



# Draft Fisheries Management Papers

Victorian Protocol for the  
Translocation of Eels

**Fisheries Victoria  
Management Report Series**

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# Draft Victorian Protocol for the Translocation of Eels

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## Introduction

The translocation of an aquatic organism at its broadest definition encompasses any human assisted movement of that organism. The translocation of aquatic organisms is recognised as a potentially threatening process to the environment, particularly where such translocations occur outside the natural range of the species being translocated. Risks include, but are not limited to, the establishment of feral populations, the introduction of disease-causing agents and the introduction of aquatic pests. As aquaculture and fisheries enhancement present opportunities to utilise a range of species within and outside their natural range, in a variety of farming systems, it is important to identify and manage the risks associated with this activity. It is also suggested that the aquaculture and fishing industry sectors take a pro-active role in managing this issue to ensure community confidence is maintained.

Fisheries Division, NRE, has a lead role in developing guidelines for the translocation of aquatic organisms in Victoria. Parks, Flora and Fauna Division also has a key role through the draft Action Statement (FFG Act 1988) No. 204 "Introduction of live fish into waters outside their natural range within a Victorian catchment after 1770". This Action Statement is currently being developed by Parks, Flora and Fauna and has implications for the development of translocation guidelines for aquatic organisms within Victoria.

The *Fisheries Act 1995* establishes a number of objectives aimed at achieving ecologically sustainable development with reference to the maintenance of aquatic processes and genetic diversity. The Victorian Aquaculture Strategy (1998) highlighted the need to '*establish a risk management approach to conserve biodiversity*' and further established a goal '*to ensure ecologically sustainable development*'. As a result, any translocation needs to be controlled and must follow a set of prescriptive guidelines which will assist in preventing and/or reducing negative impacts from such activities. Fisheries Division, NRE, has adopted a "risk management" approach to the translocation of aquatic organisms.

The purpose of these guidelines is to provide for the translocation live eels into and within Victoria for the purposes of stock enhancement and aquaculture, and are based on an assessment of the risks associated with such translocations.

## Draft Victorian Guidelines for Assessing the Translocation of Live Aquatic Organisms

Consistent with the National Policy for the Translocation of Live Aquatic Organisms (1999), DNRE has adopted a "risk management" approach to the translocation of aquatic organisms. The National Translocation Policy provides an agreed framework for managing translocations in aquaculture and fisheries. The Policy however, does not address state legislation processes or policy requirements. In addition, the National Translocation Policy does not recognise existing state-based risk management policies and protocols. The National Translocation Policy was commissioned by Standing Committee on Fisheries and Aquaculture, and endorsed by all States through the Ministerial Council, which are under obligation to implement the Policy in accordance with relevant state legislation. In addition, the requirement for guidelines for the translocation of aquatic organisms in Victoria is stated in the recommendations recently made by the Office of Regulatory Reform Task Force review of regulatory arrangements in the Victorian Aquaculture Industry (1999).

DNRE's Draft Victorian Guidelines for Assessing Translocation of Live Aquatic Organisms provides the broad foundation for the translocation of all aquatic organisms in Victoria, including those associated with aquaculture.

In this context, translocation is defined as:

*"The movement of live aquatic material (including all life stages of the organism's life cycle and any derived, viable genetic material):*

*-beyond its accepted distribution*

*-to areas which contain genetically distinct populations*

*-to areas with superior parasite or disease status*

*but specifically excludes organisms from the Classes Mammalia, Aves, Amphibia and Reptilia.*

The Draft Victorian Policy for the Translocation of Live Aquatic Organisms provides a policy framework and risk assessment process against which translocation proposals within Victoria will be assessed. The objective of the draft policy is to provide a framework to assess the potential risks associated with all proposals for translocation of live aquatic organisms. It does not deal with translocations that may arise incidentally to other processes, such as the discharge of ballast water, or accidental or malicious translocations. These are dealt with by other legislative, compliance, eradication/control and education programs.

According to the Draft Victorian Policy, where a protocol for a specific type of translocation (eg eel translocation) is developed and approved as meeting the requirements of the Draft Policy, applications developed to comply with the protocol can be assessed directly against the protocol, rather than the Draft Policy which suggests the following process:

1. NRE receives inquiry from proponent regarding proposed translocation.
2. NRE determines if the proposal can fit within existing approved protocol and provides proponent with details of the protocol and approval process.
3. Proponent submits, to Evaluation Panel, a formal application developed using the relevant protocol and providing relevant background information.
4. Evaluation panel considers assessment against protocol and advises NRE of its decision.
5. NRE considers evaluation report and advise proponent of decision.

## **Background and need for Victorian eel translocation protocols**

Eels, in particular the shortfinned eel, *Anguilla australis*, have been translocated within their natural range into and throughout Victoria, for at least the last four decades. The purpose of such translocations is for enhancement of eel fisheries, mainly in the western part of the state. Although within the natural distribution of the species, the waters supporting stock-enhanced eel fisheries receive low natural recruitment of eels due to various factors, including distance from spawning ground and the often discontinuous nature of waterways in many parts of the state. Such translocations have been for the commercial, and to a lesser extent recreational, benefit of the eel fishery, with up to 40% of the commercial eel catch in Victoria comprising stock enhanced, translocated eels. At present the translocation of eels into Crown waters for stock enhancement purposes is undertaken through the provisions of an Aquaculture (Crown land) Licence. The majority of translocated eels originate from Tasmania, with hundreds of kilograms of elvers collected from the Trevallyn tailrace, Tamar River, and Meadowbank Dam on the Derwent River upstream from Hobart. Elvers are collected by the Inland Fisheries Service and sold to licensed fishers and aquaculturists through an expression of interest process. Small eels caught in Victoria by licensed eel fishers may also be sold as "restock" eels to eel Aquaculture Licence holders, and permits have been occasionally issued on request for the collection and translocation of (previously undersized) elvers within Victoria.

To date, no protocols for the translocation of eels into or within Victoria have been enforced, and generally, no quarantine procedures are undertaken for elvers imported into Victoria as a matter of course. Elvers collected by the Tasmanian Inland Fisheries Service are generally held in flowthrough freshwater tanks prior to dispatch, but are not routinely screened or treated for disease, parasites or contaminants etc. Elvers are generally imported into Victoria in a small amount of untreated water obtained from the holding facility, inside plastic bags within cardboard or polystyrene boxes. Restock eels and elvers harvested in Victoria are transported either in wet, but not necessarily immersed, mesh bags, or in tanks containing water generally from the original source of the eels.

The Victorian Eel Fishery Management Plan has identified guidelines for the translocation of eels in Victoria as a high priority target for the Plan's implementation. The Plan recognises the need for translocation of eels in Victoria as a key component of the eel fishery, and indeed promotes stock enhancement and intensive aquaculture of eels using wild caught seedstock, in particular glass eels, as the major means to the industry's future expansion and development. Such growth in the industry will necessitate the translocation of glass eels, elvers and restock eels on a potentially large scale across Victoria, between rivers, enclosed nursery and ongrowing facilities and stock enhanced waters. Comprehensive protocols will need to be observed and enforced in order to manage any risk associated with large scale temporal and spatial translocations such as these.

## Risks associated with eel translocation in Victoria

In general, the risks associated with the translocation of aquatic organisms are:

1. Genetic shift in wild populations
2. Establishment of feral populations
3. Environmental impacts from release of translocated species
4. Translocation of associated species
5. Disease and parasite introduction
6. Chemical release
7. Socio-economic impacts from release of translocated species

The broad effects of these risks are detailed in the respective Draft National and Draft Victorian guidelines for the translocation of aquatic organisms. The results of a risk assessment, assessing these risk categories for the Victorian eel fishery specifically, are summarised in Table 1. The risk assessment was conducted according to the DNRE Risk Management Strategic Framework and Process, which is based on the Australian/New Zealand Standard for Risk Management (AS/NZS 4360:1995), and is outlined below.

### Likelihood Rating

Likelihood Rating	Description	Likelihood of Occurrence
1	Rare	Event may occur only in exceptional circumstances
2	Unlikely	The event may occur at some time, say once in 10 years
3	Moderate	The event should occur at some time, say once in 3 years
4	Likely	The event will probably occur in most circumstances, say once a year
5	Almost Certain	The event is expected to occur in most circumstances, say many times a month

### Consequence Rating

Consequence Rating	Description	Environmental
5	Catastrophic	Serious long-term or widespread environmental harm.
4	Major	Significant environmental harm with long-term recovery
3	Moderate	Moderate harm with mid-term recovery
2	Minor	Transient environmental harm
1	Insignificant	Brief pollution with effective remediation

### Risk Ratings

Risk Ranking	Score	Assessment
High	>8	Requires detailed research, planning and decision making at senior levels of management
Significant	7	Senior management attention and action needed
Moderate	6	Management responsibility must be specified
Low	<5	No major concern

Risk Category	Specific Risk	Description	Likelihood	Consequence	Risk Rating
Genetics	Translocated eels may alter genetic integrity of local eel populations	Can not occur as eels are catadromous, semelparous and panmictic	1	1	2
Establishment of feral populations	Translocated eels may escape from stock-enhanced waters to other waters	Escape is possible and non-viable populations may be established. Translocation only within species' natural range. Self-sustaining populations will not establish	3	1	4
	Escape of eels from closed facility	Within species' natural range, then low risk.	2	1	3
		Outside natural range, risk increased, but viable populations will not establish.	2	3	5
	Environmental impacts of translocated eels to open waters	Manageable risk within species' natural range.	4	3	7
		Increased impact outside species' range	4	4	8
Translocation of associated species	Establishment of populations of exotic or non-indigenous species	Can occur in transport medium through translocation between catchments, less likely from closed nursery facility	3	4	7
Disease and parasite introduction	Disease and parasite translocation	Risk of disease/ parasite translocation between catchments greater in	3	3	6

	within Victoria	adult or subadult fish than in glass eels			
	Disease and parasite translocation into Victoria	Risk of disease/ parasite translocation from interstate greater in adult or subadult fish than in glass eels	3	4	7
Chemical release	Release of chemicals in transport medium to environment or closed facility	Risk where eels translocated from nursery facility.	2	3	5
Socio-economic impacts	Compromise potential for recreational fish stocks.	Opportunity cost of commercial eel fishery vs. recreational fishery in some stock enhanced eel waters.	3	2	5

## **Protocols for Eel Translocation in Victoria**

Risk analysis indicated that the translocation of eels into Victoria posed the greatest threat with respect to disease and parasite introduction. An overall risk rating of 8 (requires detailed research, planning and decision making at senior levels of management) was determined for translocations outside the species' respective natural ranges, and a risk rating of 7 (senior management attention and action needed) was determined for translocations within the species' respective natural ranges. This was followed by disease and parasite translocation into Victoria (risk rating 7), and disease and parasite translocation within Victoria (risk rating of 6 - management responsibility must be specified). Other risk factors considered posed little threat and are of no major concern.

The potential impacts of the translocation of eels to open waterways are effectively the same as those for the escapement of eels into the same environment. Consequently, the translocation of eels outside their natural range should not be permitted, unless the receiving facility is a closed, or bio-secure, system.

The translocation of eels into Victoria has historically comprised a major part of the Victorian eel fishery, with many tonnes of elvers translocated from Tasmania and released in Victorian lakes over the course of two decades or more. In most cases where eels have been translocated from outside Victoria, little or no quarantine measures, prophylactic disease treatment, or treatment for associated species within the various consignments of eels, are believed to have been applied. Thus it is reasonable to assume that any potential impact of such translocations may already have occurred, and may be neither recognisable, nor able to be ameliorated, due to the protracted temporal and spatial distributions over which translocations have occurred. However, due to the potential for the eel industry (aquaculture and fishing) to expand, both in Victoria and throughout a significant part of Australia, with associated increase in interstate trade of glass eels, elvers and adult eels, a concerted effort must be made by all relevant agencies to reduce the risks associated with the translocation of eels in the future. Such measures should include proponent-funded detailed environmental and social impact assessments of any new/proposed Crown water for stock-enhancement purposes.

### **Translocation of eels into Victoria**

#### **1. Import Restrictions**

- 1.1. Only eels of the species *Anguilla australis* (shortfin) or *Anguilla reinhardtii* (longfin) may be translocated into Victoria.
- 1.2. Juvenile eels must be purchased from an approved health certified facility described below in section 2.
- 1.3. Juvenile eels will only be transported to Aquaculture Licence holders endorsed for eels
- 1.4. Once imported into Victoria, restrictions applicable to eels translocated within Victoria, described below, will also apply.

## 2. Approved Health Certified Facility

An approved facility refers to a holding or nursery facility that has satisfied the following criteria to supply juvenile eels to Victorian eel growers:

- 2.1. A formal daily diary of fish health and observations will be recorded by facility staff and include a record of daily mortality, observations and incidence of significant stress that has resulted in mortality. This diary shall be reviewed by a veterinarian as a part of the fish health accreditation process.
- 2.2. The facility is required to preserve (in 10% formalin) representative samples of moribund fish from the nominated rearing tank that will supply fish for the proposed consignment.
- 2.3. The preserved samples will be made available to the approved veterinarian for the purposes of the health accreditation process.

## 3. Fish Health Accreditation Process

- 3.1. The Aquaculture Licence holder endorsed for eels must obtain a fish health accreditation report prior to bringing eels into Victoria for aquaculture purposes. This report shall be prepared by a veterinarian approved by Victorian Fisheries following a visit to the nursery or holding facility (refer Appendix 1). Each proposed consignment will be assessed for the presence of clinically abnormal fish and include a report describing the history of mortality, an explanation of previous mortality and reference to those samples previously preserved. If in the opinion of the veterinarian the fish health status is unsatisfactory, the consignment will not be approved for transportation to Victoria.
- 3.2. A certification of disease testing of the consignment of eels to be translocated is to be provided to Fisheries Victoria from the relevant veterinarian.
- 3.3. The cost of preparing the fish health accreditation report will be borne by the Aquaculture Licence holder endorsed for eels. A copy of the report shall be forwarded to Victorian Fisheries, Aquaculture Section prior to fish being brought into Victoria.

### Translocation of eels within Victoria

For the purposes of this document, the natural range of shortfin and longfin eels in Victoria is defined respectively as AWRC River Basins 21-38 inclusive, and AWRC River Basins 21-27 inclusive.

## 4. Translocation restrictions outside natural range

- 4.1. Translocation of eels outside the natural range of each respective species must only occur in approved containers as described in Section 6.
- 4.2. Destination culture facilities for eels translocated outside the natural range of each respective species must be an approved culture facility as described in Section 6.
- 4.3. Eels for the purposes of aquaculture will only be transported to authorised Aquaculture Licence holders endorsed for eels.
- 4.4. Records of all translocations of eels outside the respective natural range must be kept by both the receiver and distributor, and forwarded to Fisheries Victoria

5. Translocation restrictions within natural range
  - 5.1. Eels translocated between catchments must be held in approved containers, as described in Section 6, during transport
  - 5.2. Water used to transport eels between catchments must not be discharged into any water body outside the catchment from which the translocated eels originated.
  - 5.3. Dead or moribund eels must not be released into any water body
  - 5.4. Records of eel translocations must be maintained in accordance with the requirements of the catch-effort returns/logbooks
  - 5.5. Eels for the purposes of aquaculture or stock enhancement will only be transported to authorised Aquaculture Licence holder endorsed for eels.
  
6. Approved transport and culture facilities
  - 6.1. An approved container for the transport of eels within each species' respective natural range is described as:
    - 6.1.1. Closed and secure aerated or oxygenated fibreglass or plastic tank, or;
    - 6.1.2. Aerated or oxygenated double plastic bag closed and sealed within a cardboard, plastic or polystyrene box, or;
    - 6.1.3. Secure mesh bag within closed or semi-closed container
  
  - 6.2. An approved container for the transport of eels outside each species' respective natural range is described as:
    - 6.2.1. Closed and secure aerated or oxygenated fibreglass or plastic tank, or;
    - 6.2.2. Aerated or oxygenated double plastic bag closed and sealed within a cardboard, plastic or polystyrene box.
  
  - 6.3. An approved culture facility for eels outside the respective natural range for each species is described as a closed recirculating aquaculture facility approved by Fisheries Victoria, from which water is not discharged to a natural water body, and from which the risk of escape of eels is negligible.

#### Stock Seizure

In the event that any exotic organism, disease, parasite or other undesirable species is found concomitant with the consignment of imported eels into Victoria, then the entire consignment will be either:

- impounded by Fisheries Victoria under section 85(1) of the Victorian Fisheries Act 1995 and destroyed or,
- notice will be served to the Aquaculture Licence holder(s) to remove the stocked eels and to destroy them under Section 85 (2) of the Victorian Fisheries Act 1995.

# Appendix 1

## EEL HOLDING/NURSERY FACILITY FISH HEALTH ACCREDITATION

**Particulars:**

Company: \_\_\_\_\_

Location: \_\_\_\_\_

Company delegate (on behalf of owner): \_\_\_\_\_

Authorised fish health veterinarian: \_\_\_\_\_

Inspection date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Time inspection commenced: \_\_\_\_\_ Time inspection ended: \_\_\_\_\_

**Results for each rearing tank from which consignment(s) will be taken:**

Holding/ Rearing Unit #	Collection Location	Collection Date	Summary of Mortality/Morbidity		
			Week 1	Week 2	Week 3

Holding/ Rearing Unit #	Comments / Explanation of Mortality/Morbidity

**Declaration:**

I \_\_\_\_\_ being the facility owner / manager or their agent, hereby state that the verbal & written information provided to the authorised fish health Veterinarian shown below is both true and correct.

Signed: \_\_\_\_\_ Owner / Manager / Agent.

I \_\_\_\_\_ being the approved fish health Veterinarian on behalf of Victorian Fisheries, have inspected the above described fish, proposed for translocation to Victoria, for notifiable diseases of finfish as prescribed in Schedule 16, *Fisheries Regulations 1998, Fisheries Act 1995* and recommend the following action:

Approved for translocation Yes / No (*Please circle*).

Additional attached report: Yes / No (*Please circle*)

Signed: \_\_\_\_\_ Authorised Fish Health Veterinarian.