

Health protocol for the movement of live eels

Aquaculture Protocol FAMPR005

Version 1

June 2011

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Date 08/08/2011

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Introduction

In Queensland there are two major species of freshwater eels being cultured:

- Long-finned eel *Anguilla reinhardtii*
- Short-finned eel *Anguilla australis*

In Queensland, short-finned eels occur mainly in the coastal rivers of the south east while the long-finned eels occur in rivers along the entire coast.

For translocation purposes, eels are different from other freshwater species due to the wild collection of glass eels as the source of the stock for aquaculture. The broodstock cannot be tested because spawning takes place hundreds of miles offshore in the Coral Sea. The glass eels then migrate large distances back into Australian rivers on the East Coast. The disease status of other aquatic animals in the area/river where the glass eels are collected may not be a reflection of the eel's disease status. There is currently no reliable information on the disease status of wild eels in Australian or Queensland waters.

In Queensland, eels are classified as juveniles up until the time they are 30cm in length, including the stage where they arrive in the river systems termed "glass eel". Eels of length greater than 30cm are termed adult eels.

The movement of all aquatic animals is subject to the Management Arrangements for Translocation of Live Aquatic Organisms (transport between bioregions) for Aquaculture, Aquaculture Policy FAMOP015 and appropriate protocols for each species. There is a list of exotic diseases of concern for the industry and these are listed below. Endemic diseases of concern for eels, which are not listed on the Declared Disease List, are listed in the Appendix.

Diseases of concern for eels

Declared Diseases

The diseases of concern on Queensland's Declared Disease List for eels are:

- Enteric redmouth disease (*Yersinia ruckeri* Hagerman strain)
- Enteric septicaemia of catfish (*Edwardsiella ictaluri*)
- Furunculosis (*Aeromonas salmonicida* subsp. *salmonicida*)
- Epizootic haematopoietic necrosis virus (EHN)
- Infectious pancreatic necrosis virus (IPN)
- Viral haemorrhagic septicaemia virus (VHS)
- Gyrodactylosis (*Gyrodactylus salaris*)

For movement of eels into Queensland it is necessary that they are certified free of the diseases in the list above.

Other diseases and disease agents of potential concern are listed in the Appendix. Should health testing identify any of the other diseases of concern, this may result in action being taken that may include, but not be limited to:

- banning the import
- approving the import conditional on effective treatment prior to the movement.

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Conditions for the movement of eels

These are the relevant authority conditions for the movement of live eels. For movement of live aquatic animals out of Queensland the producer should seek advice from the veterinary/fisheries authority in the destination jurisdiction.

Health certification

The species approved under this authority must not be brought into Queensland for rearing without a health certificate or Pathology Report, issued by the exporting state or territory's fisheries or veterinary authority certifying the animal's health, which must include a statement that the specimens originate from:

- a. a hatchery, farm, aquaculture premises or region which is recognised as free from infection by the diseases on the Queensland Declared Disease List based on the requirements listed in the OIE Manual of Diagnostic Tests for Aquatic Animals, current edition (Fourth Edition 2003 or later) for recognition as free from infection; or
- b. a hatchery, farm, aquaculture premises or region in which an appropriate, targeted surveillance scheme over two years has been undertaken under the supervision of state or territory fisheries or fisheries-approved veterinary authorities, and where the requirements for recognition as free from infection by diseases of concern for that species on the OIE Manual of Diagnostic Tests for Aquatic Animals¹, current edition (Fourth Edition 2003 or later) have been met; or
- c. a single batch of juvenile (<30cm) or adult eels (>30cm), isolated from open waters, which has been tested using a suitable technique to provide evidence that the batch is free from infection by diseases of concern on the Queensland Declared Disease List for eels.

A suitable technique would involve the histological examination, by a recognised laboratory (a laboratory which has a formal quality management system accreditation for aquatic animal pathology i.e. NATA), of 150 fish per batch. It is a requirement that the pathology report/health certificate is dated no more than 14 days before shipment date.

Notification of intention to translocate

The species approved under this authority must not be brought into Queensland for rearing unless an "Application to allow the Translocation of Live Aquatic Animals into and within Queensland" form (FDU1398) and health certificate or pathology report has been completed and the Aquaculture Manager, Department of Agriculture, Fisheries and Forestry (DAFF), has provided written acknowledgement and approval of the "Details of translocation form" and the pathology report.

The "Application to allow the Translocation of Live Aquatic Animals into and within Queensland form" and a signed copy of the health certificate or pathology report (as detailed above) must be given to the Aquaculture Manager, DAFF, a minimum of three (3) working days prior to all shipments into Queensland. It is a requirement that the pathology report/health certificate is dated no more than 14 days before shipment date.

Post arrival mortality

After arrival, any unusual clinical signs or mortalities in the stock must be reported immediately to the district officer of the nearest Queensland and Boating Fisheries Patrol office. If directed by a DAFF officer, the specimens must be forwarded to a veterinary laboratory as directed by the officer.

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Special conditions for the movement of adult eels

This section may apply to the movement of eels of >30cm where it would not be practical (due to the size of the animals and the time needed for laboratory examinations) to require histological or other laboratory examinations. In this situation an 'appropriate procedure' could be adopted. This situation will be assessed individually case by case in consultation with veterinary officers in both jurisdictions.

Before any eels are shipped into Queensland, an **appropriate procedure** would require a Declaration of Health Status (or equivalent) issued by the exporting state/territory government accredited fish veterinarian.

- a. The Declaration will need to state that there has been no incidence of any diseases listed on the DAFF Declared Disease List in the exporting state/territory. The Declared Diseases of concern are listed in the diseases of concern section.
- b. The Declaration must also state any disease in the Appendix that has been diagnosed or has occurred at the facility in the previous two years. The occurrence of a disease listed in the Appendix may require appropriate risk mitigation steps to limit the introduction of the disease to Queensland before approval of the "Details of translocation form" is issued.
- c. The Declaration of Health Status must also include written advice from a qualified veterinary officer (or delegate) that states that a visual inspection of the eels at the facility was made within a fortnight prior to the shipment of eels to Queensland and that the eels in the facility appear healthy and free of clinical signs of disease or lesions.
- d. The eels must not be brought into Queensland unless an "Application to allow the Translocation of Live Aquatic Animals into and within Queensland" form (FDU1398) is completed, the Aquaculture Manager, DAFF, has provided written acknowledgement and approval of the "Details of translocation form" and the Veterinary Declaration.
- e. After arrival, any unusual clinical signs or mortalities in the stock must be reported immediately to the district officer of the nearest Queensland Boating and Fisheries Patrol office. If directed by a DAFF officer, the specimens must be forwarded to a veterinary laboratory as directed by the officer.

Relevant legislation

Refer to the Queensland legislation website for the most current version www.legislation.qld.gov.au

Condition of approval

Fisheries Act 1994

Section 79A 'Contravening a condition of an authority'

Disease

Fisheries Act 1994

Part 5, Section 100 'Notice to be given about diseased fisheries resources or habitat'

Part 5, Section 104 'Offence to communicate disease to live fisheries resources or fish habitat'

Part 5, Section 105 'Offence to sell diseased fisheries resources and products'

Part 5, Section 106 'Offence to leave diseased fisheries resources and products in a place'

Part 5, Section 107 'Offence to bring diseased fisheries resources and products into Queensland'

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Contacts

Submitting samples

Contact the Duty Pathologist before sending samples.

Submit **routine aquatic animal samples** for testing to:

Biosecurity Sciences Laboratory
Health and Food Sciences Precinct
Specimen receipt (Loading Dock 12)
39 Kessels Road, Coopers Plains Qld 4108
Phone: 07 3276 6062 (Aquatic Pathologist – submission enquiries)
Fax: 07 3216 6620

In **northern Queensland**, for complex cases or where input is required to prepare samples, contact the Aquatic Veterinary Officer in Townsville **before** sending samples:

Tropical and Aquatic Animal Health Laboratory
Department of Agriculture, Fisheries and Forestry
18 Darter Street, Oonoonba Qld 4810
Phone: 07 4760 1592 or 07 4760 1510 (Aquatic Veterinary Officer – submission enquiries)
Fax: 07 4778 4307

If you need further assistance, please contact the Customer Service Centre on 13 25 23.

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References

General

Office International Des Epizooties (OIE), Paris.

- Aquatic Animal Health Code (2007)

http://www.oie.int/eng/normes/fcode/en_sommaire.htm

Copland JW (1981) Intensive Eel Culture - The Problem of Diseases. Australian aquaculture. Wagga Wagga: 18-21

Mellegaard S and Dalsgaard I (1989) Handbook of eel diseases

Gosper D (1995) Some diseases and parasites that may affect the culture of eels. Austasia Aquaculture 9:40-41

Virus

Joergensen PEV, Castric J, Hill B, Ljungberg O and De Kinkelin P (1994) The occurrence of virus infections in elvers and eels (*Anguilla anguilla*) in Europe with particular reference to VHSV and IHNV. Aquaculture 123:11-19

van Ginneken V, Haenen O, Coldenhoff K, Willemze R, Antonissen E, van Tulden P, Dijkstra S, Wagenaar F and van den Thillart G (2004) Presence of eel viruses in eel species from various geographic regions. Bulletin of the European Association of Fish Pathologists 24: 268-272

Bacterial

Edwardsiella

Chung H-Y and Kou G-H (1987) *Edwardsiella ictaluri* isolated from cultured eel in Taiwan. The memoir of bacteriology and immunology in fish disease. 1.1987 COA fisheries series. Taipei no. 10

Eaves LE, Ketterer PJ, Anderson IG and Beumer JP (1990) The isolation and identification of *Edwardsiella tarda* from a diseased native Australian eel (*Anguilla reinhardtii*). Australian Veterinary Journal 67:336-337

Vibrio

Marco-Noales E, Milan M, Fouz B, Sanjuan E and Amaro C (2001) Transmission to Eels, Portals of Entry, and Putative Reservoirs of *Vibrio vulnificus* Serovar E (Biotype 2). Applied and Environmental Microbiology 67:4717-4725

Atypical Aeromonas

Ohtsuka H, Nakai T, Muroga K and Jo Y (1984) Atypical *Aeromonas salmonicida* isolated from diseased eels. Fish Pathology 19:101-107

Parasites

Trichodinia

Madsen HCK, Buchmann K and Mellergaard S (2000a) Trichodina sp. (Ciliophora: Peritrichida) in eel *Anguilla anguilla* in recirculation systems in Denmark: host-parasite relations. Diseases of Aquatic Organisms 42:149-152

Madsen HCK, Buchmann K and Mellergaard S (2000b) Association between trichodiniasis in eel (*Anguilla anguilla*) and water quality in recirculation systems. Aquaculture 187:3-4

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Appendix

Other diseases

Other diseases and disease agents of potential concern for eels are:

Parasitic

- *Myxosporidia*
- *Eimeria sp.*
- *Pseudodactylogyus*
- *Trichodina*
- *Myxidium dermatitis*
- *Myxobolus*
- White spot disease (*Ichthyophthirius multifiliis*)

Viral

- Iridoviroses
- Lymphocystis
- Aquabirnavirus
- Eel rhabdovirus (EVEX/EVA)

Bacterial

- *Erysipelothrix sp.*
- *Vibrio vulnificus*
- *Vibrio anguillarum*
- *Edwardsiella tarda*
- *Atypical Aeromonas salmonicida*
- *Pseudomonas anguilliseptica*

Fungal

- Saprolegnia
- Epizootic ulcerative syndrome (*Aphanomyces invaderans*)

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