

STANDARD FOR MANAGING EXOTIC HITCHHIKER COPEPODS WHEN MOVING, TRANSFERRING OR RELEASING GRASS CARP AND SILVER CARP

Purpose

This Standard specifies the minimum requirements that must be met when moving, transferring or releasing grass carp (*Ctenopharyngodon idella*) and silver carp (*Hypophthalmichthys molitrix*).

Who must follow this standard?

This Standard applies to anyone wishing to move, transfer or release grass carp and silver carp¹, including:

- the transfer or release of grass carp or silver carp to or in sites where these fish species do not already exist (including the transfer of a new species to, or the release of a new species in, an existing or a new fish farm).²
- the transfer of grass carp or silver carp to any land or water managed or administered under the Conservation Act 1987 or certain other Acts.³
- the movement of grass carp or silver carp to sites where this fish species already exists.⁴
- the movement of grass carp or silver carp between the islands of New Zealand.⁵

This Standard applies to all release locations or sites, even if exotic hitchhiker species are already present.

All fish must be transferred from a licensed fish farm⁶ unless otherwise approved by DOC or MPI.

This Standard has been developed following completion of the research project: *Managing 'hitchhiker' zooplankton species*⁷, and feedback from licenced grass carp farmers.

Why is this standard important?

The movement of aquatic life between locations that would not occur under natural conditions is one of the most important risk factors in the spread of aquatic pests and diseases. A preventive approach to biosecurity for aquatic life transfers can reduce the risks to receiving waters, the wider environment and farmers' reputations.

At least nine non-indigenous zooplankton species are already known to have established in lake ecosystems throughout New Zealand, some with reported detrimental effects on native taxa. How these species arrived in New Zealand is unclear. However, the subsequent spread of some of these zooplankton have been linked to the translocation of farmed freshwater fish, principally grass carp.⁸

Zooplankton may be present in water used to transport farmed fish, on the fish themselves, or adhered to associated equipment (for example, tanks, nets, vessels, operator clothing). Decontaminating fish, water, and equipment is a vital component of effective post-border management of any risks from freshwater organisms and unwanted organisms.

¹ Fish must be 25 cm or more in length unless specified by either DOC or MPI.

² Approval is required from Minister of Conservation under section 26ZM(3)(a) of the Conservation Act 1987.

³ Approval is required from Minister of Conservation under section 26ZM(3)(b) of the Conservation Act 1987.

⁴ Approval is required from Minister of Fisheries under section 26ZM(2)(a) of the Conservation Act 1987.

⁵ Approval is required from Minister of Fisheries under section 26ZM(2)(b) of the Conservation Act 1987.

⁶ Licensed under the Freshwater Fish farming Regulations 1983.

⁷ Tremblay LA, Cahill P, Champeau O, Duggan (2017). *Managing 'hitchhiker' zooplankton species*. Prepared for the Ministry for Primary Industries. Cawthron Report No. 2848.

⁸ Branford S N, Duggan I C (2017). *Grass carp (Ctenopharyngodon idella) translocations, including hitchhiker introductions, alter zooplankton communities in receiving ponds*. Marine and Freshwater Research.

What will this standard achieve?

The objective of this Standard is to reduce the risk of spreading exotic hitchhiker copepods when transferring grass carp and silver carp from fish farms. This includes risk associated with the fish, equipment, and transportation water.

The Standard provides two options to be met before fish can be released to an approved location. The Standards development balanced farm design, cost effectiveness, practicality and stock health and welfare without compromising the ability to reduce risk of spreading exotic hitchhiker copepod species. Due to the varied approaches to on-farm biosecurity the Standard may become part of wider fish farm biosecurity management requirements.

Other freshwater fish transfers (such as trout stocking and wild-fish recovery operations) and recreational activities (including fishing and boating) could conceivably contribute to the spread of risk organisms within New Zealand. Further ongoing work to develop and implement universal standards for transferring other freshwater fish species will be explored.

Although this Standard aims to reduce and manage the risk of spreading exotic hitchhiker copepods when transferring grass carp and silver carp, MPI recommends that all fish farmers and fish transfer operators implement good biosecurity practices on their farms and during fish transfers to reduce the risk of spreading other risk organisms. Implementation of good biosecurity practices has been shown as successful in preventing or managing pathogen and pest introduction and establishment on farms and in reducing the risk of spreading pathogens and pests when moving aquatic life. Implementing good biosecurity practices will protect your business, your reputation, other fish farmers and the environment.

For more information on biosecurity management please visit the following MPI webpage, in particular the “Biosecurity guidance for fish farmers” section:

<http://www.mpi.govt.nz/protection-and-response/readiness/aquaculture-biosecurity-readiness/>

Definitions

Term	Definition
Approved water source	<ol style="list-style-type: none"> 1. town supply water (dechlorinated, if necessary); or 2. rain water collected from roofs or similar structures; or 3. potable water that has been filtered down to 50 microns or less; or 4. a source approved by MPI before use.
Approved cleaning and disinfection treatment	<ol style="list-style-type: none"> 1. immersion in a water bath heated to at least 50°C for a minimum of 5 minutes; or 2. immersion in water containing at least 35g of sodium chloride per litre for a minimum of 5 minutes; or 3. immersion in chlorinated water (Bleach solution), where the chlorine level is maintained at a level greater than 10 ppm, for a minimum of 5 minutes and air dried or rinsed in water from an approved water source.
Fish	Grass carp (<i>Ctenopharyngodon idella</i>) Silver carp (<i>Hypophthalmichthys molitrix</i>)
Fish farm or licenced fish farm	Any fish farm licenced under the Freshwater Fish Farming Regulations 1983.
Release location	Any location or site to which or in which approval has been given under Section 26ZM of the Conservation Act 1987 for grass carp or silver carp to be moved, transferred or released. Any fish farm licenced by MPI under the Freshwater Fish Farming Regulations 1983.

The Standard – requirements to be met

Option 1 – Farms using a Recirculating Aquaculture System and filtration

Preparing fish and the transporter

All fish for release from a fish farm must be held in a Recirculating Aquaculture System (RAS) for a minimum of 24 hours prior to release.

The RAS must be able to hold all the fish destined to be released and filter water to 50 microns or less throughout the period that the fish are held.

The RAS may be situated within the source licenced fish farm or as part of the transporter.

Regardless of where the RAS is situated, the following sequential requirements must be met:

1. The external areas or the transporter tank/s must be cleaned using chlorinated water from an approved water source.
2. The interior parts of the transporter tank/s must undergo an approved cleaning and disinfection treatment.
3. Only water from an approved water source may be used to transport the fish to the release location. The water must not be untreated water from ponds or a source potentially contaminated with zooplankton.
4. All equipment, including nets, boots and containers, used to move fish to the transporter tank/s must undergo one of the following treatments before being used:
 - a. all non-fibrous smooth surfaced equipment must be thoroughly cleaned using town supply freshwater;
 - b. any non-fibrous smooth surfaced equipment that can retain water, such as under seals and hollows within handles etc. must be dismantled so that all surfaces can be thoroughly cleaned using town supply freshwater;
 - c. all other equipment must undergo an approved cleaning and disinfection treatment.
5. The fish must be netted out and their health visually inspected before being placed into the transporter tank/s.

As this will be the last opportunity to evaluate the health status of the fish and their suitability for release in another location before transferring off the farm site, extra care should be taken.

At the designated release site

6. All equipment, including nets, boots and containers, to be used during the release of fish into the designated release location must undergo an approved cleaning and disinfection treatment;
7. All equipment must be kept clean and free from contamination after cleaning and before use at the release location.
8. A sample of fish in the transporter must be removed, placed in a tank/container capable of holding the sample and filled with water from an approved water source.
9. The sample must be taken from the bottom of the transporter container where dead or moribund fish are more likely to be present, if none are observed floating on the surface.

10. The condition and health of the sample fish must be examined. If the sample proves the fish are in satisfactory condition for release (for example, no undue damage due to transportation), the remaining fish may be netted from the transporter tank/s and released into the approved location.
11. Where fish need to be acclimatised before release, a portion of the transporter water can be removed in accordance with condition 15 below and the transporter tank/s topped up with water from an approved water source.
12. No fish are to be returned to the source fish farm.

Multiple deliveries from a single shipment

13. Fish may be delivered to multiple sites from a single shipment (for practical and cost efficiencies). Where this occurs, all equipment must be cleaned as per conditions 6 and 7 above after each release and before use at the next approved released location.
14. Conditions 8 to 12 are to be followed at each release location.

After fish are released to approved destination

15. Water in the transporter and the holding tank/s must be disposed of in a biosecure manner or through an approved wastewater system and where the water is not able to enter natural or any artificial waterbodies. Any water disposal must not contravene the Resource Management Act 1991 (RMA) or any resource consent issued by the local unitary authority (regional council).
16. All equipment used in the transport and release of fish must undergo an approved cleaning and disinfection treatment before being used again. This will mitigate the likelihood of copepods from a release location being transferred to the source fish farm or any other location.

Option 2 – Farms not using a Recirculating Aquaculture System (RAS) and filtration

Preparing fish

1. All fish for transport to a release location must be immersed in a container holding water from an approved water source to dilute the water being transferred with the fish. The dilution container must undergo an approved cleaning and disinfection treatment before use.
2. Fish must be immersed into a separate salt bath containing a treatment of fully dissolved sodium chloride (salt) at a strength of 26 g/L for at least 5 minutes. Fish left in the salt bath too long may have an adverse effect on them. No salt should be left undissolved in the container.
3. All equipment used to remove fish from the salt bath must undergo one of the following treatments before being used:
 - a. all non-fibrous smooth surfaced equipment must be thoroughly cleaned using town supply freshwater;
 - b. any non-fibrous smooth surfaced equipment that can retain water, such as under seals and hollows within handles, must be dismantled in such a way that all surfaces can be thoroughly cleaned using town supply freshwater;
 - c. all other equipment must be cleaned to the approved cleaning and disinfection treatments.
4. Fish must be placed in a holding tank/s for observation and preparation before transport.
5. Before use, the holding tank/s must be cleaned as follows:
 - a. The external areas of the holding tank/s must be cleaned using chlorinated water from an approved water source.
 - b. The interior parts of the holding tank must undergo an approved cleaning and disinfection treatment.
6. The holding tank must only contain water from an approved water source. The water must not be untreated water from ponds or a source potentially contaminated with zooplankton.
7. Fish must remain in the holding tank/s for at least two days for purging and observation prior to being transported off the farm. To avoid starving the fish, purging should only continue for more than two days if it is necessary to clear the gut. The water in which fish are purged must not contain plant or animal material (apart from the fish intended for release) and must be clear enough to easily view the fish, especially immediately prior to loading for transporting off the farm.

Placing fish in transporter

The transporter tank/s intended to carry fish to the release location must be cleaned to the following requirements before being used:

8. The external areas of the transporter tank/s must be cleaned using chlorinated water from an approved water source.
9. The interior parts of the transporter tank/s must undergo an approved cleaning and disinfection treatments.
10. Only water from an approved water source may be used to transport the fish to the release location. The water must not be untreated water from ponds or a source potentially contaminated with zooplankton.
11. All equipment, including nets, boots and containers, used to move fish to the transporter tank/s must undergo one of the following treatments before being used:

- a. all non-fibrous smooth surfaced equipment must be thoroughly cleaned using town supply freshwater;
 - b. any non-fibrous smooth surfaced equipment that can retain water, such as under seals and hollows within handles, must be dismantled in such a way that all surfaces can be thoroughly cleaned using town supply freshwater;
 - c. all other equipment must undergo an approved cleaning and disinfection treatment.
12. The fish must be netted out of the holding tank/s and their health visually inspected before being placed into the transporter tank/s.
- As this will be the last opportunity to evaluate the health status of the fish and their suitability for release in another location before transferring off the farm site, extra care should be taken.

At the designated release location

13. All equipment including nets, boots and containers, to be used during the release of fish into the designated release location must undergo an approved cleaning and disinfection treatment;
14. A holding tank for the fish must be set up at the release location. The holding tank must undergo an approved cleaning and disinfection treatment before use. The water in the holding tank/s must be clear enough so the fish can be easily examined in the water. Only water from an approved water source is to be used.
15. The fish must be netted from the transporter and placed into the holding tank. This step is required as a precautionary step to dilute any water that may be transferred with the fish that may contain residual copepods. While in the holding tank, the condition and health of the fish must be visually assessed. If in satisfactory condition for release (for example, no undue damage due to transportation), the fish may be netted from the holding tank/s and released into the approved location.

After fish are released to the approved location

16. Water in the transporter and the holding tank/s must be disposed of in a biosecure manner or through an approved wastewater system and where the water is not able to enter natural or any artificial waterbodies. Any water disposal must not contravene the Resource Management Act 1991 (RMA) or any resource consent issued by the local unitary authority (regional council).
17. All equipment used in the transport and release of fish must undergo an approved cleaning and disinfection treatment before being used again. This will mitigate the likelihood of copepods from a release location being transferred to the source fish farm or any other location.

Conditions applicable to both Option 1 and Option 2

Any fish with lesions or any signs of disease or stress must **NOT** be transferred and released, but be disposed of in a humane and biosecure manner.

If fish appear abnormal, or if there are significant mortalities or abnormally high numbers of moribund fish, the party responsible for the movement of fish must notify MPI on the biosecurity hotline (0800 80 99 66) as soon as practical. In that instance, no fish, transport water, or holding water may be released. Samples should be kept refrigerated for MPI investigation or as advised by MPI.

All mortalities throughout the transfer process are to be reported via the source fish farm's monthly reporting requirements in their fish farm licence and authorisation to remove fish from a fish farm. Any mortalities that are found after leaving the fish farm and before release must be reported to the agency who granted the approval to release the fish (either DOC or MPI).

Notes:

DOC or MPI may require officials to be present to audit any part, or all of the Standard and fish transfer process. Failure to comply with the Standard may result in DOC or MPI halting all transfers from the source fish farm until such time as non-compliance is rectified. And DOC or MPI have assurance that future fish transfers and releases will comply with the Standard.

The handling, holding, breeding, euthanasia and transport of fish must be in accordance with the obligations set out in the Animal Welfare Act 1999 and relevant provisions of codes of welfare under that Act, including the code of welfare for transport. The fish must have access to sufficient food at the release location and must not be overcrowded to the point that their welfare is compromised.⁹

DOC or MPI may, at any time, undertake, or require a fish farmer or fish transfer operators to undertake sampling for exotic zooplankton on the fish farm or during any part of the fish transfer.



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⁹ For more information about animal welfare requirements, refer to the codes of welfare <http://www.mpi.govt.nz/protection-and-response/animal-welfare/codes-of-welfare/> or contact animalwelfare@mpi.govt.nz.