

# **POLICY ON RESTOCKING AND STOCK ENHANCEMENT IN WESTERN AUSTRALIA**

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## 1.0 INTRODUCTION

The practice of releasing hatchery-reared fish into existing populations to augment fishing (stock enhancement) or restore depleted spawning biomass (restocking) has occurred around the world for decades with varying degrees of success. The underpinning concept is to produce and release fish into wild populations to increase their abundance, catch rates and/or fishery yields.

Potential benefits from fish restocking or enhancement include:

- increasing the catch and catch rates of a species;
- improving fishing opportunities;
- restoring a depleted stock;
- restoration after catastrophic mortality events;
- compensating for nursery or breeding ground loss/degradation;
- shifting fishing effort from some species towards other species;
- ‘seeding’ a fishing enhancement structure (artificial reef); and
- conservation or reintroduction of critically endangered species.

If restocking and stock enhancement activities are to be successful, they should have clear objectives and be well planned and targeted at situations where there is a reasonable expectation of having a beneficial effect.

The ‘responsible approach’, as outlined by Lorenzen *et al.*, (2010), Bell *et al.*, (2005) and Blakenship and Leber (1995), provides a detailed best practice approach to developing or reforming restocking and stock enhancement programs. It outlines developmental phases by which stock enhancement or restocking uses a more scientific, evidence-based and stakeholder-participatory approach within a sustainable fisheries management framework to maximise the likelihood of success.

In keeping with the responsible approach, restocking and stock enhancement are fisheries management tools that can be considered as part of an ecosystem-based approach within an overall sustainable fisheries management framework.

Under this approach, any restocking or stock enhancement project that aims to provide economic, social or biological benefits needs to be considered in the context of current management arrangements for the species.

Restocking or stock enhancement proposals must also be considered against factors such as: the potential ecological impacts on the wild component of the target stock, other stocks and the ecosystem; transfer of disease, pathogens and parasites; impacts on genetic diversity or fitness; and undesirable social outcomes (such as access conflicts).

Successful restocking is more likely where there is evidence that overfishing or recruitment limitation cannot be overcome effectively by other fisheries management tools and limiting factors are understood.

The *Fish Resources Management Act 1994* (FRMA) confers the legislative power to regulate the reseeded of fish stocks or the release of fish for the purpose of restoring or improving fish stocks.

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## 2.0 POLICY OBJECTIVES

This policy on restocking and stock enhancement in Western Australia (policy) provides a process and basis for the consideration of proposals.

The key objectives of this policy are to ensure proposals for restocking and stock enhancement are consistent with the objects of the FRMA and that the activities ensuing from these proposals:

- have negligible adverse impacts on the aquatic environment; and
- are appropriately assessed and managed.

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## 3.0 DEFINITIONS

For the purposes of this policy the following definitions apply:

- 3.1 **Aquaculture** means the keeping, breeding, hatching, culturing or harvesting of fish.
- 3.2 **Fish** refers to an aquatic organism of any species (whether alive or dead) and includes: (a) the eggs, spat, spawn, seeds, spores, fry, larvae or other source of reproduction or offspring of an aquatic organism; and (b) a part only of an aquatic organism (including the shell or tail), but does not include aquatic mammals, aquatic reptiles, aquatic birds or amphibians.
- 3.3 **Restocking** refers to the production and release of fish into wild population(s) where the species historically occurred naturally, to restore severely depleted spawning biomass to a level where it can once again provide regular yields or to restore self-sustaining populations in the wild.
- 3.4 **Stock enhancement** refers to the production and release of fish into wild population(s) where the species historically occurred naturally, for the purpose of augmenting the natural supply of fish to optimise harvest or increase catch rates.

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## 4.0 SCOPE

This policy provides guidance for proponents and for the assessment of proposals for restocking or stock enhancement in waters of Western Australia. Future policy directions will, as appropriate, be guided by the assessment and evaluation of restocking and stock enhancement projects.

This policy is not intended to apply to the aquaculture of fish within an aquaculture lease site under the authority of an aquaculture licence.

This policy is not intended to apply to proposals to stock non-endemic species in Western Australia. These activities are covered by Ministerial Policy Guideline No. 5, *The aquaculture and recreational fishing stock enhancement of non-endemic species in Western Australia*.

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## 5.0 ISSUES

Key issues that need to be considered when assessing restocking or stock enhancement proposals in Western Australia include:

- fisheries management objectives and reasons for proposals;
- biology of the target species in the wild population;
- exploitation status of the stock;
- environmental issues that may be impacting on the target species;
- known carrying capacity of the environment into which the fish are to be released;
- release strategy, including species, volume, size at release, timing and location(s) for release;
- the potential relative success of a project;
- consideration of the needs or concerns of stakeholders;
- the ability to successfully rear target species by aquaculture means;
- transfer of pests, diseases and pathogens from hatchery-reared stock;
- adverse impact on genetic diversity;
- potential impact on the wild component of target and non-target populations;
- overall ecological risk, including the potential impact on threatened species and other fish population(s); and
- environmental approvals (under State and/or Commonwealth legislation) if the proposal is likely to have a significant impact on a matter of environmental significance (*State Environmental Protection Act 1986* or *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*).

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## 6.0 POLICY

The following principles form the basis of this policy.

- Proposals will be assessed in accordance with the objects of the FRMA and any other legislative or regulatory requirements.

### *Species*

- Restocking or stock enhancement will only be for species native to Western Australia.

### *Fisheries management considerations*

- The potential contribution of the restocking or enhancement program to fisheries management goals (ecological, social and economic) should be evaluated.

### ***Biosecurity considerations***

- A broodstock management plan that adopts the following principles is required for the hatchery component of the proposal:
  - Broodstock should be sourced from the area in which fish are to be released or shown to adequately represent the genetic profile of the populations into which fish are to be released. This should apply in all circumstances unless there is a compelling reason why broodstock should be sourced from a different area. For example, conservation restocking.
  - Only first generation offspring bred from broodstock sourced from the wild should be used for restocking or enhancement program purposes.
  - Broodstock from known subpopulations of the species should be identifiable (marked) and spawned separately in the hatchery.
  - A rotational broodstock selection strategy should be adopted to ensure the full genetic variability within regional populations is accessed.
  - Inclusion of fish released from the hatchery in subsequent broodstock capture should be avoided.
- Restocking or stock enhancement of species should not significantly adversely affect wild components of the target stocks or ecological communities at receiving sites, either of populations of other species or the same species.
- Disease testing and health certification will be required for all hatchery-reared fish before they are released.
- The number of fish required to be tested and the specific tests to be used will be determined by the Department of Fisheries' Senior Fish Pathologist.

### ***Monitoring and evaluation***

- Where possible, fish produced for release must be identifiable for monitoring purposes (e.g. tags, marks on otoliths, genetic markers).
- A monitoring and evaluation program is required to assess the project against its primary objectives. The extent of the monitoring program may vary with the scale of restocking or stock enhancement being undertaken.

### ***Consultation***

- The proposal identifies and considers the needs of various stakeholders. The Department will provide guidance on consultation.

### ***General***

- The proposal identifies the producer of the fish.
- The production of fish for the purposes of the proposal must be undertaken under the authority of an aquaculture licence endorsed for the species.
- No private right of ownership shall exist over any fish released into public waters. This does not apply to fish being held for aquaculture purposes undertaken under the authority of an aquaculture licence or lease.

- The proponent will meet all costs associated with obtaining approval(s).
- The proponent will meet all costs of the restocking or stock enhancement project including monitoring and reporting.
- The proponent must demonstrate that adequate financial resources are available for the restocking or stock enhancement proposal.
- Future policy directions will be guided by the assessment and evaluation of restocking or stock enhancement programs.

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## **7.0 ASSESSMENT PROCESS**

Assessment of stock enhancement and restocking proposals will be carried out in a step-wise process as summarised below and depicted in Appendix 1.

### **Step one – pre-proposal phase**

The first step will require a pre-proposal outlining the key principle objectives and capacity to undertake the restocking or stock enhancement project. The pre-proposal will be assessed by the Department against current management arrangements and strategy for the species. Following in principle approval of the concept, a full proposal (step two) will be required outlining the detail for the project.

In principle approval may also include guidance for proponents on issues that need to be considered in moving to the second (full proposal) step. For example, the project may need to be broken down into stages. A ‘pilot’ stage may be used to evaluate the proposal in a lower risk manner against clear performance indicators. Following assessment of the pilot phase the full proposal would then be reassessed against the policy.

### **Step two – full proposal phase**

When assessing a full proposal for restocking or stock enhancement, the Department will consider the following:

- 7.1. The purpose and primary objectives of the proposal.
- 7.2. The available information on the fishery or population under consideration including:
  - 7.2.1. current management arrangements and how the proposal would potentially integrate into those arrangements;
  - 7.2.2. current known status of the fishery or population in question;
  - 7.2.3. known or predicted impact on fisheries performance including impacts on wild population component;
  - 7.2.4. known limiting factors having an impact on the fishery or population, including environmental issues that may be affecting target species, such as habitat loss or reduced water quality;
  - 7.2.5. the probable reason/s for any previous decline of the species; and
  - 7.2.6. the outcome of any previous restocking or stock enhancement of the species.
- 7.3. The release strategy including:
  - 7.3.1. proposed timing for the release of the fish;

- 7.3.2. the proposed locations for release of fish; and
- 7.3.3. the size and number of fish to be released, based on the known or predicted carrying capacity of the environment into which the fish are to be released.
- 7.4. The biosecurity plan including:
  - 7.4.1. Broodstock management plan:
    - 7.4.1.1. broodstock source;
    - 7.4.1.2. broodstock numbers;
    - 7.4.1.3. breeding regime; and
    - 7.4.1.4. culture system.
  - 7.4.2. The health management program, including disease testing and health certification.
- 7.5. The consultation process undertaken to identify stakeholder needs, including the level of community support and evidence of consultation with other organisations and individuals who may be interested in or affected by the proposed project.
- 7.6. Identification of social and economic impacts, for example, identification of potential conflicts between users.
- 7.7. The monitoring and evaluation program to assess the project against its objectives. This needs to take into account the short, medium and long-term requirements to monitor the impact of any restocking or stock enhancement proposal.
- 7.8. How the enhanced or restocked fishery would be managed and whether management changes may be required.
- 7.9. Whether the production of the fish to be released is carried out under the authority of an aquaculture licence endorsed for the species.
- 7.10. The timetable for the proposed activities.
- 7.11. Evidence of availability of funds to complete the planned project.

The approval letter will be issued with conditions (including reporting requirements) unless the proposal is rejected.

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## **8.0 CONTACT AT THE DEPARTMENT OF FISHERIES**

### **RESPONSIBLE OFFICER**

Manager, Strategic Policy, Aquatic Management.

**Address:** DEPARTMENT OF FISHERIES  
3rd Floor the Atrium,  
168 St Georges Terrace  
PERTH WA 6000

**Postal address:** Locked Bag 39  
Cloisters Square  
PERTH WA 6850

**Website:** [www.fish.wa.gov.au](http://www.fish.wa.gov.au)

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## 9.0 REFERENCES

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**APPENDIX 1**

**PROPOSAL PROCESS**

**STEP ONE**

**PRE PROPOSAL PHASE**

Assessed against current management arrangements and strategy for the species

NOT APPROVED

APPROVED IN-PRINCIPLE

**STEP TWO**

**FULL PROPOSAL PHASE**

Assessment against policy

NOT APPROVED

APPROVED

Pilot

Full restocking or stock enhancement

Monitoring & Assessment

Feedback for ongoing assessment