Staff Assessment Report

APP203029: to determine the new organism status of Neocaridina denticulata and Caridina cantonensis

December 2016

| Purpose | To determine if Neocaridina denticulata and Caridina cantonensis are new organisms under Section 26 of the HSNO Act |
| Application number | APP203029 |
| Application type | Statutory Determination |
| Applicant | Ministry for Primary Industries |
| Date formally received | 24 November 2016 |
Executive Summary and Recommendation

The Ministry for Primary Industries (MPI) has submitted application APP203029 in order to seek a determination on the new organism status of *Neocaridina denticulata* and *Caridina cantonensis*.

After reviewing the all available information, the EPA staff recommends the Hazardous Substances and New Organisms (HSNO) Decision-making Committee determine that *N. denticulata* and *C. cantonensis* are new organisms for the purpose of the HSNO Act.

Should new evidence be found, a new determination could be sought.
# Table of Contents

Executive Summary and Recommendation ................................................................. 2

Table of Contents ........................................................................................................... 3

1. **Introduction** ............................................................................................................ 4

   Purpose of this document ............................................................................................. 4

   The application .............................................................................................................. 4

   Organism description ................................................................................................... 4

   Table 1: Taxonomic description of N. denticulata and C. cantonensis .......................... 4

2. **Summary of information** ....................................................................................... 5

3. **Evaluation against legislative criteria** ................................................................. 6

4. **Comments from government agencies** ............................................................... 6

5. **Overall findings and conclusion** .......................................................................... 6

6. **References** ............................................................................................................ 7

**Appendix 1: Correspondence** .................................................................................. 8

   Correspondence with NIWA ............................................................................................ 8

**Appendix 2: Decision path for section 26 determination** ........................................ 12

   Context ............................................................................................................................ 12

   Introduction .................................................................................................................... 12

   Figure 1 Flowchart: Decision path for applications under Section 26 ...................... 13

   Figure 1 Explanatory Notes .......................................................................................... 14
1. Introduction

Purpose of this document

1.1. This document has been prepared by Environmental Protection Authority (EPA) staff to advise the HSNO Decision-making Committee (the Committee) of our assessment of application APP203029 submitted under the HSNO Act (the Act). This document discusses information provided in the application and various other sources.

The application

1.2. The application from MPI was submitted under section 26 of the Act to determine whether *N. denticulata* and *C. cantonensis* are new organisms for the purpose of the Act. This application was formally received by the EPA on 24 November 2016.

1.3. MPI has provided information regarding the absence or presence of *N. denticulata* and *C. cantonensis* in New Zealand prior to 29 July 1998. We have evaluated this and other evidence against the legislative criteria for determining whether *N. denticulata* and *C. cantonensis* are new organisms.

1.4. MPI considers *N. denticulata* and *C. cantonensis* to be exotic species not present in the New Zealand environment prior to 29 July 1998. MPI first detected the presence of the two shrimp species when they were seized from aquaria in Auckland in 2015. The applicant believes these organisms to be new organisms for the purpose of the HSNO Act.

Organism description

Table 1: Taxonomic description of *N. denticulata* and *C. cantonensis*

<table>
<thead>
<tr>
<th>Taxonomic Unit</th>
<th>Classification of <em>N. denticulata</em></th>
<th>Classification of <em>C. cantonensis</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kingdom</td>
<td>Animalia</td>
<td>Animalia</td>
</tr>
<tr>
<td>Phylum</td>
<td>Arthropoda</td>
<td>Arthropoda</td>
</tr>
<tr>
<td>Class</td>
<td>Malacostraca</td>
<td>Malacostraca</td>
</tr>
<tr>
<td>Order</td>
<td>Decapoda</td>
<td>Decapoda</td>
</tr>
<tr>
<td>Suborder</td>
<td>Caridea</td>
<td>Caridea</td>
</tr>
<tr>
<td>Family</td>
<td>Atyidae</td>
<td>Atyidae</td>
</tr>
<tr>
<td>Genus</td>
<td>Neocaridina</td>
<td>Caridina</td>
</tr>
<tr>
<td>Species</td>
<td>denticulata (De Haan 1844)</td>
<td>Cantonensis (Yu 1938)</td>
</tr>
<tr>
<td>Common names</td>
<td>Japanese swamp shrimp, cherry shrimp</td>
<td>Tiger shrimp, red bee shrimp, crystal red shrimp, crystal black shrimp, bee shrimp</td>
</tr>
</tbody>
</table>
1.5. Shrimp belonging to the suborder Caridea are referred to as caridean shrimp and occur in all aquatic habitats including freshwater and marine environments. Caridean shrimp are found throughout tropical Asia in fresh water systems and are popular in the aquarium trade (Grave et al. 2008).

1.6. *C. cantonensis* has a widespread distribution in its native China. *N. denticulata* is distributed in the Indo-West Pacific, Korea, China, Japan and Taiwan (Oh et al. 2003).

1.7. *C. cantonensis* and *N. denticulata* lack planktonic larval stages, instead hatching as a miniature version of the mature shrimp (Yam and Dudgeon 2005).

1.8. *C. cantonensis* and *N. denticulata* are popular pets in the aquarium trade.

2. Summary of information

2.7. Searches of the following collections were made:
   - Auckland War Memorial Museum’s specimen collection
   - Te Papa’s natural environment collection
   - Otago Museum’s vertebrate collection
   - Canterbury Museum’s invertebrate collection
   - New Zealand Organisms Register.
   No *N. denticulata* or *C. cantonensis* specimens are present in any of these locations.

2.8. The National Institute of Water and Atmosphere (NIWA) is the lead Crown Research Institute in New Zealand in aquatic biodiversity and biosecurity. NIWA representatives reviewed their databases and provided information on the presence of *N. denticulata* and *C. cantonensis* in New Zealand (see Appendix 1). NIWA noted that the only record of the two caridean shrimp species they hold were received as a part of an MPI seizure from aquaria in Auckland in October 2015.

2.9. The only species of freshwater shrimp endemic to New Zealand is *Paratya curvirostris* (Gordon 2010; Yaldwyn and Webber 2011).

2.10. Searches of all scholarly articles relating to the presence and distribution of *N. denticulata* and *C. cantonensis* show no evidence that the two species are or have ever been imported into, or established in, New Zealand.

2.11. There are no recorded observations of *N. denticulata* and *C. cantonensis* in NatureWatch NZ, a community nature observation platform launched online in 2012 that is dedicated to building a living record of life in New Zealand (NatureWatch NZ 2012-2016).

2.12. There is no mechanism under the current Import Health Standards to import *N. denticulata* or *C. cantonensis* into New Zealand. The Import Health Standard for Ornamental Fish and Marine Invertebrates from All Countries issued under s22 of the Biosecurity Act in April 2011 does not list any freshwater invertebrate species that may be given biosecurity clearance.
3. Evaluation against legislative criteria

3.1. For an organism to be determined as “not new” under section 26 of the Act, the organism must be shown to lie outside the parameters of the definition of a new organism as defined in section 2A(1) of the Act:

3.2. A new organism is-
   a) an organism belonging to a species that was not present in New Zealand immediately before 29 July 1998:
   b) an organism belonging to a species, subspecies, infrasubspecies, variety, strain, or cultivar prescribed as a risk species, where that organism was not present in New Zealand at the time of promulgation of the relevant regulation:
   c) an organism for which a containment approval has been given under this Act:
      ca) an organism for which a conditional release has been given:
      cb) a qualifying organism approved for release with controls:
   d) a genetically modified organism:
   e) an organism that belongs to a species, subspecies, infrasubspecies, variety, strain, or cultivar that has been eradicated from New Zealand.

3.3. Section 2A(1)(a) of the Act states that a new organism must belong to “a species that was not present in New Zealand immediately before 29 July 1998”. We have evaluated the information regarding *Neocaridina denticulata* and *C. cantonensis* against this criterion.

3.4. The decision pathway for a section 26 determination is outlined in Appendix 2.

4. Comments from government agencies

4.10. In accordance with section 58(1)(c) of the Act, and clauses 2(2)(e) and 5 of the Methodology, the Department of Conservation (DOC) and the Ministry for Primary Industries (MPI) were notified and provided with the opportunity to provide further information on the application.

4.11. DOC advised on the receipt of this notification that they had no information or evidence that would help to determine whether *N. denticulata* or *C. cantonensis* were present in NZ prior to 29 July 1998.

4.12. MPI is the applicant and all the information they held about these organisms is contained within the application form.

5. Overall findings and conclusion

5.1. Given that the Act requires a species to have been present in New Zealand immediately before 29 July 1998, and we have found no evidence that it was, we recommend that *Neocaridina denticulata* and *Caridina cantonensis* should be regarded as a new organisms for the purposes of the Act.
6. References


Appendix 1: Correspondence

Correspondence with NIWA
Hi Sarah

I am so sorry for not getting back to you – I have been swamped with field work and I totally forgot.

We received these tropical freshwater specimens as part of an MPI seizure from aquaria in Auckland in October 2015. The only records we hold in our database relate to the specimens submitted by Stuart Williamson. They are not currently known from NZ and I believe they had been illegally imported. So, they are considered non-indigenous in New Zealand.

Hope that helps?

Many thanks
Serena

Dr Serena Wilkens
Marine Biologist
Manager – Marine Invasives Taxonomic Service
+64-4-386-0364 | +64-27-405-2224 | 301 Evans Bay Parade, Greta Point, Wellington | www.niwa.co.nz

To ensure compliance with legal requirements and to maintain cyber security standards, NIWA’s IT systems are subject to ongoing monitoring, activity logging and auditing. This monitoring and auditing service may be provided by third parties. Such third parties can access information transmitted to, processed by and stored on NIWA’s IT systems.

Hi Serena,

Can I assume that NIWA doesn’t have any information related to the presence of the two shrimp species, *Neocaridina denticulata* and *Caridina cantonensis*?

Kind regards,
Sarah

Hi Serena,
Thanks for the update. Tomorrow would be great.

Cheers,
Sarah

From: Serena Wilkens [mailto:Serena.Wilkens@niwa.co.nz]
Sent: Wednesday, 12 October 2016 9:54 a.m.
To: Sarah Fish <Sarah.Fish@epa.govt.nz>
Subject: RE: Presence of 2 shrimp species in New Zealand

Hi Sarah

Apologies for not emailing sooner, I've been away training and not had internet access. I don't have that information readily available till I'm back in the office. Can I get back to you once I'm back in the office tomorrow?

Thanks
Serena

Dr Serena Wilkens
Marine Biologist
Manager – Marine Invasives Taxonomic Service
+64-4-386-0364 | +64-27-405-2224 | 301 Evans Bay Parade, Greta Point, Wellington | www.niwa.co.nz

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From: Sarah Fish [mailto:Sarah.Fish@epa.govt.nz]
Sent: Monday, 10 October 2016 3:08 p.m.
To: Serena Wilkens <Serena.Wilkens@niwa.co.nz>
Subject: RE: Presence of 2 shrimp species in New Zealand

Hi Serena,

I am following up on the email below that Kareen sent last week. Do you have any biosecurity information related to the two shrimp species, Neocaridina denticulata and Caridina cantonensis?

Kind regards,
Sarah

Sarah Fish
Advisor, New Organisms
HAZARDOUS SUBSTANCES AND NEW ORGANISMS

Environmental Protection Authority • Level 10 • 215 Lambton Quay • Private Bag 63002 • Wellington 6140 • New Zealand
• Tel +64 4 916 2426 • Fax +64 4 914 0433 • DDI +64 4 474 5581 • www.epa.govt.nz

From: Kareen Schnabel [mailto:Kareen.Schnabel@niwa.co.nz]
Sent: Tuesday, 4 October 2016 9:03 a.m.
To: Serena Wilkens <Serena.Wilkens@niwa.co.nz>
Cc: Sarah Fish <Sarah.Fish@epa.govt.nz>; Sarah Allen <Sarah.Allen@niwa.co.nz>
Subject: FW: Presence of 2 shrimp species in New Zealand
Good morning Serena (and Sarah),

I have had the below request from Sarah Fish from EPA (cc’ed here) for information on two caridean shrimp species (the cherry shrimp *Neocaridina denticulata* and the bee shrimp *Caridina cantonensis*). According to Jeff Forman, our resident shrimp expert, there are over 100 species of *Caridina* spp. so this is a diverse group and they are used in the aquarium trade. They are not listed as native or invasive in Dennis Gordon’s Biodiversity Inventory volume 2 and I can only see the native relative *Paratya curvoirostris* shrimp listed in Steve de Cook’s volume on coastal invertebrates (unpublished). So I am afraid I can’t help. Can I please refer this query to you for any further information you may have regarding any biosecurity information related to these species.

Thanks
Kareen

Dr Kareen Schnabel
Marine Biologist
+64-4-386-0862 | 301 Evans Bay Parade, Greta Point, Wellington | [www.niwa.co.nz](http://www.niwa.co.nz)

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**From:** Sarah Fish [mailto:Sarah.Fish@epa.govt.nz]
**Sent:** Monday, 3 October 2016 4:11 p.m.
**To:** Kareen Schnabel <Kareen.Schnabel@niwa.co.nz>
**Subject:** Presence of 2 shrimp species in New Zealand

Hi Kareen,

We have had a request from MPI to determine whether the cherry shrimp (*Neocaridina denticulata*) and the bee shrimp (*Caridina cantonensis*) are present in New Zealand. Do you have any records of these freshwater shrimp in your collections/database? Could you advise if they could be held in any other collections in New Zealand?

Kind regards,
Sarah

**Sarah Fish**
Advisor, New Organisms
**HAZARDOUS SUBSTANCES AND NEW ORGANISMS**

Environmental Protection Authority • Level 10 • 215 Lambton Quay • Private Bag 63002 • Wellington 6140 • New Zealand
• Tel +64 4 916 2426 • Fax +64 4 914 0433 • DDI +64 4 474 5581 • [www.epa.govt.nz](http://www.epa.govt.nz)
Appendix 2: Decision path for section 26 determination

Context

This decision path describes the decision-making process for applications under Section 26 for determination as to whether an organism is a new organism.

Introduction

The purpose of the decision path is to provide the HSNO decision maker with guidance so that all relevant matters in the HSNO Act and the Methodology have been addressed. It does not attempt to direct the weighting that the HSNO decision maker may decide to make on individual aspects of an application.

In this document ‘section’ refers to sections of the HSNO Act, and ‘clause’ refers to clauses of the Methodology.

The decision path has two parts –

- Flowchart (a logic diagram showing the process prescribed in the HSNO Act and the Methodology to be followed in making a decision), and
- Explanatory notes (discussion of each step of the process).

Of necessity the words in the boxes in the flowchart are brief, and key words are used to summarise the activity required. The explanatory notes provide a comprehensive description of each of the numbered items in the flowchart, and describe the processes that should be followed to achieve the described outcome.

For proper interpretation of the decision path it is important to work through the flowchart in conjunction with the explanatory notes.

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1 The HSNO decision maker refers to either the EPA Board or any committee or persons with delegated authority from the Board.
Figure 1 Flowchart: Decision path for applications under Section 26

For proper interpretation of the decision path it is important to work through the flowchart in conjunction with the explanatory notes.
### Item 1: Review the content of the application and all relevant information

Review the application, Agency advice and any relevant information held by other Agencies, and advice from experts. Determine whether further information is required.

### Item 2: Is this information sufficient to proceed?

Review the information and determine whether or not there is sufficient information available to make a decision.

### Item 3: Seek additional information

If the HSNO decision maker considers that further information is required, then this may be sought either from the applicant (if there is an external applicant) or from other sources.

If the HSNO decision maker considers that the information may not be complete but that no additional information is currently available, then the HSNO decision maker may proceed to make a determination.

If the application is not approved on the basis of lack of information (or if the organism is considered new) and further information becomes available at a later time, then the HSNO decision maker may choose to revisit this determination. In these circumstances the HSNO decision maker may choose to adopt a precautionary approach under section 7 of the Act.

### Item 4: Identify scope of organism description

The identification of the organism must be at an appropriate taxonomic classification. For applications involving potentially genetically modified organisms, the organism should be identified by describing the host organism and the processes to which it has been subjected to (for example injection with a non-replicative, non-integrative plasmid DNA vaccine).

### Item 5: Is it a GMO?

Determine whether the organism is a GMO using the definitions in Section 2 of the Act and in the Hazardous Substances and New Organisms (Organisms Not Genetically Modified) Regulations 1998.

### Item 6: Is the organism known to have been present in NZ immediately before 29 July 1998?

Determine on the basis of the available information whether on balance of probabilities the organism is known to belong to a species that was present in New Zealand immediately prior to 29 July 1998.

For the purposes of making a section 26 determination an organism is assessed to be present in New Zealand if it can be established that the organism was permanently existing in New Zealand and was not present solely by way of being contained in a recognised safekeeping facility, immediately prior to 29 July 1998. The key phrases ‘permanently existing,’ ‘recognised

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2 Alternatively the application may lapse for want of information.
safekeeping facility’ and ‘immediately’ are defined in the Protocol Interpretations and Explanations of Key Concepts

<table>
<thead>
<tr>
<th>Item 7:</th>
<th>Is it prescribed as a risk species?</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Determine whether the organism has been prescribed as a risk species by regulation established under section 140(1)(h) of the Act.</td>
</tr>
<tr>
<td></td>
<td>Note: at this point it may become apparent that the organism is an unwanted organism under the Biosecurity Act. If this is the case, then MPI and DOC may be advised (they may already have been consulted under items 1, 2 and 3).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 8:</th>
<th>Was it present when prescribed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If the organism is prescribed as a risk species, determine whether it was present when it was prescribed. The organism is a new organism if it was not present in New Zealand at the time of the promulgation of the relevant regulation (Section 2A (1)(b) of the Act).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item 9:</th>
<th>Is it known to have been previously eradicated?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Determine whether the organism is known to have been previously eradicated.</td>
</tr>
<tr>
<td></td>
<td>Eradication does not include extinction by natural means but is considered to be the result of a deliberate act (see the interpretation in the Protocol Interpretations and Explanations of Key Concepts').</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Item 10:</th>
<th>Has a HSNO release without conditions approval been given under section 38 or 38I of the Act?</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>If a HSNO release approval has been given under section 35 of the Act, then the organism remains a new organism.</td>
</tr>
<tr>
<td></td>
<td>If a release approval has been given under section 38 of the Act then the organism is not a new organism.</td>
</tr>
<tr>
<td></td>
<td>If a release approval has been given under section 38I of the Act, then if the approval has been given with controls then the organism remains a new organism, however, if this approval has been given without controls then it is not a new organism.</td>
</tr>
</tbody>
</table>