL - Quarantine for 3 weeks with investigation of batches displaying nervous signs, colour change or behavioural abnormalities.

SUBTROPICAL & TEMPERATE - Batch or source population testing for nodavirus with negative results.

***12* Aphanomyces invadans**
NAMED TROPICAL/SUBTROPICAL/TEMPERATE - Quarantine for 3 weeks with investigation of batches displaying clinical signs of ulcerated or congested skin lesions.

***17* Glugea heraldi**
SUBTROPICAL/TEMPERATE - Quarantine for 3 weeks with investigation of batches displaying clinical signs of grey, proliferative skin lesions.

## 5.5. AMENDED RISK MANAGEMENT OPTIONS FOR HIGH RISK SPECIES – MARINE INVERTEBRATES

| FAMILY | GENUS | SPECIES | CLIMATE | | HAZARDS REQUIRING MITIGATION (11.x) |
|---|---|---|---|---|---|
| DECAPODA | *Enoplometopus* | *occidentalis* | tropical | **19** | |
| | *Lysmata* | *grabhami* | subtropical | **19** | |
| | | *amboinensis* | tropical | **19** | |
| | | *debelius* | tropical | **19** | |
| | *Periclimenes* | *brevicarpalis* | tropical | **19** | |
| | *Stenopus* | *hispidus* | tropical | **19** | |
| | | *cyanoscelis* | | **19** | |
| | *Rhynchocinetes* | *uritai* | tropical | **19** | |
| | *Saron* | *marmoratus* | tropical | **19** | |

**19 – White spot syndrome virus**

3-week quarantine period with investigation of batches showing clinical signs of white spot syndrome.

# 6. Appendix 1: Copies of Submissions

## 6.1. WARREN GARRETT, BROOKLANDS AQUARIUM LTD

11th September 2009

MAF Biosecurity New Zealand
PO Box 2526
Wellington 6140

Attention: Risk Analysis Team Support Officer

**Re: *Import risk analysis;* Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans**

Brooklands Aquarium has been importing tropical freshwater and marine ornamental species for over 40 years. During this time we have seen many changes instigated through legislation, which have had considerable impact on our industry.

Our country has some of the strictest quarantine regulations in the world and we accept that this is for good reason. Still as far as exotic animal imports are concerned it is generally accepted that tropical fish and invertebrate importation is a low risk sector. However, because collectively our industry is only a small group in both the number of operators and in commercial terms, our activities are easily monitored and controlled through regulation. Our industry is of course not the only means by which foreign exotic species or diseases might reach our shores. But as importers we are more easily regulated and controlled, than other significant hazards such as foreign shipping movements and vessels off-loading their ballast tanks in our waters.

As discussed in this risk analysis **"Quarantine periods should be no more than is justifiable"**. There will always be a level of risk with any import and it is important that we take a realistic approach towards weighing up and mitigating this risk.

**3.2 Hazard Identification**

- The issue we have with the steps described in the hazard identification process is that because there is limited information on which diseases are already present in New Zealand, versus those which might be classed as "exotic", the assumption has been made that a broad group of diseases do not already exist in New Zealand. This initial step is fundamental in mitigating the risk and without the relevant information how can this assumption be made?
  Under the *OIE Aquatic Animal Health Code* it is necessary to first identify whether a hazard already exists or does not exist in New Zealand.

**16.3.2. Hazard factors and identification of high risk species**

- This report on high-risk species is based on research and findings overseas. Unfortunately very little local research is available and we

would question how relevant some of this overseas research is to New Zealand. We have been importing at Brooklands for over 40 years and during this time we have not had any outbreaks of notifiable diseases. The import standards that we have in place are obviously working and we need to weigh up just how real the risks/hazards listed are in New Zealand's circumstances, especially considering our climate and that these species are imported from tropical regions.

### 16.4.1 Risk management options

- This purpose of this analysis document is to mitigate the risk. To suggest that the 179 identified advanced risk species could be *"denied entry into New Zealand through the imposition of an import ban"* is to eliminate the risk altogether. The purpose of the risk analysis should therefore be to minimise the risk not to rule out the importation of these 179 species.
- Therefore alternative ways of mitigating the risks as outlined in the subsequent two points must be explored.

### 16.4.2 Standard live ornamental aquatic animal import requirements

- We would question whether this section is relevant to the import risk analysis. This is material for discussion in relation the Transitional Facility Standard review rather than the Risk Analysis review.

### 17. Summarised risk management options for specified high risk species

- NZ Importers source the majority of their stock from reputable suppliers in Singapore. Obviously in order to run a successful business we must ensure that we buy only the best quality stock, which will be strong & healthy enough to pass through our lengthy quarantine period. The majority of freshwater imports are sourced from Singapore and the exporters we deal with in Singapore are members of the Ornamental Fish Exporter Scheme (AOFES). To attain this certification a facility has to meet specific quality standards and is audited on a regular basis. There are also other organisations that Singapore exporters are affiliated with, whose role it is to ensure that standards within the industry are maintained, such as Ornamental Fish International (OFI) and Singapore Aquarium Fish Exporters Association (SAFEA).

  We would ask whether a Health Certificate will actually mitigate the risk.
  In theory this as a valid concept, but in truth this is merely another bureaucratic process and documentation fee an importer has to pay, which does not ensure that a shipment is healthy and disease free. The standard of fish exported simply will not change through the issue of a Health Certificate. To what degree a shipment will actually be inspected and what a certified "expert" might find in a visual inspection before export is highly questionable.

- For freshwater imports we would support a period of 4 weeks quarantine, as the economic benefits of a shorter quarantine period would be offset by any additional testing requirements and other measures. We would rather have a longer quarantine period, than see other measures implemented which would make the quarantine process more complicated for all concerned. To keep the process simple the quarantine period for

freshwater species needs to be of the same length of time for all species. For example it would not be viable to have 3 weeks for one group and 4 weeks for another group.

- If we were to opt for minimum 4-week quarantine for freshwater, it would mean that the following identified hazards would be reduced and effectively removed from the high risk list. The only requirement would then be for investigation of batches showing clinical signs or sudden unexpected mortality.
  Based on a 4-week or longer overall quarantine the following hazards could then be removed from the list:

  Tropical: 2 / 3 / 9 / 12
  Subtropical: 1 / 7 / 8 / 9 / 12 / 16 / 17
  Temperate: 11 / 12 / 16 / 17

- For marines we would support a 2 week quarantine period. As outlined in 16.3.1 the risk factors for marine species are much less significant than for freshwater. "*Marine ornamental imports are of greater individual value and thus less likely to be released. This assumption, in conjunction with a lower likelihood of successful establishment after release means that fewer hazards are attributable to marine animals than to freshwater animals."*
  One has to look at the overall picture in assessing the risk in relation to saltwater imports. Given the small volume of saltwater imports and that they are such a low risk group, the hazards identified for the specified species are extremely minimal if not close to nil.

  Because the risk factors for marine imports are far less than for freshwater imports, the current length of quarantine for marines is obviously shorter. It would not make sense to make both freshwater and marine quarantine periods the same length for the simple reason of setting a uniform period of quarantine.

  We need to take a realistic approach to the risk mitigation in relation to saltwater imports. The ornamental importation of these species is easily regulated through legislation, but there are other many other threats to our marine ecosystem, which aren't as easily controlled, such foreign shipping movements, vessels dumping ballast water off our shores, or introduced species drifting into our waters in through the ocean currents. Also those species which are on the permitted entry list are from tropical climates and would not survive in our cooler waters.

**17.2.5. / 6 / 10 / 11 / 14 Hazards affecting Carassius auratus**

- As an importer we cannot see that it would be viable to import goldfish under the proposed conditions, even to obtain brood-stock. Perhaps goldfish should be mentioned in their own section as this would eliminate five of the identified temperate disease hazards from the main body of the document and reduce confusion (5 / 6 / 10 / 11 / 14). Those diseases identified as specific to Carassius auratus are cyprinid herpesvirus-3, spring viraemia of carp virus, aeromonas salmonicida, flavobacterium psychrophilum and hoferellus carassii.

**17.2.4. Viral haemorrhagic septicaemia virus**

- If a given source supply is tested and certified to be free of VHSV no mention is given to the period of time this would be valid for. We would assume that if the exporter can prove that fish are from a disease free area, testing would not be a requirement for every batch exported? This needs to be clarified as such testing would not be economically viable if it was required for each import.

**17.2.15. Bothriocephalus acheilognathi**

- We would accept treatment with praziquantel or fenbendazole as an effective means of treatment.

**17.2.18. Capillaria philippinensis**

- We would accept treatment with levamisole bath as an effective means of treatment.

**17.2.19. White spot syndrome virus**

- In reference to the risk factor for the ***Decapoda Family***, all factors need to be assessed in the evaluation. These shrimps are imported solely for the ornamental hobby, not for the commercial aquaculture or food sector. They retail for $80.00 each or more, as they are very delicate species and difficult to keep alive. At this price the likelihood of a collector releasing one of these shrimps into New Zealand's waters is extremely low if not close to nil. And even then if one of these tropical shrimps was somehow released, it would not survive in our temperate waters.
- The chance of these shrimps or any other marine organism being introduced into our waters through foreign shipping movements, vessels dumping ballast water or by drifting in ocean currents would be far greater than that of hobbyists releasing their prized specimens into our waterways.
- The 4-week quarantine and nested PCR test suggested would mean it would no longer be commercially viable to import the Decapoda Family.

**20. Appendix 3: Guidelines for testing aquatic animals in quarantine**

- We would question whether this section is relevant to the import risk analysis. This is material for discussion in relation the Transitional Facility Standard review rather than the Risk Analysis review.

We thank you for the opportunity to comment on the review.

Yours Sincerely

Warren Garrett
**General Manager**
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## 6.2. STEVE WALLS, AQUARIUS IMPORTS




# Aquarius Imports

For Fine Fish
P.O.Box 76015 Manukau City. Auckland . New Zealand.
Phone 64-9-2320011 Fax 64-9-2320051
email strike@xtra.co.nz


MAF Biosecurity NZ
Attn Risk Analysis Team Support Officer

Fax 04 8940731

Please find to follow 5 pages of submission re the Import Risk Analysis

Steve Walls
Owner
Aquarius Imports

# Aquarius Imports

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MAF/ Biosecurity New Zealand
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Wellington

Fax 04-9-8940300 (Copy faxed 14/09/09...5 pages.....original mailed)

10th September 2009

Re Import Risk Alalysis Ornamental Fish

Thankyou for the copy of your June 2009 Supplementary Risk Analysis and the invitation to make a submission. My thanks also for extending the submission time to ensure all stakeholders had a reasonable time to work through the report.

With the extra time granted there has been more of an opportunity to work through the various areas but some questions still remain unanswered due to time constraints

I note in the introductory letter with the report that the following comment is made by MAF/Biosecurity NZ
".....Please note that the reveiw of submission in appendix One is a final document and we are not seeking further comment on that appendix."

I feel that while this is an ongoing document of discussion and MAF/Biosecurity NZ has made an interpretation of submissions to date and has made further suggestions around those submissions to suggest that no further comment is required would be counter productive to the consulation process. While a consultation process is in progress, ideas and thoughts from relevant parties are important to the process, regardless of where they fall in the program.

First, I note in the executive summary the statement is made in the first paragraph in reference to submissions from stakeholders regarding the 2005 Risk analysis that "....no stakeholders questioned the hazards identified..."

It should be noted that the extensive work involved in working through the report precluded all but a quick overview and as such submissions were made on the areas of reommendations asked for.

I would like to make comment regarding table 1.1 (page 207-209) in the original (2005) report "Parasites and disease agents into New Zealand and New Zealand fish populations."

On checking through the New Zealand section I note the fish associated with introducing disease are commercial fish (carp/salmon/eels), locally established fish (common bully/mullett) and goldfish. I feel this sort of information is misleading when dealing with the import of ornamental fish. (I acknowledge goldfish are

ornamental but make this point based on there being no current legal importation of Goldfish allowed)
The ornamental fish trade as it exists today has played no part in introducing parasites and disease agents into New Zealand fish and this reference casts doubt on the industry and is totally out of context.

I feel obliged to point out that the report is made somewhat difficult to work with given the inclusion of tropical/subtropical/temperate/marine fish/molluscs and crustaceans in one overall combined report.

My suggestion is that this and all future work is done under the three sections as they apply to importers.
**Tropical/ Marine/Goldfish** I would suggest that these fall into 3 separate categories and should be dealt with as such. I can see no reason to try and bundle them into similar risk analysis/ quarantine time frames etc for the sake of convenience. Whilst there is certainly a large degree of similarity in handling the various organisms they should be dealt with in separate format as they most definately have different quarantine processes and very different risks.

Given the high risk of Goldfish by both disease and the ability to adapt to the temperatures of our waterways, I would suggest this category of fish is a most unlikely inclusion with your analysis of ornamental/ tropical fish . In fact I am surprised that this category of fish is even being considered in the same document. In your 2005 report (section 1 introduction) you point out that goldfish have been excluded from permitted import lists quote "for good reason....". What has changed?

If MAF/Biosecurity NZ is determined to allow the importation of Goldfish I would make the following recommendations.

1) Quarantine period of 9 weeks (This is an easily workable derivative of the favoured three (marine) 6 week (tropical) Quarantine periods.
2) Due to the possibilty of handling cross contamination by suppliers, shipments of Tropical and Goldfish cannot be imported from the same supplier on the same day.
3) Goldfish must have full quarantine isolation from tropical fish shipments.
4) Existing quarantine processes and procedures remain the same as tropical .

My position is that the current standard of quarantine has served the industry well.

**My enquiry to MAF Biosecurity New Zealand re the notification or incidence of a notifiable disease outbreak via any quarnatine facilty was met with the response that they were not aware of any exotic disease outbreak. This would further suggest that the current process of 6 weeks (freshwater) and 3 weeks (marine) is working well.**

To suggest in the executive summary of the 2009 report that "Stakeholders also indicated that the 6 week quarantine period for freshwater fish is excessive" is really

just asking stakeholders if they would like the workload reduced from 6 weeks to 4.

In reference to the quarantine period , your 2005 report quotes the problems associated with the importation of goldfish and gouramis into Australia and also quotes the quarantine period of 3 weeks and 2 weeks respectively. Surely your own commentary would suggest that the reduction in quarantine time as evidenced in Australia is potentially flawed.

MAF/ Biosecurity NZ did follow up my enquiry saying there had been evidence for concern and supplied me with a list of "Pathogens and diseases reported into Australia". I note the data ranges in time from 20 to 30 years old and as such could not be considered representative of current fish imports. In combination with Australias short quarantine period (as mentioned above) this data is not necessarily relevant to our existing strict quarantine requirements.

You have specifically asked for input on 4 areas.

**1) What are your views on the risk asessment for each hazard group or organism.**
I note that Scleropages Formosus has been deleted from the proposed permitted list and can only guess that this is due to it being listed in the summary risk analysis due to Aquabirnavirus. The data source for this was based on a 1993 publication on a fish farm in Taiwan.
Given that Scleropages formosus is an extremely expensive fish ranging from $1000 to $5000 I would suggest that this needs re consideration. Section 16.3.1.2 (page 69) of the current risk analysis (2009 version) states that the value of the animal and volume imported are valid considerations. Scleropages formosus are low volume and high value fish. Section 16.3.1.1 suggests Climatic range is a valid argument. These fish will not survive at sub tropical temperatures. The importation of these fish is from highly sophisticated fish farms, predominantly in Singapore.
I would have to also ask the question why this fish alone was singled out from the group.
I note it is on the proposed permitted list I have a copy of so I am unsure of the MAF/Biosecurity NZ position here.

**2) Has the efficacy of risk management measures for each hazard group or organism been adequately described?**
Whilst I respect the research in the report I am left with some conflicting evidence in some areas that I have investigated.

Eg The listing of apistogramma ramirezi as a hazard.
The reference to this is the research/investigation by Leibovitz and Riis 1980.
Points worth consideration here. The age of the research. The localisation of the inspected sample.
In contrast to this, Biosecurity Australias (2009) Importation of freshwater ornamental fish draft import risk analysis makes reference to the same research: (Leibovitz and Riis 1980) but states there is a lack of evidence in the prevalence of iridovirisus in cichlids.

Armstrong and Ferguson 1989 state that there are very few reports of viral diseases of aquarium fish and references Leibovitz and Riis as one of the few examples.

The point I am making here is that there is limited data on some of the fish listed as hazards and in many cases it is well out of date when the reference point can be over 20 years old.

I would like to see more comprehensive data listed on a species basis before a fish is listed as a species of concern. It must have **recent research data** and be more than an isolated incidence or a laboratory experiment.

**3) Whick risk management options do you consider most appropriate?**
The suggestion that 179 remaining high risk species to be dealt with as per risk management measures outline a number of options but serves to create a number of quarantine issues in presenting confusion and varaibles in the quarantine process. I feel my 6 week recommendation will negate this.

The approach of 3 and 4 weeks quarantines also poses unnecessary controls/confusion and would suggest that rather than this, a uniform 6 week approach be maintained for freshwater fish EXLUDING GOLDFISH.

**4) Are there alternative measures that will effectively manage the risk?**
Evidence and data to date suggests the existing standard of 6 weeks for freshwater 3 weeks for marine has served the industry well and avoided health/disease problems as evidenced by MAF Biosecuritys agreement that there has been no disease issues.
I suggest that this 6 week quarantine has been the "norm" for many years and it has proven to be an effective mechanism for the control of disease agents. Quarantine operators to date have been happy to work within this time frame. The continuation of the six week quarantine would eliminate the necessity to separate high risk organisms. It would negate the need to introduce varying quarantine times by species and in essence would seem to protect the future interests of all parties.

Data points to New Zealands extremely clean bill of health from working with the existing quarantine process and time frame. Given we source our fish from similar suppliers as other countries, the point of difference boils down to our quarantine period and our lack of goldfish imports. To my mind, this is definate proof that our existing quarantine process, although considered strict by some and lengthy by others, is doing exactly the job it was intended to do.

The current risk management program (quarantine process) with six week (tropical) and 3 week (marine)quarantine and observation/ testing / destruction where applicable has served the industry very well as long as I have been involved (and before). I would like to ask the question...What data can be provided to show that the current risk management process has not served the industry well? I have certainly not had a problem at my quarantine facility nor am I aware of any issues at any other facility. Whilst I am in agreement of ensuring this fine record remains intact and relevant to todays environment, I am not in support of the concept of **change for the sake of change.**

MAF/ Biosecurity NZ has with the existing quarantine rules/regulations/time frames and process in place currently, the ability to make sure there are no exotic disease outbreaks by means of surveillance. Where there is any doubt there is a testing/destruction option. Again I restate my position that New Zealands bill of health on the importation of ornamental fish is excellent compared to the rest of the world where they have a far more relaxed quarantime time frame.

Steve Walls
Aquarius Imports

## 6.3. MICHAEL TAN

Submission

Import Risk Analysis: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans

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To:

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This is a formal submission regarding the Import Risk Analysis (RA herein) for "Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans" released for public consultation on July 6th, 2009.

This submission will focus primarily on Section 13, Page 45, White Spot Syndrome Virus (WSSV herein). However, other aspects of the RA will be explored.

### 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 MAFBNZ quarantine potentially manageable due to the dichromatisms that occur with infected organisms.

Section 13.1.4 of the RA

This assessment relates to the potential for imported *A. salina, Enoplometopus occidentalis,* Lysmata grabhami, L. amboinensis, L. debelius, Periclimenes

brevicarpalis, Stenopus hispidus, S. cyanoscelis, Rhynchocinetes uritai and Saron marmoratus to introduce WSSV to New Zealand - MAFBNZ RA

Similar to MAFBNZ's analysis, my research has shown that according to Briggs, M., Funge-Smith, S., Subasinghe, R.P. & Phillips, M. (n.d.), WSSV infected naturally 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.

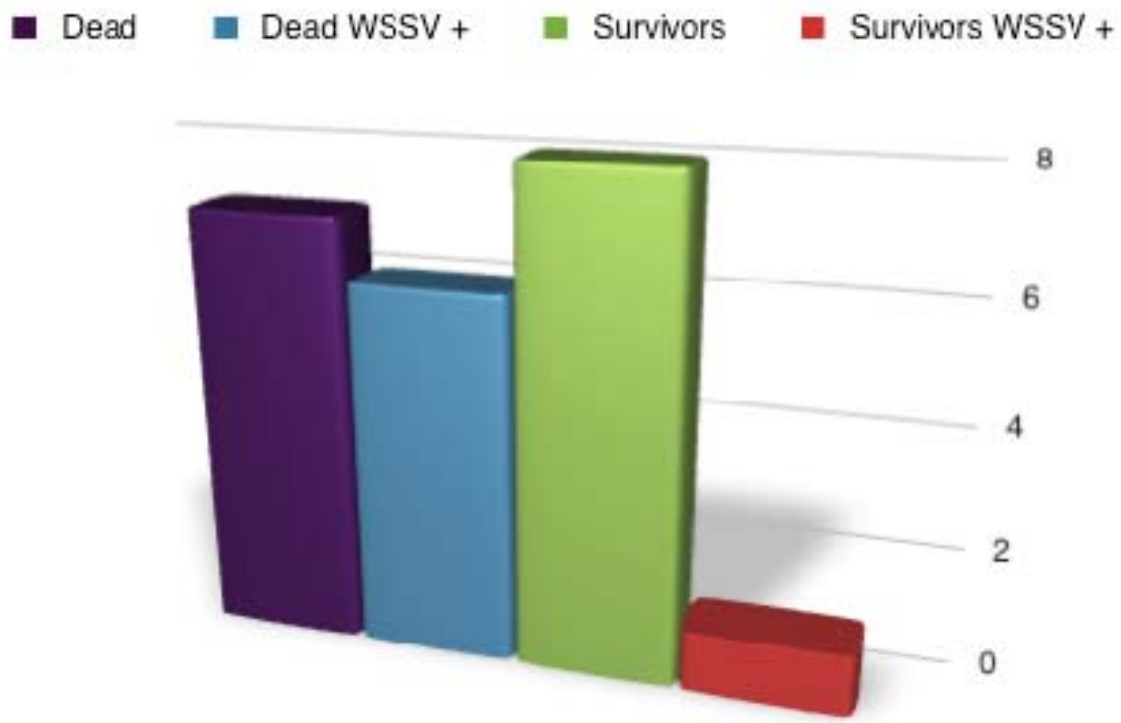
The affects of WSSV on ornamental marine shrimp species has not been studied (Laramore, 2007). Ornamental marine shrimp species will be defined as "any species of ornamental marine shrimp commonly collected for the global marine aquarium industry."

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* - 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. It is extremely important that MAFBNZ note this. 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 the 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 MAFBNZ, 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 MAFBNZ, NIWA and the Department of Conservation and further supports the idea that MAFBNZ and associated agencies simply decided to 'pick and choose' piece of data from Laramore (2007), instead of reading the wider context.

*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 naturally 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).

"Of direct relevance to the draft import list is the report of *Lysmata* sp. susceptibility to WSSV with 60% mortality over 11-27 days (Laramore 2007)." - MAFBNZBNZ RA

The RA is citing Laramore's work out of context. The experiment resulted (shown above) with specimens of *Lysmata sp.* being directing infected, either through the feeding of WSSV infected flesh or through direct injection of WSSV. Any organism can be infected with a pathogen in clinical studies. For the lack of a better example, despite being naturally susceptible to HIV Aids, I as a human can only contract HIV Aids through direct infection. Why hasn't the Ministry of Health banned immigration and tourism? The ornamental species submitted for this RA are not naturally susceptible to WSSV and infection has only been seen in one controlled clinical study conducted by Laramore.

Section 13.2.1 of the RA

The studies detailed above indicate a negligible likelihood of *Artemia* sp. nauplii derived from infected cysts carrying WSSV. There is a low, but non-negligible likelihood, that *Artemia* sp. adults could be infected with WSSV, if they were imported live (which is unlikely) - MAFBNZ RA

Agreed.

The other decapod crustaceans listed would be imported as live free-swimming stages only. Given the epidemiological information above and considering that all decapod crustaceans are most likely susceptible to WSSV there is a non-negligible likelihood that *Enoplometopus* occidentalis, Lysmata grabhami, L. amboinensis, L. debelius, Periclimenes brevicarpalis, Spirobrachus gigantus, Stenopus hispidus, S. cyanoscelis, Rhynchocinetes uritai and Saron *marmoratus* would be carrying WSSV and so require further consideration - MAFBNZ RA

All decapod crustaceans are indeed only imported in live free swimming stages only. All are wild caught due to the significant costs and difficulty in captive breeding the above species. While all decapod crustaceans are indeed susceptible if directly exposed to the virus (i.e. through feeding WSSV infected flesh or direct injection of WSSV), WSSV has never been recorded in wild populations of ornamental shrimp (Laramore, 2007). Furthermore, WSSV only naturally occurs in shrimp from the family Penaeidae (Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009; Laramore). Therefore, according to properly read and analysed scientific texts, primarily Laramore, we could assume with certainty that there is indeed negligible risk to New Zealand's environment. This assumption is supported by the fact that some of these shrimp have been imported into New Zealand for several decades and no WSSV has ever been recorded in New Zealand (MAFBNZ RA).

Section 13.2.2 of the RA

WSSV infected decapod crustaceans would need to be released into waters here containing susceptible species. New Zealand has native freshwater and marine decapod crustaceans that are of economic, environmental, social and cultural significance. There is good evidence to support an assumption that they would be susceptible to WSSV (Wang *et al.* 1998, Corbel *et al.* 2001, Lei *et al.* 2002, Hameed *et al.* 2003) - MAFBNZ RA

Agreed. However, the risk of release of imported ornamental shrimp species is negligible due to their significant retail cost, generally $60NZD to $100NZD per shrimp. New Zealand's native freshwater and marine decapod crustaceans will indeed be susceptible like all decapod species, however, their populations, like all non-penaeid shrimp species (includes ornamental species), are not naturally affected by WSSV. Therefore we can safely assume that WSSV infection is negligible from the release of ornamental species. There will be greater risk of WSSV infection associated with imported food shrimp.

Exposure could occur through the shedding of virus from live animals, or by the consumption of live or dead imported animals. Whilst the imported decapods would be tropical and it is likely that, if they were released, they would enter colder water, it is known that cold water conditions can trigger a clinical outbreak (OIE 2006b). Release into freshwater could result in their consumption as food after death. Passaging WSSV through non-penaeid hosts may cause changes in virus pathogenicity, which may include a decrease in pathogenicity (Waikhom *et al.* 2006), however there is clear evidence that pathogenicity can be retained (Yoganandhan and Hameed 2007) - MAFBNZ RA

Agreed to a certain extent. However, like above, the release of imported tropical shrimp is so low as to be negligible due to their significant retail cost. You must also take into account the fact that imported tropical ornamental shrimp pose little or no risk of WSSV infection as they are not found naturally with the virus. All signs of WSSV infection have occurred during controlled laboratory experiments where the subjects were deliberately infected (Laramore, 2007).

In conclusion therefore there is a low, but non-negligible, likelihood that infected, imported decapod crustaceans could transmit WSSV to New Zealand's waters. It is likely that species here would act as reservoirs of infection and allow the establishment of WSSV - MAFBNZ RA

Disagree. There is definitely a negligible likelihood that imported ornamental shrimps will carry WSSV. There has never been any recorded form of WSSV infection in ornamental shrimp (Laramore, 2007. Supported by Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009).

Section 13.2.3 of the RA

There is sufficient evidence to suggest that the naïve decapod crustaceans endemic in New Zealand's waters would be susceptible to WSSV infection with a resulting serious mortality of up to 100% (Corbel *et al.* 2001, OIE 2006b, Laramore 2007, Escobedo Bonilla *et al.* 2008). At risk is fishing for freshwater crayfish, mainly recreational, and commercial and recreational crab and lobster fisheries worth more than $120 million - MAFBNZ RA

Agreed.

Section 13.2.4 of the RA

There is a non-negligible likelihood of entry, exposure and establishment and there would potentially be serious consequences if WSSV were introducted to New Zealand. As a result, the risk estimate for WSSV is non-negligible and it is classified as a hazard in the commodity. Therefore risk management measures can be justified - MAFBNZ RA

Disagree. There is definitely a negligible likelihood that imported ornamental shrimps will carry WSSV. There has never been any recorded form of WSSV infection in ornamental shrimp (Laramore, 2007. Supported by Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009). Therefore, risk management measures are not and cannot be justified until wild populations of the analysed species are found and confirmed to have been infected by WSSV.

Section 13.3.2 of the RA

"Prevention of importation of the listed species would be easy to implement and would address the risk completely. As the animals would no longer be permitted entry, this option would be trade restrictive." (MAFBNZ RA)

Agreed. The hobby is already severely restricted in comparison to other countries.

Health certification of freedom from WSSV or batch testing of imported animals for WSSV with negative results would be difficult to implement. It is unclear how certification of freedom from WSSV could be achieved for anything other than biosecure farm raised animals. The animals listed are most likely wild caught.

Batch testing to 95% confidence of point prevalence of ≤ 2% infection would require batches to consist of approximately 100 animals at the minimum, whereupon 87 animals would require destructive testing. This is obviously impractical - MAFBNZ RA

Not only is this impractical and extremely expensive, it is obviously sadistic and cruel to require the meaningless slaughter of 87% of all imported shrimp.

Requiring that animals are not sourced from a farm containing penaeid prawns would reduce the potential infection pressure on the imported animals, rendering them less likely to be carriers of WSSV on entry to New Zealand. This would address the risk to a moderate degree; however, it would be difficult to provide adequate certification of their origin to make this option practical - MAFBNZ RA

All ornamental shrimp imported into New Zealand and most other countries are wild caught, not farm raised. Therefore, background research by Laramore (2007) should be enough of a certification to prove that the imported commodity are not infected with WSSV. It is also important to note that penaeid shrimp are an important food commodity (Briggs et al., n.d.) and currently, captive raised ornamental shrimp are not raised in the same facilities are penaeid shrimp.

The available literature suggests that translocation can cause clinical expression of
WSS in covertly infected animals, and that clinical WSS in non-penaeid decapod crustaceans results in mortalities over a period of up to 27 days (Lo *et al.* 1996, Corbel *et al.* 2001, Laramore 2007). It would therefore be possible to require that batches of marine decapod crustaceans should not be suffering clinical disease at the point of despatch, should enter post-entry quarantine for a period of 4 weeks, during which time mortalities should be notified and tested for WSSV. This would address the risk to a high degree. This regime would also be trade restrictive to a degree, in that it would increase the cost of importation - MAFBNZ RA

Agreed with mortality rates. Disagree with proposed quarantine period. However, MAFBNZ fail to note that available literature also suggests that WSSV *only* affects penaeid shrimp species and several crab species. Laramore (2007) states that WSSV has never been recorded in any ornamental shrimp species and her assertion is supported by other academic sources. These sources all state that WSSV is a virus which only affects farmed penaeid shrimp species (Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009; Laramore). As ornamental shrimps are not naturally found with or are infected by WSSV (Laramore).

<u>Possible quarantine measures to prevent the importation of WSSV infected organisms</u>

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.

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.

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## Risk Management Options

Section 16.1 of the RA

Given the huge host range and the evident amount of uncertainty regarding some pathogens it is advisable to retain a period of compulsory quarantine on importation. In addition, it is good zoosanitary practice to require the inspection of consignments of live animals at the time of export to ensure that the fish are free

of clinical signs of pest or disease. This is routine for live terrestrial animals - MAFBNZ RA

Agree to a certain extent. Yes, there should be a compulsory quarantine, however, the requirement of a health inspection for ornamental fish and marine invertebrates at point of export is unnecessary. It will be impossible for MAFBNZ to ensure that the exporting country provides a health certificate. Also, many live terrestrial animals are shipped from first world nations where there are good zoosanitary practices. However, many countries which export ornamental aquatic life are considered second or third world. Also, MAFBNZ must take into account the remoteness of exporting companies making compulsory health certification impractical for them to implement. Some of these companies are based well over 100km from major cities making compulsory health certification extremely costly, not only to the exporter, but also to the importer and finally us hobbyists. Also, nearly all fish are held for no more than two days before being exported. Therefore, they are in relatively good health anyway due to them being freshly caught.

Section 16.2.1.2 of the RA

High value tropical species, especially marine specimens, are considered to be much less likely to be inappropriately released into the environment than low cost, frequently freshwater, species. The inappropriate release of ornamental fish is a necessary step if exposure and establishment of pathogens are to occur. The value of the fish is generally inversely proportional to the volume imported, so it is necessary to take a more precautionary approach with low value, high volume fish species. This is generally an insensitive factor as good information on volume of trade is lacking, but a ballpark estimate of “high individual value” or “low individual value” can be made - MAFBNZ RA

Agree with the first half. However, I disagree with there being a lack of trade information. MAFBNZ can easily obtain this data from transitional facility operators through the facility supervisor. Also, the retail cost of many species can be easily obtained through retail outlets and hobbyists. For example, fewer than two or three imported ornamental marine species will retail for less than $50NZD. Nearly all others retail for about 50%-150% more.

Section 16.3 of the RA

“In general, it is hard, if not impossible, to obtain accurate import volumes for the different species.” (MAFBNZ RA)

Incorrect, see my answer to 16.2.1.2 of the RA above. This information should be easily available through invoices and individual tank records as per sections 4.2, 4.17, 6.4.10 and 6.4.11 of the document “Transitional Facilities for Ornamental Fish and Marine Invertebrates.” Importers who could not provide MAF with this data as per the four noted sections of the cited document “Transitional Facilities for Ornamental Fish and Marine Invertebrates” would technically be in breach of the document.

Section 16.4.2 of the RA

It is undesirable for fish that are clinically affected with ubiquitous or opportunist pathogens or parasites to be imported into New Zealand from a biosecurity, economic and welfare position. Therefore Biosecurity New Zealand should require import shipments to be certified as "free of clinical signs of pest or disease" at the time of despatch. This inspection and certification should be carried out no more than 24 hours before despatch, by an individual authorised by the competent authority of the dispatching country. The signing officer must be satisfied that a representative number of fish have been inspected to enable them to sign off the entire shipment - MAFBNZ RA

It will be impossible for MAFBNZ to ensure that the exporting country provides a health certificate. Also, many live terrestrial animals are shipped from first world nations where there are good zoosanitary practices. However, many countries which export ornamental aquatic life are considered second or third world. MAFBNZ must therefore take into account the remoteness of exporting companies making compulsory health certification impractical for them to implement. Some of these companies are based well over 100km from major cities making compulsory health certification extremely costly, not only to the exporter, but also to the importer and finally us hobbyists. Also, nearly all fish are held for no more than two days before being exported. Therefore, they are in relatively good health anyway due to them being freshly caught.

Further Notes Relating to the RA

Under Section 17.1, the moorish idol (*Zanclus cornutus*) has been classed as a subtropical species which was cited by MAFBNZ on Fishbase. I have to refute this as it is obvious that MAFBNZ has only read part of the Fishbase page on *Z. cornutus*. While it may have been classified as subtropical, it's temperature range is 24C-28C, hardly what I call subtropical temperatures. I think that MAFBNZ would show some commonsense if they reclassified the climate from subtropical to tropical based on Fishbase's temperature ranges. The specific temperatures would naturally be more of an accurate representation of a fish's climatic range than simple words such ass 'temperate,' 'subtropical' and 'tropical.' The above can be said for all species contained with the RA.

When we look at *Chromis viridis* and *Amphiprion akindynos,* we can see they have been classed as susceptible to *Enteromyxum leei*. I have several sources within the industry both in New Zealand and abroad and all state that the risk of *E. leei* infection in named species is so low as to be negligible (R. Fenner. Personal Communication, 2009). Fenner went on to state that he as never encountered *E. leei* in any organisms he has dealt with during several decades of active industry experience. Like my proposal for shrimps above, they may be susceptible to the disease, but are highly unlikely to contract it.

## 6.4. DAVID COOPER, MAHURANGI TECHNICAL INSTITUTE

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20 June 2009

MAF Biosecurity New Zealand,
Attn. Risk Analysis Team Support Officer
PO Box 2526, Wellington 6140
Phone 04 894 0310
risk.analysis@maf.govt.nz.

Dear Sir / Madame,

**Import risk analysis: Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans - Review of Submissions and Supplementary Risk Analysis**

On behalf of Mahurangi Technical Institute I would like to make a submissiion on the IRA noted above.

Our submissions relate to the areas that specifically mention Goldfish. It appears that Goldfish are to be considered for inclusion on the list of ornamental fish to be permitted entry to NZ.

We fully support the comments noted in the IRA relating to the potential for Goldfish to carry various diseases and support the implementation of measures noted in section 14.

It is our opinion that additionally an effective control would be to allow entry only from sources shown to be free of the diseases noted. The document notes that this is the current Australian position.

We would go further and recommend that import only be allowed from Australia and that for a specified period (suggest 5 years) that be further restricted to a single supplier within Australia who can demonstrate strong fish health protocols and procedures and who is recognised as a reputable operator.

To this end I refer you to our pending IHS application "Goldfish (Various cultivated varieties) - Carassius auratus - Live fish" which suggests just such an arrangement. The advantage of an initial restriction to only one "best practice" supplier would facilitate easy monitoring and control of the import of Goldfish and allow for a biosecurity review to be made in the future based on the initial experience. This IHS application is currently with Biosecurity NZ and being assessed for possible inclusion in the 2009/2010 work shedule. This will obviously be withdrawn should the import of goldfish be allowed as a result of this IRA.

Furthermore we would support the pre export quarantine of Goldfish within Australia.

Although the suggested situation could be seen as a restriction to trade we would argue that there is no legal import of Goldfish at present so this would actually be a liberalisation of the current state of affairs and that biosecurity considerations outweigh any minor concerns of unfettered trade.

Yours sincerely

David Cooper
Special Projects Manager

## 6.5. ALOIS WOLLONER

### 6.5.1. Submission shrimp

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."

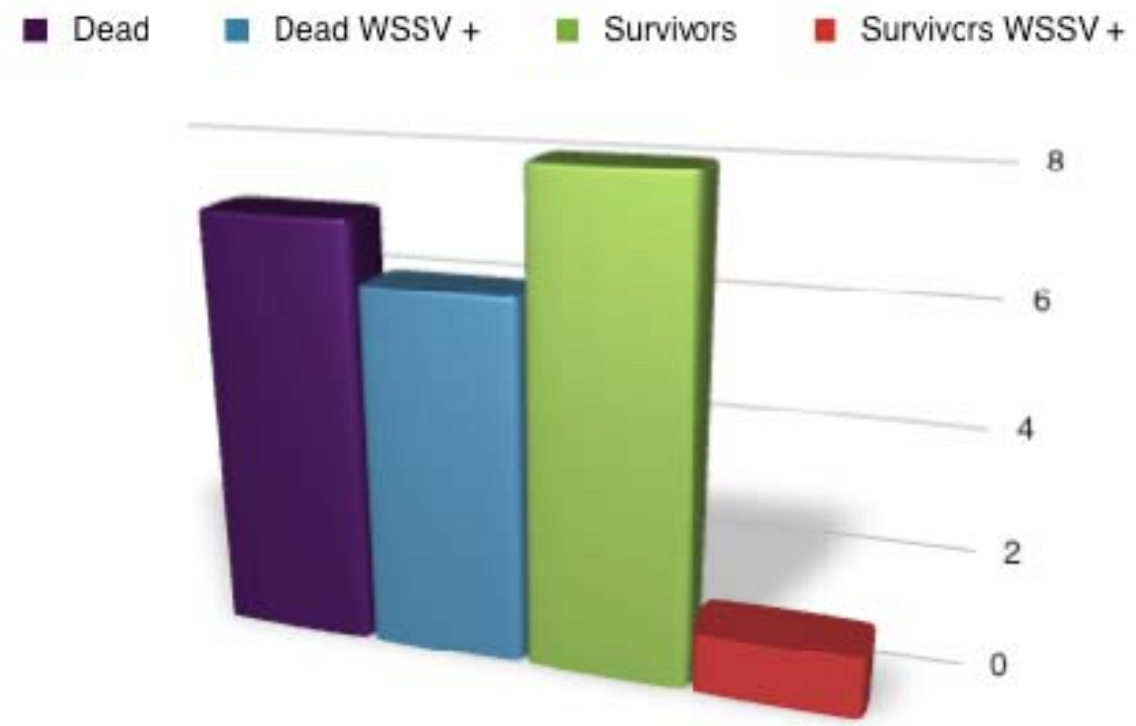
WSSV only naturally occurs in shrimp species from the family *Penaeidae* (Wang et al., 2000; Lo et al., 1996; Briggs et al., n.d.; Phuoc et al., 2009; Laramore, 2007). Susan E. Laramore conducted a study on *L. wurdemanni* to examine the susceptibility of WSSV on ornamental marine shrimp species. Laramore's 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.

- 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.

- 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.
- 

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).

<u>Species</u>

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 sp.* is actually the former scientific name of *Trachyphyllia sp.* However, many *Trachyphyllia sp.* corals shipped from Indonesia are shipped as *Wellsophyllia sp.* 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 sp.* and *Trachyphyllia sp.* 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 take into account that many species currently listed on the current IHS and draft IHS are either outdated scientific names and their current scientific names must be added. Many species such as *Trachyphyllia sp.* cited above are actively shipped using their old scientific names and therefore it would be wise to include both the old and current scientific names on the new IHS in order to avoid confusion at the border.

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### 6.5.2. Submission fish

**Tropical, subtropical and temperate freshwater and marine ornamental fish and marine molluscs and crustaceans**

14 September 2009
To:

**Risk Analysis Team Support Officer**
**PO Box 2526,**
**Wellington 6140**

risk.analysis@maf.govt.nz

**Thank you for the opportunity to make submission on the overdue risk Analysis dated 2 November 2005.**

Reply to MAFBNZ Recommendations

MAF(pg 90) 18.1

**The opinion was expressed that the cost of diagnostic testing for the 13 actual hazards should be borne by MAFBNZ. However, the testing for pathogens of concern to New Zealand is an**
**Integral component of any risk mitigation programme associated with the import of many**
**Animals and animal products into New Zealand. In addition, the importer gains from the**
**Importation, thus it is appropriate and consistent across species that the costs of specified**

Response

Any cost in Diagnostic should be Bourne by MAFBNZ, The Hobby can't sustained any more costs as already importers are already over charged for checking fish by NZ food and safety.
The costs have a major impact on the trade and any additional cost is going to suppress the trade more.

Can we have the cost analysis By MAFBNZ that shows that importers make gains? , the reality is that in the marine trade importers make very little profit if any. I don't see importers having a few thousand dollars surplus for getting fish tested. Most import facilities are significantly underfunded anyway, so not sure how MAFBNZ expects importers to fund this; it's not like importer make significant profits like the aquaculture trade.

The Hobby is already been subjected to large increased in importing due to increased airline charges and compliance costs. Previous submissions by importers already highlighted a major concern that increased testing of fish will result in major impact on the trade and would obstruct the importers business.

17.2.19. White spot syndrome virus(pg89)

**ALL – Quarantine for 4 weeks. All mortalities to be recorded and notified to the supervisor.**
**All mortalities to be retained (frozen) and representative number subjected to nested PCR test**
**for WSSV. Samples may be pooled if required. Nested PCR test to be negative before** Biosecurity clearance.

**DECAPODA Enoplometopus occidentalis tropical 19**
**Lysmata grabhami subtropical 19**
**amboinensis tropical 19**
***debelius* tropical 19**
**Periclimenes brevicarpalis tropical 19**
**Stenopus hispidus tropical 19**
**cyanoscelis 19**
**Rhynchocinetes uritai tropical 19**
*Saron marmoratus* tropical 19

## Response

**Attached is brief paper completed BY Michael Tan on WSSV which gives good factual account on the data for WSSV**.

To further add WSSV has not been found in the wild. Given that fact and that 99.9% of shrimps imported are from the wild the risk would be low.

WSSV is mainly a concern in farm raised food shrimps not Ornamental shrimps.

Some experiments did show that Ornamental shrimps got infected with WSSV when injected and feed the virus. Is this hardly surprising?

Ornamental shrimps are imported into every country in the world at present so it speaks for itself that WSSV is not a major risk.

New Zealand already has a three week quarantine which would has been more than satisfactory for the current Ornamental shrimps on the IHS which has caused no issues over the last 30 years of importing them.

The imported Ornamental shrimps are so fragile that it is very unlikely that they would ever survive NZ climate.

The proposed 4 week quarantine is totally unacceptable as how can an importer release the main importation in 3 weeks and then release Ornamental shrimps a week later.
There is significant costs as they have to be packed and then courier out to the retail stores,
On top of that there will be an additional NZFSA inspection cost and testing on dead shrimps.

None of these costs can be passed on and added to the shrimp price , as who is going to pay $200 plus for a shrimp. Current retail price for a shrimp is about $75-$90.

If WSSV is present on Ornamental shrimps it would be easy to diagnosis and most shrimps would perish well before the end of the 3 week quarantine which would alert importers of an issue.
It is highly unlikely a shrimp infected with WSSV is going to survive shipping , 3 week quarantine and then survive a trip to the local retail store and then to a hobbyist tank. As mentioned this is a closed environment which makes it hard to effect any other penaed shrimps.

Ornamental shrimps are very fragile , so loses of 40% is not uncommon especially if they have not be acclimatized correctly.

WSSV in almost all destructive circumstances appears only in cultured penaeid shrimp species.

In summary MAFBNZ proposed risk management of ornamental shrimps is over jealous and the shrimps are incorrectly classified as high risk.

A three week quarantine and training given to the supervisor and importers to identify the virus would be more than enough to mitigate to cover any risk/hazard.

MAFBNZ (pg84)17.Summarised risk management options for specified high risk species

**In addition to the caveat of direct entry to, and lifelong holding in, containment facilities; if Any country is able to demonstrate, to the satisfaction of New Zealand, compartment, zone or Country freedom from any of the 19 actual hazards listed via the provision of an acceptable Zoo sanitary health certificate that should negate the requirement for any import requirement Specific for that hazard.**
**It is undesirable for fish clinically affected with ubiquitous or opportunist pathogens or parasites to be imported into New Zealand from a biosecurity, economic and welfare position.**

Therefore Biosecurity New Zealand should require import shipments to be certified as "free of clinical signs of pest or disease" at the time of dispatch. This inspection and certification should be carried out no more than 24 hours before despatch, by an individual authorised bythe competent authority of the despatching country. The signing officer must be satisfied thata representative number of fish have been inspected to enable them to sign off the entire Shipment.

**Response**

As mentioned in previous submissions by importers in 2005, Any Health certificate is a total waste of time,
For any such certificate to hold any merit, fish will have to be in separate batches at the exporter's facility prior to packing to be shipped to New Zealand.
This is never going to happen as New Zealand is such a small market and exporters generally will have all other countries prioritized to send fish.

Any exporter can provide a Health certificate as they are just signed by the exporter, .

No importer is going to keep getting fish from the same importer if they continue to have bad quality fish.
Most importers tend to only have 3-4 exporters that they use as finding a good exporter is hard to come, so Risk is reduced as only a few exporters are used to import from as unlike overseas they have hundreds of importers and exporters.

17.1. SUMMARISED RISK MANAGEMENT MEASURES BY HIGH RISK SPECIES

Subtropical

**Hippocampus coronatus subtropical 17 .less than 10 per year**
**reidi subtropical 17 . not imported frequently, less tan 10 per year**
**spinosissimus subtropical 17, never imported**
whitei temperate 17 less than 10 per year

Zanclus cornutus subtropical 1 less than 30 per year
Lipophrys nigriceps subtropical 13
Elacatinus oceanops subtropical 16 not often imported
**Chromis viridis subtropical 13 , bread and butter fish. Over 500 a year**
Amphiprion akindynos subtropical 13 less than 10 per year
**Thalassoma lunare subtropical 13 less than 10 per year**
lutescens subtropical 13 less than 20 imported per year

**Response**

**Next to each species I have listed how many are approximately imported each year, this is based on my knowledge in the marine importing trade and knowledge what retailers tend to buy.**

None of the fish above are imported from a subtropical countries, what proof does MAFBNZ have . that the tropical species imported will live in Subtropical conditions.

Even if they would survive for a short period there are many other factors that make them an acceptable risk given that they have been imported for years with no cause of concern.

No importer in New Zealand obtains any of these species from subtropical countries so it would be highly unlikely these fish will cause in issue,
Having a 4 week quarantine is unpractical as it is far to expensive to hold these marine species for a additional week,
There are additional costs and ramifications as mentioned which would make importing these fish pointless.
Other than the *Chromis viridis* the other fish are imported in very limited numbers, so risk is very low.

It's highly unlikely that a four week quarantine is going to reduce any risk and given the fact that they have been imported for over 30 years without issues.

No other country has made it so difficult to import these fish so it would make more sense that MAFBNZ take into account overseas standards as we are already served well with three week quarantine for marine fish.

Tropical

***Coris aygula* tropical 9, less than 20 imported a year**
***caudimacula* tropical 9 less than 20 imported a year**
***cuvieri* tropical 9 less than 20 imported a year**
***flavovittata* tropical 9 less than 20 imported a year**
***gaimard* tropical 9 less than 20 imported a year**
***venusta* tropical 9 less than 20 imported a year**
***Labroides bicolor* tropical 2 less than 20 imported a year**
***dimidiatus* tropical 2 less than 50 imported a year**
***pectoralis* tropical 2 less than 50 imported a year**
***phthirophagus* tropical 2 less than 20 imported a year**

***Cephalopholis miniata* tropical 2 3 less than 20 imported a year**
***urodeta* tropical 2 3 less than 20 imported a year**
***Chromileptes altivelis* tropical 2 3 less than 20 imported a year**
*Epinephelus merra* tropical 2 3 12 less than 20 imported a year

Same as above,

Our three week quarantine is more than adequate to cover risk for these species

There is absolutely no additional risk especially since these are imported in very low numbers.

**GOLD FISH (carassius Auratus)**

Would it not be more appropriate that this genus is review by itself, as it has so many hazards and no real importance to any Importer as it is unviable to import with so many hazards.

**Quarantine Period**

Proposed quarantine for Ornamental fish by MAFBNZ

3 weeks for marine fish
3 weeks for freshwater

**Response**

I agree that 3 weeks is more than sufficient for marine fish, including the deemed high risk species as it does not make sense to increase the quarantine to 4 weeks for some deemed high risk species.

The cost of making some Marine fish 4 weeks is going to make importing these species unviable and make the IHS to complicate.

The reality is that another week for high risk species is not going to make any difference to reduce risk.

In terms of the freshwater it would be more appropriate to extend the quarantine to 4 weeks as this would cover all the species that are deemed as high risk and make the IHS easier to follow,
Freshwater do pose a far higher risk than marines so I doubt any importer is going to find it an issue as freshwater is imported in far higher volumes so they have far more stock to sell before importing again.

Recommendation is to keep all marine fish at 3 weeks and freshwater to remain the same (6 weeks) or reduce to 4-5 weeks.

**MAFBNZ wrote**

What are your views on the risk assessment for each hazard group or organism? Are the risk assessments accurate? What changes, if any, are required? Do you have any relevant evidence to support suggested changes?
2. Has the efficacy of risk management measures for each hazard group or organism been adequately described?
3. Which risk management options do you consider most appropriate, and what makes them your preferred choice?
4. Are there alternative measures or packages of measures that you consider will effectively manage the risk?

**Response**.

Those are interesting questions,

All imports in to New Zealand pose some sort of risk however to date MAFBNZ has very little evidence that the aquatics industries has posed any major risk in New Zealand.

When considering Hazards , MAFBNZ should take into account the following

1/ **Over 1 billion ornamental fish comprising more than 4000 freshwater and 1400 marine species are traded internationally each year, with 8–10 million imported into Australia alone.**
**An estimated 4000–5000 freshwater fish species have been kept in aquaria, (Sales, 2003). Most (90%) of the ornamental fish trade is in freshwater species which are farm-bred however the marine species (99%) are predominantly wild-caught . More than 1450 species of marine fish are traded globally with Indonesia and the Philippines being the main suppliers (Wood, 2001).**
**The global wholesale value of live ornamental fish in 2000 was estimated by the Food and Agriculture Organisation of the United Nations (FAO) to be US$900 million with a retail value of US$3 billion.**
**Approximately 1 billion ornamental fish were exported annually involving more than 100 countries. In 1992, the top five exporting countries were Singapore (32% by value), Hong Kong (11%), USA (11%), The Netherlands (7%) and Germany (6%). In the same period, the top five importing countries were USA (26%), Japan (17%), Germany (9%), United Kingdom (9%) and France (7%)**
(Cheong, 1996).

2/ The USA alone imports 10,000 boxes of live ornamental fish per week via air freight from at least 20 different countries and 500+ different source locations or farms**.**

In contrast New Zealand's share would be .004% and the number of species allowed to be imported is very low.

NZ imports less than 40 boxes a week on average and imports from less than 12 countries which greatly reduces risk.

3/ Presently New Zealand has one of the longest quarantine period , 6 weeks for fresh water and 3 weeks for Marines,. Australia only has 1 week for Marines.

4/ New Zealand's cold seawater temperatures are also very unlikely to support any imported ornamental Marine organism.

New Zealand has relatively few reported fish disease incursions if any , Could MAFBNZ please advise importers /stakeholders what tropical marine imported species on the Current/ old IHS `that have been released or caused a incursion/ disease during the last 30 years.

Anecdotal evidence would suggest that most marine ornamental fish/shrimps pose no risk at all due to being in a closed environment.

5/ The discharge of ballast water is one of the main ways ocean pest species can be introduced to New Zealand waters. Each year almost three million metric tonnes of ballast water sourced from outside waters is discharged into New Zealand ports, this water can contain the eggs and larvae of marine organisms able to establish here.

International shipping industries are responsible for the majority of alien species invading foreign waters. Over 3,000 marine species travel around the world in ships' ballast water on a daily basis

**Figures prepared in the OATA office using official statistics, show that around 10 million ornamental marine fish are imported annually throughout the world. The total weight of these fish may lie between 70-100 tonnes. While official statistics are not always reliable, they are the best we have to work with. This figure should be contrasted with the total of 100,000,000 tonnes of sea fish caught for consumption, and the 17,000,000 tonnes of by-catch (waste) that is thrown back into the sea each year by the world's fishing fleets.**

**In the United kingdom, H. M. Customs and the State Veterinary Service figures indicate the UK imports approximately 350,000 marine ornamentals a year, which weigh under 3 tonnes. Previous reports have indicated much higher figures for the weights because their authors have failed to properly recognize the very small percentage of the weight of ornamental fish freight which is actually live fish, the remainder being water and packaging.**

**Another concern that has been expressed recently is the likelihood that ornamental marines may be introduced as alien species around the world. In the UK, not only are tropical species highly unlikely to become established, but there are far larger areas of concern. A recent report estimated that 42 million tonnes of ballast water was discharged into British waters by ocean going ships. This is the equivalent of every marine aquaria in the country being emptied into the sea three times a day, every day of the year.**

Ornamental fish are imported into closed environment (aquariums) and quarantined which has significantly reduced risk from the trade in New Zealand. Marine fish/Shrimps imported into New Zealand is so small compared to the above data.
MAFBNZ have made no mention of this or supplied any data as this should have been taken into account when completing the risk analysis for marine and fresh water fish.

6*/* Releasing fish into waterways.
In terms of marine species this is unlikely to be an issue as marine species are very expensive and not imported in large numbers so no hobbyist is going to spend hundreds of dollars just to dump fish and if this unlikely event is to happen Marine ornamental fish would not survive.
Fish would have to be dumped by the hundred to cause any risk to waterways..
The likely hood also of the fish being released having disease is also very low as the fish would have to survive 3 week quarantine, then survive the transport to the

retail store and them survive the hobbyist tanks before being released. Risk factor is very, very low.

7*/* New Zealand trade.

Whilst the rest of the world has experienced significant growth in the Ornamental fish trade, NZ trade is sum what in decline.
NZ only currently only has about 6 Main importers and 2-3 part timers in the Ornamental fish Trade.
This has been about the same for the last 10 years which would suggest this is also the reason New Zealand has very little risk as Importers generally only deal with 2-3 exporters so quality is generally of a high standard as importers are unlikely to import fish from an exporter who has continuous bad fish. Overlooked in the risk review by MAFBNZ.

**8/ Education**

**The need to implement a national public awareness and education program On the disease risks posed by imported ornamental fish, with emphasis on responsible pet ownership.**
**Further to this MAFBNZ has a targeted passive surveillance be conducted for the following disease agents.**
**aquabirnaviruses, iridoviruses, grouper nervous necrosis virus, viral haemorrhagic septicaemia, Edwardsiella ictaluri, Edwardsiella tarda, Lactococcus garvieae, Aphanomyces invadans, Enteromyxum leei, Glugea heraldi, Bothriocephalus acheilognathi, Capillaria philippinensis and Argulus foliaceus**

However to date no information has been given to importers/retailers on how to identify these disease agent., Training/information would reduce risk.

9/ Consultation**.**

New Zealand has less than 7 Ornamental importers so you would think it is very easy to provide proactive consultancy and have the industry more involved to help reduce deemed risk.
Very little work was done by MAFBNZ to change the IHS from genus to species and it was advised at the time of the review that many species will be missed due to the short 6 weeks time frame. Hence the reason many species have had to be reviewed which has resulted in the industry missing many species
Would it not be more practical to review the IHS fish list yearly so that it is kept up to date and move with the times?

Education to importers and retailers would also reduce risk.

9/ FISH SPECIES.

Since the IHS has been changed from genus to species it has resulted on a vast amount of fish species being no longer being able to be imported.

What process in is in place to a add fish species to the IHS? ,
Current standards to add fish is ridiculously long and expensive.
Whilst it is not a priority, is it unacceptable that no set time frame is in place as importers/retailers have a Business to run,

Why can't MAFBNZ allow importers to add additional species of fish on a yearly basis if the genus is on the Current IHS.
MAFBNZ has already done a risk on the genus so adding additional species should be simple.

**Summary**

The risk analysis has not really addressed any of the above mitigants and data as this would show that the risk needs to be kept in perspective.

Balance needs to apply as current proposals will significantly impact the hobby in New Zealand which has been in recession for a number of years due to the high compliance cost in importing to New Zealand and the small size of the hobby.

Any proposed changes should be in consultation with importers as some have a abundance of knowledge and have real practical experience in the ornamental trade, Scientific data provide by MAFBNZ is important however very impractical if many of the proposed changes are not given a reality test as it would create so much more bureaucratic paper work for importers and NZFSA and unlikely really to reduce risk.

New Zealand has very few importers and maybe having a forum to discuss these issues would be beneficial for all concerned as no real progress has been made since the initial risk review in 2005.

I hope these comments will be of interest and assistance.

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## 6.6. RICHARD WOOLLEY, HIGHWAY FISHERIES LTD.

14th September 2009

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This is a submission relating to the Import Risk Analysis of Tropical, subtropical and temperate freshwater fish and marine ornamental fish, marine molluscs and crustaceans dated 29 June 2009.

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A submission has been made on Sections 16 and 17 and includes quantitative information below that was not included in the Import Risk Analysis.

According to Ornamental Fish International and data sourced from FAO statistics, the worldwide export value of ornamental fish in 2004 was US$251 million.
An estimate by OFI of this value resulted in an amount of around 1.5 billion live ornamental fish[1]. These figures were based on the average price per fish of a number of large shipments. A "large" shipment can be in excess of 200 boxes of fish.
By comparison, New Zealand imports amounted to NZ$497,000 or US$323,000 for the same year[2]. An average shipment in New Zealand is approximately 20 boxes however the frequency remains low at around 21 days per importer.
Using the same formula, approximately 1.9 million fish may have entered New Zealand in 2004.
Realistically, approximately 1 million fish entered New Zealand in 2004. This is based on the large selection of fish types but low volume of fish per type required or available to the New Zealand market.
Based on the above information, New Zealand imports of ornamental fish amount to between 0.06 to 0.12% of the global market.
In simple terms, for every 1,000 fish coming into New Zealand, 800,000 to 1.6 million fish are going somewhere else in the world at the same time.

Therefore, the risk of actually finding a host fish – at between 0.06 and 0.12% of the risk species population, is highly unlikely. The probability of the fish in this 0.06 to 0.12% group that is actually carrying a hazardous disease can therefore be quantified as extremely low. Therefore the risk or likelihood of entry and exposure is very small especially when also considering the chances of the disease carried by the fish on entry to New Zealand actually being transmitted to a potential host species.

[1] Ornamental Fish International, International Transport of Live Fish in the Ornamental Aquatic Industry 2007
[2] Statistics New Zealand Trade Data 2004

This applies to **Section 16.2 Defining Risk Factors.**

⊖ **Host factors**

Three host factors have been identified: climate range, value, and relationship to native or endemic species.
While it is not a requirement to distinguish between fresh or saltwater species, or between wild, cultured or ornamental species[3], this Import Risk Analysis has classified the aquatic animals as temperate, sub-tropical or tropical species. Therefore, there is no apparent reason for not distinguishing between freshwater and saltwater species.

When the three host factors are applied to *freshwater* fish that are either wild, cultured or ornamental species and capable of surviving in a temperate, subtropical or tropical environment, the host factors as written in the Import Risk Analysis are considered to be fair and acceptable.

When the three host factors are applied to saltwater fish that are ornamental species, either wild or cultured and capable of surviving in a tropical environment, the lack of a transfer vector negates the risk.
Twenty one marine species are identified in the tropical category of the high risk species and are unjustly affected by this clause.
It is appropriate that marine species from a tropical environment be reassessed. A number of species will then move into the "not regarded as an additional potential hazard" category based on the following justifications.

1. The climate range is too low for the ornamental tropical marine species imported into New Zealand to initially survive the transfer from an artificial environment into the ocean. Both heat and water parameters are significantly different to natural seawater surrounding New Zealand. If the natural water was indeed suitable for aquarists to use, then the market for artificial saltwater would not exist as they would be collecting the natural seawater. The water surrounding the New Zealand coastline can be hazardous especially in summer when the water temperature is higher and the days are longer. Toxic algae blooms throughout summer are a good indicator that the water quality is unsuitable for releasing delicate animals. While a number of foreign organisms have established in water surrounding New Zealand, the source of these incursions have already been identified as originating from overseas shipping movements and the release of ballast water during the loading and unloading process.

2. The value of the ornamental tropical marine species is high enough to exclude inadvertent release as a risk. Marine systems represent a significant investment in setup and ongoing maintenance costs. The cheapest tropical marine fish currently available is $30.00 which could be regarded as too expensive to discard.

3. The relationship of ornamental marine species to native or endemic species has not been studied. The lack of unsuitable release areas and inhospitable water conditions suggests that this clause is also not relevant to ornamental tropical marine species.

[3] FAO. 2007. Aquaculture development. 2. Health management for responsible movement of live aquatic animals.

⊖ **Hazard factors**

There is no dispute that the hazard factors present significant risks for both native and endemic species. A lack of resources prevents an in depth analysis of the hazards presented.
However, a process needs to be developed by Biosecurity New Zealand to update the hazard list with new information on a more regular basis. This would further assist in mitigating the risk of emerging diseases entering into New Zealand's environment.

This applies to **Section 16.4. Risk Management Options.**

This section is incomplete.

Three options have been identified in the introduction yet only option two has been presented in detail.

### 16.4.1. Introduction

*Having identified the species of fish for which advanced risk management measures are required, it is necessary to define the measures required to reduce the risk to an acceptable level whilst minimising any restrictions on trade.*

An Acceptable Level of Protection has not been stated in the Import Risk Analysis document and as such, it remains difficult to identify the level of protection that Biosecurity New Zealand is attempting to achieve. An indication of the current risk level and the new target level after the proposed mitigation measures are implemented are necessary to ensure the hazard list is accurate and the mitigation measures will be effective.
Please state the current Acceptable Level of Protection.

*The 179 remaining species could be:*

*• denied entry to New Zealand through the imposition of an importation ban. This would keep the import health standard straightforward and easy to understand*

This clause is a recommendation to deny entry which is eliminating risk entirely. The aim must be for Biosecurity New Zealand and all stakeholders to find a workable solution to reducing the risk of any disease incursions that may threaten native or endemic species.

*• permitted entry under specific additional measures. For some species the additional measures will be relatively easy to meet, however there will be species where the entry requirements will be complicated and potentially costly. This may make importation of anything other than high-value brood-stock economically non-viable and it is possible that large-scale importation of those species will cease purely through financial pressures.*

Specific additional measures for the risk species have been identified in Section 17.1. It is more pertinent to discuss the options there.

*• permitted entry subject to MAFBNZ accepting an Importation and Quarantine Plan, that detail alternative ways of mitigating the risks and could include supplier accreditation, offshore audits etc.*

The term "etc" is undesirable in an Import Risk Analysis as part of an option. The use of the term suggests the clause is an undesirable option and has been included as a regulatory requirement.

This clause needs to be elaborated upon to be fully considered as it is a viable option for reducing both incursions and onerous mitigation measures. As an example the requirements of accredited exporters in Singapore are explained below.

Ornamental fish exporters in Singapore are accredited members of the Ornamental Fish Exporter Scheme (AOFES). This scheme is governed by the Agri-Food & Veterinary Authority of Singapore (AVA).
The scheme involves monthly audits of records, water and fish testing. The cost of testing is borne by the AVA as an information gathering exercise. This enables accurate information to be collected.
The majority of freshwater ornamental fish imported into New Zealand are sourced from Singapore as this is the main import – export hub of Asia. Fish can pass through Singapore within a couple of days of arrival. According to Highway Fisheries supplier, fish are housed for a minimum of 14 days before export.

Suppliers wanting to use the *Importation and Quarantine plan* option would need to provide evidence of the accreditation.
A copy of the Standard Operating Procedures of the supplier currently supplying livestock to Highway Fisheries Limited has been sighted. The SOPs cover disinfection of plant and equipment, receipt of livestock, disinfectants used on the livestock pre-export and a minimum quarantine period before export. Disease monitoring by staff, autopsies by a staff biologist and external laboratory testing are completed regularly. The use of antibiotics was also terminated. These procedures have been implemented to meet or exceed new EU requirements.

The implementation of an acceptable Import and Quarantine plan can be seen as a move towards a self regulating industry. A significant amount of preparatory work by operators would be required before this is seen as an effective mitigation measure. Operators may need to have a history of importing for a number of years prior to acceptance. The benefits to those who wish to take this option must be evident in reduced compliance costs.

Shipping containers are regularly opened by unsupervised "trained personnel" armed with cans of insecticide in an alfresco environment. These people may open just six containers in a year compared to an ornamental fish importer that is opening multiple containers in a facility that is actually designed to isolate organisms from the environment.
This suggestion warrants further investigation to determine if the option could be effective and viable.
Please provide more information.

This applies to Section 16.4.2. **Standard live ornamental aquatic animal import requirements.**

*It is undesirable for fish that are clinically affected with ubiquitous or opportunist pathogens or parasites to be imported into New Zealand from a biosecurity, economic and welfare position. Therefore Biosecurity New Zealand should require import shipments to be certified as "free of clinical signs of pest or disease" at the time of despatch. This inspection and certification should be carried out no more than 24 hours before despatch, by an individual authorised by the competent authority of the despatching country. The signing officer must be satisfied that a representative number of fish have been inspected to enable them to sign off the entire shipment.*

Ubiquitous – having or seeming to have the ability to be everywhere at once[4]. A better term would be common.
Opportunist – harmless to the healthy but debilitating to the weak.
Loosely translated, BNZ want a health certificate stating common parasites and pathogens were not present on the fish in the 24 hours prior to despatch.

There is no value in this certification requirement. Health certificates need to be specific to hazards, hazard species, test results and zone status.
Please remove this clause as it is referring to common parasites and diseases which are attended to within the four week quarantine period.

*On arrival at the transitional facility the shipment should be visually inspected by the facility supervisor and the declaration and any associated laboratory reports or health certificates inspected.*

Part C of the Import Health Standard for Ornamental Fish and Marine Invertebrates from all Countries (FISORNIC.ALL) covers the current documentation requirements and as such, this comment is acceptable.

*Routine shipments of lower risk fish species should undergo quarantine for three weeks, during which time careful records of water quality, fish behaviour and mortalities (with apparent cause) should be recorded by the facility operator and kept available for inspection by the supervisor at all times.*

*The operator of the transitional facility should inform the supervisor within 24 hours of becoming aware of health problems in any shipment.*
*At the end of the quarantine period, or at any time within it if warranted, the supervisor should determine the total number of sick and dead fish per species from facility records and physical inspection. Percentages of affected fish should be calculated; these must include sick and dead fish.*

This statement is shifting the onus of reporting including a shipment summary detailing percentage losses and the main cause of death to the supervisor. Is this the intention as Highway Fisheries have provided this information for a number of years at the end of the quarantine period? Since supervision moved to NZFSAVA, reporting is now done electronically on a weekly basis.

[4] Collins Concise Dictionary

*Sick fish include those displaying the following signs: -*
*? moribund fish – floating listlessly in the tank*
*? loss of equilibrium or abnormal buoyancy*
*? skin lesions (ulceration, rash, haemorrhage at base of fins)*
*? exophthalmos (abnormally protruding eyes) ± ocular haemorrhage*
*? swollen abdomen*
*? rapid opercular movements or mouth gaping*
*? unusual colouration (darker or paler than normal)*
*? unusual behaviour (corkscrewing, flashing, rubbing etc.)*
*If the number of affected fish is determined to be significant then the consignment should be investigated for the cause of mortality. If there are no significant health events the fish may be released.*
*Submissions to the original risk analysis from the ornamental industry requested that this level of significance be at the discretion of the supervisor. This seems an appropriate suggestion as it is not possible to set a fixed level that would be appropriate in all scenarios.*

This is a good example of working together to meet the requirements of the standards. Unfortunately the theory disintegrates when a new supervisor arrives at a Transitional Facility and 'marks' their authority through a different interpretation of the relevant standards.

*Guidelines could be developed to ensure a uniform approach, and an example of such guidelines is included in Appendix 2 of this document. As the species covered by this section have been determined to be inherently lower risk, it is the intent that disease investigation should only be necessary in cases of serious clinical disease.*

Fortunately, Section 20 is an example only as the thresholds quoted are from an ideal world without external influences.
This area will need significant discussion and while the discretionary guidelines will work well, they will need to be formally adopted for each facility.

*Should a disease investigation be warranted, i.e. there is no clear environmental cause for the health problems and the condition appears to be due to a serious systemic infectious disease, the importer should be given the option to test the fish (at importer's expense) or destroy the whole batch of affected species and cohabitants. Should the fish be tested and a diagnosis of low regulatory significance obtained then the fish may be released, otherwise the batch should be destroyed.*
*Direct entry of aquatic organisms into, and lifelong holding in, suitably approved and inspected containment facilities should negate the requirement for either standard import requirements or specified risk management options for high risk species.*

Please define 'batch' ("or destroy the batch").

This applies to Section 17. **Summarised risk management options for specified high risk species.**

*In addition to the caveat of direct entry to, and lifelong holding in, containment facilities; if any country is able to demonstrate, to the satisfaction of New Zealand, compartment, zone or country freedom from any of the 19 actual hazards listed via the provision of an acceptable zoosanitary health certificate, that should negate the requirement for any import requirement specific for that hazard.*
*It is undesirable for fish clinically affected with ubiquitous or opportunist pathogens or parasites to be imported into New Zealand from a biosecurity, economic and welfare position.*
*Therefore Biosecurity New Zealand should require import shipments to be certified as "free of clinical signs of pest or disease" at the time of despatch. This inspection and certification should be carried out no more than 24 hours before despatch, by an individual authorised by the competent authority of the despatching country. The signing officer must be satisfied that a representative number of fish have been inspected to enable them to sign off the entire shipment.*
*On arrival at the transitional facility the shipment should be visually inspected by the facility supervisor and the declaration and any associated laboratory reports or health certificates inspected.*
*In addition to the above, high risk species should be subject to further specific requirements (depending on species and climate range) as detailed below and summarised in Table 7.*

Firstly, to avoid any ambiguity, the terms `certificate, health certificate and zoo-sanitary health certificate' need to be clarified unless there are different levels of certification applicable to imported animals.

This is *"Option"* 1:
"In addition to the caveat of direct entry to, and lifelong holding in, containment facilities; if any country is able to demonstrate, to the satisfaction of New Zealand, compartment, zone or country freedom from any of the 19 actual hazards listed via the provision of an acceptable zoosanitary health certificate, that should negate the requirement for any import requirement specific for that hazard."

This is *"Option"* 2
"High risk species should be subject to further specific requirements (depending on species and climate range) as detailed below and summarised in Table 7."

The balance of the clause has been covered in Section 16.

This applies to Section 17.1 **Summarised risk management measures for specified high risk species**

*Table 7. Suggested import requirements by high risk species*

The following fish have been identified as the same species.

| | | |
|---|---|---|
| BELONTIIDAE | *Colisa* | *chuna* |
| | *Trichogaster* | *chuna* |

*Colisa chuna* is the current valid name.

The following is a revised version of Table 7 and represents the high risk species that will have additional requirements pre-clearance if the minimum quarantine period is set at 4 weeks and both levamisole and praziquantel are adopted as acceptable mitigation measures.

| Species | Climate | Hazards remaining | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| *Apistogramma borelli* | subtropical | | X | | | | | | | | | | | | | | | | | |
| *Apistogramma commbrae* | subtropical | | X | | | | | | | | | | | | | | | | | |
| *Apistogramma pleurotaenia* | subtropical | | X | | | | | | | | | | | | | | | | | |
| *Capoeta semifasciolatus* | subtropical | | | | X | | | | | | | | | | | | | | | |
| *Poecilia reticulata* | subtropical | | X | | | | | | | | | | | | | | | | | |
| *Puntius conchonius* | subtropical | | | | X | | | | | | | | | | | | | | | |
| *Puntius denisonii* | subtropical | | | | X | | | | | | | | | | | | | | | |
| *Puntius gelius* | subtropical | | | | X | | | | | | | | | | | | | | | |
| *Puntius ticto* | subtropical | | | | X | | | | | | | | | | | | | | | |
| *Carassius auratus* | temperate | X | X | | | X | X | | | | X | | | | | | | | | |
| *Amphiprion akindynos* | subtropical | | | | | | | | | | | | | X | | | | | | |
| *Chromis viridis* | subtropical | | | | | | | | | | | | | X | | | | | | |
| *Lipophrys nicriceps* | subtropical | | | | | | | | | | | | | X | | | | | | |
| *Thalassoma lunare* | subtropical | | | | | | | | | | | | | X | | | | | | |
| *Thalassoma lutescens* | subtropical | | | | | | | | | | | | | X | | | | | | |

Seven hazards remain and may require additional management measures. They are:

1. 17.2.1 *Aquabirnaviruses*
2. 17.2.2 *Iridoviruses*
3. 17.2.4 *Viral haemorrhagic septicaemia virus*
4. 17.2.5 *Cyprinid herpesvirus-3 (CyHV-3)*
5. 17.2.6 *Spring viraemia of carp virus*
6. 17.2.10 *Aeromonas salmonicida*
7. 17.2.13 *Enteromyxum leei*

The revised table represents an achievable alternative to the daunting list presented in the current format. A minimal amount of species are affected and the list of hazards makes the surveillance task more straightforward.

The risks associated with the eyed eggs, in particular, the eggs of *Carassius auratus,* need to be included in this Import Risk Analysis. Eyed eggs have successfully passed through New Zealand borders in the past. With an appropriate disinfection protocol and a possible source restriction, the higher risks associated with importing *Carassius auratus* as brood-stock may be mitigated to an acceptable level.

This applies to Section 17.2 **Summarised risk management measures by hazard**

Clause 2 of the introduction in Section 16.4 states the following but is more relevant to Table 7 in Section 17.2

*• permitted entry under specific additional measures. For some species the additional measures will be relatively easy to meet, however there will be species where the entry requirements will be complicated and potentially costly. This may make importation of anything other than high value brood-stock economically non-viable and it is possible that large-scale importation of those species will cease purely through financial pressures.*

The additional measures can be summarised as follows:

1. A quarantine period of 4 weeks
2. A quarantine period of 6 weeks
3. Batch or source population testing
4. Treatment with levamisole
5. Treatment with praziquantel

It has been recommended that a quarantine period of three weeks is suitable for low risk species.

1. The practicalities of applying the additional recommended risk measures of a four week minimum quarantine for high risk species and a three week quarantine period for low risk species is problematic. Isolation of high and low risk species, tropical, sub-tropical or temperate species may be virtually impossible. Isolation of people and equipment will equally be difficult to maintain. Documentation and additional visits by the Supervisors will also put an additional strain on resources.

A quarantine period of four weeks would therefore be deemed as being more suitable and acceptable as a mitigation factor for freshwater ornamental species.

2. A quarantine period of 6 weeks has been indicated for named marine species. The Host Factors identified in Section 16.3.1 must firstly differentiate between freshwater and marine species and then the climate ranges of the susceptible species. Once this has been completed, the risk factors in most cases will be found to be negligible.

The extension of the quarantine period is an unreasonable measure given the lack of a transfer vector for the named species. This needs to be revised.

3. Batch or source testing is an effective means of banning the importation of risk species yet still allowing importation of high grade brood-stock for resource affluent companies. However, more information regarding batch or source testing would be beneficial.

An assumption has been made that a negative source test will have a defined period of validity (1 – 2 years) whereas a batch test will be applicable to a specific importation only. Depending on the species, a source test may then be a viable option.

4. The recommendation that levamisole be used as a preventative measure against the release of *Capillaria philippenensis*.
   This is acceptable. However, specific application details will need to be included in the new Import Health Standard.
5. The recommendation that praziquantel be used as a preventative measure against the release of *Bothriocephalus acheilognathi.*
   This is acceptable. However, clear application details will need to be included in the new Import Health Standard.