

# Oxleyan Pygmy Perch



*Nannoperca oxleyana*

## Recovery Plan and Background Paper

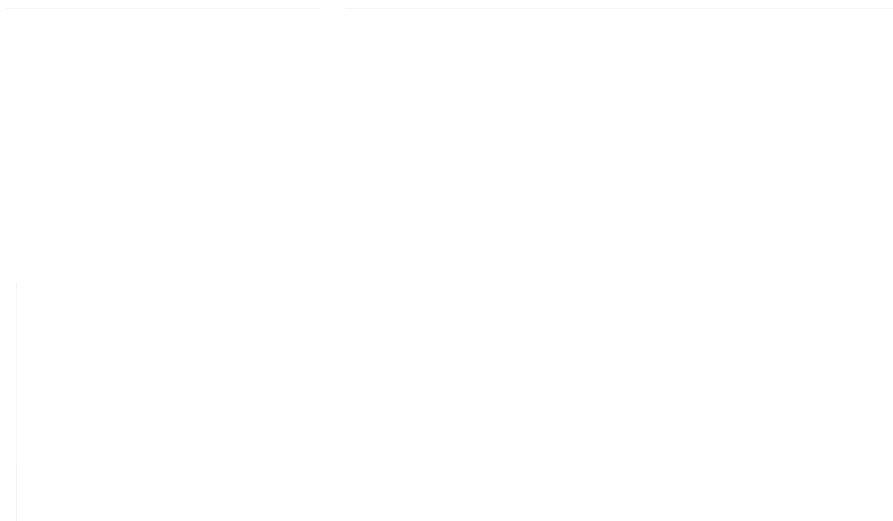
Prepared in accordance with the threatened species provisions of the  
New South Wales *Fisheries Management Act 1994*



NSW DEPARTMENT OF  
PRIMARY INDUSTRIES



Australian Government



# Recovery



*Nannoperca oxleyana*

## Recovery Plan

Prepared in accordance with the threatened species provisions of the  
New South Wales *Fisheries Management Act 1994*

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The attainment of objectives and the provision of funds may be subject to budgetary and other constraints affecting the parties involved, and may also be constrained by the need to address other conservation priorities. Approved recovery actions may be subject to modification due to changes in knowledge and conservation status over time.

## Acknowledgments

This recovery plan was prepared with the assistance of Michael Murphy (NSW Department of Environment and Conservation), Tony McAteer, Damien Grace (Richmond Valley Council), Professor Don Gartside (Southern Cross University), Professor Angela Arthington (Griffith University), Effie Howe (Australia New Guinea Fishes Association), Todd Kelly, Sara Williams (Qld Environmental Protection Agency / Queensland Parks and Wildlife Service), Richard Gates (Evans Head resident), Jamie Knight, Rebecca Chapman, Gabrielle Holder, John Pursey, David Pollard (all of NSW Department of Primary Industries), Steve Brooks, Peter Jackson (Queensland Department of Primary Industries and Fisheries).

The work of Australia New Guinea Fishes Association (ANGFA) and other community groups in promoting the recovery and protection of the Oxleyan pygmy perch is also acknowledged.

This plan was partially funded by the Commonwealth Endangered Species Program - a component of the Natural Heritage Trust.

## Executive summary

The Oxleyan pygmy perch is a small freshwater fish that has been listed as 'endangered' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the NSW *Fisheries Management Act 1994*. It has also been listed as 'vulnerable' under the Queensland *Nature Conservation Act 1992*.

Oxleyan pygmy perch are irregularly distributed in small numbers in swamps, streams and lakes of lowland, coastal 'wallum' heaths between north-eastern New South Wales and south-eastern Queensland. These wallum heath communities once formed an almost continuous band along the eastern coastline from Coffs Harbour in northern NSW, to Bundaberg in southern Queensland. However, the practice of land clearing for urban development, agriculture, forestry and mining has significantly reduced and fragmented these habitats.

Oxleyan pygmy perch – with their limited distribution, rarity and dependence on specific habitats – are particularly vulnerable to a range of threatening processes. The most serious threat is habitat degradation and loss. Other potential threats include the presence of the introduced 'plague minnow' or mosquitofish, *Gambusia holbrooki*, and the illegal capture of Oxleyan pygmy perch for aquariums.

The plan has been developed in accordance with the requirements of the NSW *Fisheries Management Act 1994* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. It complies with the revised Recovery Plan Guidelines for Nationally Listed Threatened Species and Ecological Communities 2002 and the Queensland Recovery Plan Procedural Guidelines (draft) 2005.

The plan is supported by a background paper containing information on the biology and ecology of pygmy perch, threats to the survival of the species and background information on the recovery planning process.

### Recovery planning objectives and actions

This recovery plan contains 17 objectives to be achieved in 3 program areas:

- Research and investigation,
- Compliance and regulatory and,
- Management.

The plan will be judged a long-term success if the status of Oxleyan pygmy perch is revised from 'endangered' to 'vulnerable' on listings under the NSW *Fisheries Management Act 1994* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, and from 'vulnerable' to 'near threatened' under the Queensland *Nature Conservation Act 1992* within 15 years.

### Implementing the plan

Implementation of the recovery plan in NSW will be lead by the Department of Primary Industries (DPI) in conjunction with other responsible bodies and stakeholders. In Queensland a range of potential contributors have been identified as having a role in implementation. The implementation of some recovery actions will be subject to the availability of additional funding from grant programs. Implementation results and achievements will be reported in subsequent background papers that will be updated with the latest information in relation to pygmy perch and recovery actions.

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## 1. Introduction

Oxleyan pygmy perch are listed as threatened in NSW and Queensland because of their limited distribution, rarity, dependence on specific habitat characteristics and their vulnerability to threatening processes.

This recovery plan has been prepared in accordance with the provisions of Part 7A of the *Fisheries Management Act 1994* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The recovery plan complies with the Revised Recovery Plan Guidelines for Nationally Listed Threatened Species and Ecological Communities 2002 and the Queensland Recovery Plan Procedural Guidelines (draft) 2005.

The plan is supported by a non-statutory background paper which contains additional information on the legislative context of the plan, biological and ecological information on pygmy perch, a review of the current issues and threats to pygmy perch, and details of implementation activities.

The background paper will be updated every three years with information on plan implementation, monitoring, review, and achievements.

## 2. Description and distribution

Oxleyan pygmy perch are usually light brown to olive in colour (darkest on back, sides paler) and mottled, with three to four patchy, dark brown bars extending from head to tail, and a whitish belly. The gill cover (opercular) flap has a blue iridescence and there is a conspicuous round dark spot with orange margin at the base of the tail. The scales have dusky margins and the fins are mainly clear. There is a blue ring around the eye. During breeding the dorsal, pelvic and anal fins darken and the lateral stripes and tail turn scarlet <sup>[2]</sup> <sup>[5]</sup> <sup>[6]</sup>. They can grow to about 60mm in length, but are more common to around 35mm <sup>[3]</sup>.

The Oxleyan pygmy perch appears only to be found in the swamps, streams and dune lakes that lie in the lowland, coastal 'wallum' heaths between north-eastern NSW and south-eastern Queensland (including Fraser, Stradbroke and Moreton islands). Their specific habitat requirements include fresh, acidic waters and abundant aquatic vegetation. Even within areas of their habitat, their distribution is patchy and despite extensive searching, the species has only been found in a relatively small number of locations in NSW and Queensland.

The coastal wallum heaths where pygmy perch are found once formed part of an almost continuous strip down the mid-east coast of Australia from Bundaberg in southern Queensland to Coffs Harbour on the north coast of NSW. However, land clearing for residential development, farming, mining, pine plantations and drainage impacts have led to a severe reduction in wallum heaths and remaining areas are highly fragmented. While some important tracts of wallum heaths are protected within coastal national parks, other remaining areas of pygmy perch habitat are found on private or Crown land that could be developed in the future.

Further information on the distribution of pygmy perch can be found in the accompanying background paper.

## 3. Identification of critical habitat

Critical habitat provisions are established by Division 3 of Part 7A of the *Fisheries Management Act 1994*. The Minister may declare the whole or any part of the habitat critical to the survival of a species, population or ecological community as critical habitat. Public authorities are required to have regard to critical habitat in exercising any of their functions in relation to any land involved. The *Fisheries Management Act 1994* also establishes offences in relation to damaging critical habitat. Once declared, a species impact statement is mandatory for all developments and activities that are likely to affect the critical habitat.

In Queensland the *Nature Conservation Act 1992 – Nature Conservation (Wildlife) Regulation 1994* and the *Vegetation Management Act 1999* contain provisions to identify and protect critical habitat or areas of major interest. The *Nature Conservation Act 1992* defines critical habitat as ‘habitat that is essential for the conservation of a viable population of protected wildlife or community of native wildlife, whether or not special management considerations and protection are required’.

The specific requirements for identifying habitat critical to the survival of nationally threatened species, populations and ecological communities are established by Regulation 7.09 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

No critical habitat has been declared for pygmy perch at the time this plan was prepared (July 2005). Future background papers will provide details of any critical habitat declarations for pygmy perch. The recovery actions listed in this plan recognise the need to identify critical habitat for pygmy perch.

## **4. Identification of threatening processes**

The purpose of this section is to identify the processes affecting the long-term survival of pygmy perch and to provide a brief overview of each threat. Further information on each threat may be found in the background paper that supports this plan.

### **4.1 Limitations in current understanding**

There is limited information on the biology and ecology of pygmy perch in the wild.

#### ***Habitat and environmental tolerances***

The habitat associations for pygmy perch and the water quality parameters at most sites where the species has been found have been relatively well documented (see Table 1 in the accompanying background paper). However, in NSW, pygmy perch have been found in several sites with ‘atypical’ water quality and habitat characteristics. This suggests that the apparent dependence on these needs by pygmy perch requires greater examination. In addition, little information exists on their tolerance to disturbance, habitat degradation or pollution.

#### ***Life history and genetics***

Significant gaps exist in information about the life history, population dynamics, dispersal patterns and genetics of the pygmy perch. For example, little is known about why the species is present or absent at certain sites over time. More knowledge about the genetic structure of pygmy perch populations and methods of dispersal would help in understanding what effect barriers to their distribution, population fragmentation or changes to topography or hydrology have on the viability of the species. Genetic studies would also provide data that would assist in the conservation of pygmy perch genetic diversity and genetic population structure, which is critical to ensuring their long-term viability.

### **4.2 Community awareness and support**

Pygmy perch do not have a high profile in the community or among planners and developers. This is partly because they are considered a small, rare fish with no recreational fishing value. In many cases access to accurate information about the species, improved awareness, and appropriate planning could avoid many of the impacts on pygmy perch caused by human activities.



### 4.3 Habitat degradation and loss

The amount of coastal wallum heath has diminished since European settlement. This has been a major factor in the historical decline of pygmy perch and the pressures on remaining areas of suitable pygmy perch habitat continue.

Intact areas of wallum heath are now largely confined to protected areas such as Broadwater, Bundjalung and Yuraygir National Parks in NSW and Cooloola (Great Sandy) and Moreton Island National Parks in Queensland. These areas have played an integral role in the survival of pygmy perch. They have helped preserve large tracts of wallum heath habitat and most recent reports of pygmy perch in NSW have come from water bodies within the parks.

However, even habitats in protected areas can be degraded through a range of recreational, management or development activities. Examples include run-off from unsealed roads, hazard reduction burning, bushfire fighting activities and disturbance by recreational users such as four-wheel vehicle drivers. There are also several pygmy perch sites known to exist close to residential areas (or areas zoned for development) and the survival of these populations may be threatened by surface run-off and other activities that degrade habitats.

Some areas of comparatively undisturbed wallum heath still occur on freehold land. However, there is a risk that these areas will be lost because of land demands for housing, agriculture and other developments as populations continue to grow on the north coast of NSW and southeast Queensland. Housing development and road construction projects pose major habitat threats and need to be carefully managed to avoid or minimise impacts.

### 4.4 Introduced fish species

Oxleyan pygmy perch are likely to have been adversely affected by the presence of introduced species, particularly the plague minnow (or 'mosquitofish') *Gambusia holbrooki*, in many parts of their range.

As a species, *Gambusia* is competitive and combines high environmental tolerance with flexible feeding and habitat needs and can compete with native species for food and other resources. *Gambusia* has been linked to the worldwide decline of many endemic fish species. They are now regarded as a pest in Australian waters. While there is little information about the impacts of *Gambusia* on pygmy perch, their aggression and ability to survive and compete for food in habitats native to pygmy perch, suggest their presence has been detrimental to pygmy perch.

Intentionally introducing other fish into areas outside their natural range (such as to enhance recreational fishing opportunities) may also have negative impacts on pygmy perch because the species have not coevolved.

### 4.5 Collection and aquarium keeping

Oxleyan pygmy perch are a threatened species in NSW and Queensland and it is illegal to catch and keep, buy, sell, possess or harm them without a permit or licence, and heavy penalties apply.

The number of pygmy perch illegally collected for aquariums is impossible to estimate. Although their collection is far less damaging to their overall survival than habitat degradation. Aquarium collectors have been observed removing large numbers of indigenous fish from wallum heath water bodies <sup>[1]</sup>. There have also been several reports in aquarium journals on collecting and keeping pygmy perch.

The random collection of pygmy perch for aquariums is likely to be harmful to some small, restricted populations of the species, particularly when they are difficult to keep and breed and more fish are collected to replace aquarium mortalities. While collection alone is unlikely to remove a complete population, even in highly accessible areas, any reduction in numbers may

affect the population's ability to recover from floods, pollution or introduced species such as gambusia.

## **5. Overall recovery objectives and performance criteria**

### **5.1 Recovery plan objectives**

The overall objective of this recovery plan is to prevent the extinction and ensure the recovery and ongoing viability in nature of Oxleyan pygmy perch populations.

The specific objectives of the recovery plan are to:

- Increase scientific knowledge and understanding about the distribution, habitat, life history, ecology and genetics of pygmy perch
- Increase community awareness and support of pygmy perch recovery actions
- Protect and restore essential habitats for pygmy perch
- Minimise the impacts of introduced fish on pygmy perch
- Reduce the illegal collection of pygmy perch by encouraging and involving aquarium enthusiasts to support recovery efforts
- Establish a program to monitor the status of pygmy perch and assess the effectiveness of recovery actions.

### **5.2 Performance criteria**

The success of the plan will be measured against the criterion that:

- The status of Oxleyan pygmy perch is revised from 'endangered' to 'vulnerable' on listings under the *NSW Fisheries Management Act 1994* and *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*, and from 'vulnerable' to 'near threatened' under the *Queensland Nature Conservation Act 1992* within 15 years.

## 6. Recovery objectives, actions and responsibilities

The recovery objectives, actions and responsibilities have been presented in three functional program areas: research and investigation, compliance and regulation, and management activities.

### 6.1 Research & investigation activities (RIA)

#### Objective 1: Undertake a survey program to better establish the distribution of pygmy perch and their habitat requirements

##### RIA 1:

- Evaluate sampling methodologies to determine the most effective way to sample pygmy perch populations while minimising adverse impacts on the species.

##### RIA 2:

- Conduct broad-scale surveys to establish the species' limits of distribution and to identify catchments where the species might be found.

##### RIA 3:

- Conduct intensive surveys in drainage areas identified as supporting or potentially supporting new pygmy perch populations, to map their distribution and identify habitat associations.

**NSW Responsibility:** RIA 1, 2 & 3: DPI

**NSW Partners:** Universities, research institutions, ANGFA

**Qld Potential Contributor:** RIA 1, 2 & 3: Qld DPIF, Burnett Mary Regional Body, Western SEQ Catchments regional body, SE Qld Regional Body

**Timeframe:** RIA 1, 2: Year 1  
RIA 3: Year 2, 3

#### Objective 2: Model and map known and potential pygmy perch habitat

##### RIA 4:

- Develop a GIS-based map of the distribution of known and predicted pygmy perch habitat across the species range. This will be achieved by combining available mapping and remote sensing data (including soil and vegetation layers, drainage patterns, land tenure, zoning and other relevant planning information) with existing or new field data.

##### RIA 5:

- Produce fine-scale maps for important areas (e.g. near towns) showing the distribution of water bodies: (a) known, (b) with the potential, and (c) unlikely to support pygmy perch.

**NSW Responsibility:** RIA 4 & 5: DPI

**NSW Partners:**

**Qld Potential Contributor:** RIA 4 & 5: Qld DPIF, Qld EPA/QPWS

**Timeframe:** RIA 4 & 5: Year 1, 2

**Objective 3: Support research into the environmental tolerances, population dynamics and other aspects of the life history and ecology of pygmy perch**

**RIA 6:**

- Encourage scientific investigation of key areas of the biology and ecology of pygmy perch to provide information valuable to the recovery of the species or its management. This may include work to establish environmental tolerances, ability to survive in disturbed habitats, factors influencing population dynamics and variability, age and growth, diet, etc.

**NSW Responsibility:** RIA 6: DPI

**NSW Partners:** Universities, ANGFA

**Qld Potential Contributor:** RIA 6: Qld DPIF, Burnett Mary Regional Body, Western SEQ Catchments regional body and SE Qld Regional Body

**Timeframe:** RIA 6: Year 3, ongoing

**Objective 4: Conduct genetic research to establish the degree of isolation between populations and factors influencing dispersal of the pygmy perch**

**RIA 7:**

- Initiate a project to examine genetic diversity and structure in populations of pygmy perch, in collaboration with a university or other research institution.

**RIA 8:**

- Support this work by collecting genetic material (e.g. fin clips) during surveys within NSW.

**NSW Responsibility:** RIA 7 & 8: DPI

**NSW Partners:** Universities

**Qld Potential Contributor:** RIA 7: Qld DPIF

**Timeframe:** RIA 7: Year 4  
RIA 8: Year 2, ongoing

**Objective 5: Monitor populations of gambusia and other exotic or native introduced fish species within or near water bodies occupied by pygmy perch, and implement measures to reduce their impacts**

**RIA 9:**

- Record data on all fish species captured during the survey program and on-going monitoring program for entry into a species database. The data will record the capture of introduced and indigenous species.

**RIA 10:**

- Use this data, and any other available records, to map the distribution of introduced species relative to pygmy perch and any expansion in their range or abundance over time.

**RIA 11:**

- Implement the NSW Freshwater Fish Stocking Fishery Management Strategy and Qld DPIF translocation policy to prevent significant impacts from stocking on pygmy perch populations.

**NSW Responsibility:** RIA 9, 10, 11: DPI

**NSW Partners:** ANGFA

**Qld Potential Contributor:** RIA 9, 10 & 11: Qld DPIF, Burnett Mary Regional Body, Western SEQ Catchments Regional Body and SE Qld Regional Body.

**Timeframe:**  
 RIA 9: Year 2, ongoing  
 RIA 10: Year 5  
 RIA 11: Ongoing

**Objective 6: Study interactions between gambusia and pygmy perch to better establish the degree of threat posed by gambusia**

**RIA 12:**

- Support further studies on interaction between the two species (eg. experimental trials, behavioural studies, resource partitioning studies) to determine the probable impacts of gambusia on pygmy perch.

**NSW Responsibility:** RIA 12:DPI

**NSW Partners:** Universities, research institutions

**Qld Potential Contributor:** RIA 12: Qld DPIF, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body.

**Timeframe:** RIA 12: Year 6, 7

## 6.2 Compliance and regulatory activities (CRA)

### Objective 7: Provide information to Councils, agencies and other organisations to support appropriate planning and impact assessment

#### CRA 1:

- Provide GIS-based maps of known and potential pygmy perch sites on CD-ROM, to councils and relevant government agencies.

#### CRA 2:

- Develop Environmental Impact Assessment Guidelines (NSW) and Supplementary Significance Guidelines (Qld) for Oxleyan pygmy perch and distribute these to relevant councils, CMAs, State government agencies, environmental consultants and developers.

**NSW Responsibility:** CRA 1 & 2: DPI

**NSW Partners:** CMAs

**Qld Potential Contributor:** CRA 1 & 2: Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body

**Timeframes:** CRA 1: Year 3  
CRA 2: Year 4

### Objective 8: Investigate and implement options for providing increased protection for key areas of pygmy perch habitat

#### CRA 3:

- Review regulatory and voluntary incentive based mechanisms available to enhance protection for key pygmy perch habitat areas and apply as required. This may include the use of critical habitat provisions, aquatic protected areas, voluntary conservation agreements etc.

**NSW Responsibility:** CRA 3: DPI, DEC

**NSW Partners:**

**Qld Potential Contributor:** CRA 3: Qld EPA/QPWS, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body

**Timeframes:** CRA 3: Year 2

### Objective 9: Ensure compliance with the ban on collecting through communication with aquarium enthusiasts

#### CRA 4:

- Communicate information on the conservation and legal status of pygmy perch through appropriate media such as aquarium industry journals, society newsletters, conferences, etc.

**NSW Responsibility:** CRA 4: DPI

**NSW Partners:** ANGFA

**Qld Potential Contributor:** CRA 4: Qld DPIF, Qld EPA/QPWS, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body.

**Timeframes:** CRA 4: Year 1, ongoing

## 6.3 Management Activities (MA)

### Objective 10: Develop an education program to increase community awareness of pygmy perch (in both urban and rural areas) and encourage community involvement

#### MA 1:

- Produce and distribute information brochures (e.g. Fishnotes) and other advisory materials. Advisory material will be posted to stakeholders and distributed at meetings, community days and other functions. They will also be on display at local councils, relevant government offices and CMA/NRM regional offices.

#### MA 2:

- Write articles for regional newspapers and/or relevant magazines to raise awareness of pygmy perch status and issues.

#### MA 3:

- Encourage participation of local indigenous people through direct consultation and targeted advisory activities.

#### MA 4:

- Develop and distribute pygmy perch educational materials including information on the species habitat and role in the ecosystem.

#### MA 5:

- Install signs and/or interpretive displays at appropriate locations (eg. access points for national parks or on council-managed land).

#### NSW Responsibility:

MA 1: DPI, DEC  
MA 2, 3 & 4: DPI  
MA 5: DPI, DEC

#### NSW Partners:

Local councils

#### Qld Potential Contributor:

MA 1 - 4: Qld DPIF, Qld EPA/QPWS, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body.  
MA 5: Qld DPIF, Qld EPA/QPWS, Qld DNRM

#### Timeframes:

MA 1,2 & 3: Year 1, ongoing  
MA 4: Year 4  
MA 5: Year 3

**Objective 11: Manage pygmy perch habitats occurring on national park estate****MA 6:**

- Incorporate the location of pygmy perch sites within national parks into the information systems used to manage national park activities.

**MA 7:**

- Incorporate the use of habitat protection mechanisms into the management plans for relevant NSW and Qld National Parks. These can include the closure of access trails that bisect key water bodies or the modification of weed and pest control activities.

**MA 8:**

- Incorporate appropriate impact minimisation considerations in bushfire hazard reduction plans.

**NSW Responsibility:** MA 6, 8: DPI, DEC  
MA 7: DPI, DEC

**NSW Partners:**

**Qld Potential Contributor:** MA 6 – 8: Qld EPA/QPWS

**Timeframes:** MA 6: Year 3  
MA 7, 8: Year 4



**Objective 12: Minimise the impacts on pygmy perch habitats from current and future urban development, agriculture and forestry**

**MA 9:**

- Negotiate with councils in regard to local environmental plans, development control plans and other planning documents, regarding the type and scale of development near pygmy perch populations and habitat.

**MA 10:**

- Provide appropriate knowledge and expertise to assist councils to develop drain management plans which avoid or minimise the impacts of drain construction and maintenance on pygmy perch populations and habitats.

**MA 11:**

- Identify pygmy perch habitat sites affected by sedimentation, pollution or barriers to fish movement such as roads and trails. Encourage land holders or relevant agencies (e.g. councils, RTA, DEC) to install sediment and pollution controls and provide adequate fish passage.

**MA 12:**

- Incorporate information and strategies to reduce the impacts of bush fire hazard reduction works, fire fighting operations and fire trail construction on pygmy perch populations and habitats when reviewing local bush fire management plans and other reserve or community fire plans.

**MA 13:**

- Encourage the identification, assessment and modification of natural resource management plans and policies (including catchment action plans, water management plans, vegetation management plans, and other land management plans) which may impact on pygmy perch habitat to minimise impacts on stream flows, connectivity of habitats, riparian vegetation or soils in wallum heath areas.

**NSW Responsibility:**

*MA 9, 10, 11 DPI, DEC*

*MA 12: DPI, RFS, DEC*

*MA 13: DPI, DEC, DIPNR, local councils*

**NSW Partners:**

*Local councils*

**Qld Potential Contributor:**

*MA 9 – 11: Qld DPIF, Qld EPA/QPWS, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body*

*MA 12: Qld RFS, Qld DPIF, Qld EPA/QPWS*

*MA 13: Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body*

**Timeframes:**

*MA 9 - 13: ongoing*

<b>Objective 13: Identify and restore degraded pygmy perch habitats</b>	
<b>MA 14:</b>	<ul style="list-style-type: none"> <li>Identify degraded habitats known or likely to have supported pygmy perch, where there is a potential for the species to re-establish viable populations.</li> </ul>
<b>MA 15:</b>	<ul style="list-style-type: none"> <li>Develop guidelines for rehabilitation work which includes advice on appropriate native species for replanting, effective sediment controls etc.</li> </ul>
<b>MA 16:</b>	<ul style="list-style-type: none"> <li>Work with relevant stakeholders to prioritise and commence the rehabilitation of key pygmy perch habitat. This may include the establishment of a 'demonstration site' where various rehabilitation techniques are trailed and water quality monitoring undertaken.</li> </ul>
<b>MA 17:</b>	<ul style="list-style-type: none"> <li>Seek funds to expand rehabilitation work through grant schemes or other sources.</li> </ul>
<b>NSW Responsibility:</b>	MA 14: DPI, DEC, local councils MA 15: DPI, DEC MA 16: DPI, DEC, DIPNR, local councils MA 17: DPI, local councils
<b>NSW Partners:</b>	Community groups, CMAs
<b>Qld Potential Contributor:</b>	MA 14 – 15: Qld DPIF, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body MA 16: Qld DPIF, Qld EPA/QPWS, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body MA 17: Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body
<b>Timeframes:</b>	MA 14, 15: Year 4, ongoing MA 16, 17: Year 5, ongoing

<b>Objective 14: Investigate options for managing existing gambusia populations and preventing their spread to other areas</b>	
<b>MA 18:</b>	<ul style="list-style-type: none"> <li>Investigate the feasibility of eradicating gambusia from enclosed water bodies in close proximity to pygmy perch habitat that are high-risk in terms of the spread of gambusia.</li> </ul>
<b>MA 19:</b>	<ul style="list-style-type: none"> <li>Develop and implement a gambusia threat abatement plan (including the development of controls that could be used in waterways containing pygmy perch).</li> </ul>
<b>NSW Responsibility:</b>	MA 18 - 19: DPI, DEC
<b>NSW Partners:</b>	
<b>Qld Potential Contributor:</b>	MA 19: Qld DPIF
<b>Timeframes:</b>	MA 18: Year 6, ongoing MA 19: ongoing

<b>Objective 15: Develop and implement a public education program on identifying undesirable species and encourage reporting</b>	
<b>MA 20:</b>	<ul style="list-style-type: none"> <li>Ensure that the Protected, Threatened and Pest Species Sighting Program cover the NSW north coast area where the pygmy perch occurs. Ensure materials are available to assist the public in identifying gambusia, and encourage reporting of gambusia sightings in or near pygmy perch habitat.</li> </ul>
<b>MA 21:</b>	<ul style="list-style-type: none"> <li>Incorporate any information obtained from the public into the species database, available via the web, and use it to assist in mapping the distribution of gambusia.</li> </ul>
<b>MA 22:</b>	<ul style="list-style-type: none"> <li>Incorporate gambusia and its impacts on pygmy perch in general pest species literature and communication programs on pest species.</li> </ul>
<b>NSW Responsibility:</b>	MA 20 -22: DPI
<b>NSW Partners:</b>	ANGFA
<b>Qld Potential Contributor:</b>	MA 22: Qld DPIF, Qld EPA/QPWS, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body
<b>Timeframes:</b>	MA 20, 22: ongoing MA 21:ongoing

<b>Objective 16: Develop cooperative threatened species survey and sighting programs</b>	
<b>MA 23:</b>	<ul style="list-style-type: none"> <li>Facilitate the involvement of ANGFA volunteers, wherever possible, in survey work undertaken as part of the sampling and monitoring program.</li> </ul>
<b>MA 24:</b>	<ul style="list-style-type: none"> <li>Encourage the inclusion of sampling for pygmy perch into any ANGFA fieldtrips in parts of the State where the species may potentially occur, and ensure additional records are provided to NSW DPI.</li> </ul>
<b>NSW Responsibility:</b>	MA 23, 24: NSW DPI
<b>NSW Partners:</b>	ANGFA
<b>Qld Potential Contributor:</b>	N/A
<b>Timeframes:</b>	MA 23, 24: Year 1, ongoing

<b>Objective 17: Establish a long-term monitoring program to assess the ongoing status of pygmy perch and the effectiveness of recovery actions</b>	
<b>MA 25:</b>	<ul style="list-style-type: none"> <li>Evaluate the results of the initial survey program in terms of techniques, timing and site selection to develop and implement a long-term program to assess the ongoing conservation status of the species and the success of recovery actions.</li> </ul>
<b>NSW Responsibility:</b>	MA 25: DPI
<b>NSW Partners:</b>	Community groups
<b>Qld Potential Contributor:</b>	Qld DPIF, Burnett Mary Regional Body, Western SEQ Catchments Regional Body, SE Qld Regional Body
<b>Timeframes:</b>	MA 25: Years 3, 6, 9

**Acronyms:**

DPI – NSW Department of Primary Industries	MA – Management Action
DIPNR – Department of Infrastructure, Planning & Natural Resources	RIA – Research & Information Action
DEC – Department of Environment & Conservation	CRA – Compliance and Regulatory Action
Qld EPA/QPWS – Environmental Protection Agency-/ Qld Parks & Wildlife Service	
RFS – NSW Rural Fire Service	
Qld DNRM: Department of Natural Resources & Mines & Wildlife Service	
Qld DPIF – Department of Primary Industries Fisheries	
FSC – Fisheries Scientific Committee	
CMAs – Catchment Management Authorities	

## 7. Monitoring, evaluation and review

The overall performance criteria of down-listing Oxleyan pygmy perch from endangered to vulnerable on the Schedules of the *Fisheries Management Act 1994* and the *Environment Protection and Biodiversity Conservation Act 1999* and from 'vulnerable' to 'near threatened' under the *Qld Nature Conservation Act 1992* will be the primary measure used to assess the success of the objectives of this plan.

The recovery plan recognises the need for a strategically focused monitoring program to enable the effectiveness of recovery actions to be evaluated.

The recovery plan will be audited and reviewed every three years to assess the implementation of recovery actions and the success of the actions in recovering pygmy perch to a position of viability in nature. The outcomes of the audit will be reported in a background paper.

This recovery plan will be subject to major review within ten (10) years from the date of publication.

## 8. Social and economic issues

The following sections outline some of the potential adverse social and economic consequences that may result from the development and implementation of this plan, and the ways in which these can be minimised or ameliorated.

The objectives and actions of this plan have also been formulated with the aim of minimising adverse social and economic impacts. However, the recovery plan is likely to have some social and economic impacts on local communities. These impacts are likely to have positive and negative aspects and different sectors of the community may respond in a variety of ways.

Some owners and managers of pygmy perch habitat, particularly those interested in developing these areas, may view the recovery plan as negative or restrictive. Few landholders are likely to be affected this way because most identified sites are found within national parks. However, some owners with land adjacent to national parks or other recorded sites may be affected and other sites may be identified in future on private land.

Many community members may view the recovery plan as positive because it will lead to the increased appreciation of the area's natural ecology and encourage future development plans to preserve their value. This could also lead to greater opportunities for tourism and recreation, while some private landholders with pygmy perch on their property have expressed their enthusiasm to participate in recovery activities for the species.

The major economic consequences of the recovery plan relate to the costs of implementation, although there may also be some economic consequences resulting from increased costs or decreased opportunities for some forms of development.

Ways to minimise or modify any adverse social or economic effects from the plan are discussed below.

## 8.1 Development

As pygmy perch are not a species with any recreational fishing value, any social or economic impacts of the recovery plan on local communities are most likely to flow from changes to development opportunities.

The NSW *Environmental Planning and Assessment Act 1979* requires the potential impacts of a development on any threatened species to be considered by authorities responsible for its approval. If a major impact is likely, the developer must prepare a SIS as part of their proposal. Any decision about this type of development by a consent authority must also be approved by the Director-General of the DPI.

These protective laws may be seen as an economic burden by developers who may be required to contract consultants to prepare a species impact statement as well as bear the costs involved in the delay, conditional approval or rejection of a proposal. The legislation may also represent a burden to consent or determining authorities if they lack the appropriate expertise and information needed to assess development proposals.

However, these legal requirements arise from the endangered status of pygmy perch under the *Fisheries Management Act 1994* and the existing provisions of the *Environmental Planning and Assessment Act 1979*, and are not a consequence of the recovery plan. The recovery plan will help to ease some of the economic effects by distributing relevant information to those involved in the assessment of impacts, particularly to consent and determining authorities.

## 8.2 National parks, tourism and recreation

Coastal national parks such as Broadwater, Bundjalung and Yuraygir are important locations for tourism and local recreational activities such as walking, bird watching, wildflower observation, camping, surfing, fishing, four-wheel driving and canoeing. Efforts to reduce damage to Oxleyan pygmy perch habitat (wallum heath) within these areas will have important socio-economic benefits by protecting the natural integrity of these areas, thereby enhancing recreational opportunities. However, in some cases public access may need to be restricted and trails near pygmy perch habitat may be closed.

The recovery plan requires park management to consider pygmy perch during activities such as pest management, fire management, weed eradication, erosion control measures and habitat management. As a rule, the costs of these activities should already be included in their management plans. Similarly, the cost of management activities on other publicly owned lands relate mainly to activities required for the normal management of the land, such as fire management and weed control, and as such should already be budgeted for.

## 8.3 Native fish collection and breeding

As a threatened species, it is illegal to take Oxleyan pygmy perch from the wild, or buy, sell or possess them without a permit from the relevant state agency. This means pygmy perch cannot be kept, bred or collected for aquariums by native fish enthusiasts. It is clear from a number of reports that pygmy perch have been collected for this purpose in the past.

However, some native fish aquarists have indicated they are interested in participating in recovery actions for pygmy perch. For example, the Australia New Guinea Fishes Association (ANGFA) is a partner in the recovery program and will be involved in compiling records through survey work, field excursions and collecting trips along with the education of its members. The recovery plan will also draw on the interest, expertise and enthusiasm of members of these groups.

## 8.4 Indigenous cultural issues

Recent surveys to determine the distribution of pygmy perch in NSW, reported pygmy perch on Aboriginal land west of Bundjalung National Park <sup>[29]</sup>. The indigenous owners of this land have shown an interest in being involved in recovery actions.

A process to assess the cultural significance of pygmy perch and wallum heath habitats to local Aboriginal people has started in consultation with local area land councils and elders groups. It will also consider the effects of the recovery program and the level of community interest in participating in recovery activities.

The NSW DPI has developed an Indigenous Fisheries Strategy and implementation plan. A primary goal of the strategy is to “encourage and support the involvement of indigenous communities in the management of the state’s fisheries resources” and a key implementation approach is to “acknowledge and address indigenous issues in preparing every fishery management strategy”, which includes this recovery plan.

Local Aboriginal groups will be encouraged to take part in activities that are part of the recovery plan. Any proposal that could affect places of cultural importance will need to be discussed in direct consultation with local groups.

## 8.5 General community attitudes and involvement

Aside from the social and economic effects that could result from restrictions on development, some people in the community may be dissatisfied with recovery activities that limit public access or activities in some areas.

Overall, responses to the recovery plan are expected to be very positive. Regional communities are usually quick to support conservation efforts for such a locally identifiable species and the opportunity exists for the community to adopt the Oxleyan pygmy perch as a local symbol. Increased awareness about the conservation of threatened species may help to change any negative impressions about the plan.

Continued liaison with landholders, local councils and the community will help to minimise any social effects from the conservation of pygmy perch.

## 9. Implementation & costs

In NSW the DPI has a statutory responsibility to prepare and lead the implementation of this recovery plan. In Qld a range of potential contributors are identified as having implementation responsibilities. The long-term success of the plan in recovering pygmy perch to a position of viability in nature will depend on the involvement of agencies, organisations and individuals who have a role in activities that affect the viability of the species. In NSW, public authorities must take any appropriate action available to them to implement the measures for which they have an identified responsibility in a recovery plan. Similarly, consent and determining authorities must consider relevant recovery plans when exercising decision-making functions under Part 4 & 5 of the *Environmental Planning Act 1979*. Such authorities, when considering an activity that may impact on pygmy perch or its habitat, must consider the provisions of this plan.

Wherever possible, recovery activities for the pygmy perch will be linked to existing government or community programs to prevent duplication, in particular via catchment action plans or other natural resource management plans.

## 10. Further information

Further information on pygmy perch can be found in the background paper that supports this plan. The background paper includes information on:

- The legislative context and implications of the plan,
- Biological and ecological information on pygmy perch,
- Current threats to the species survival, and
- Reporting on the implementation of the recovery plan.

Copies of the background paper and additional information can be obtained from:

NSW Department of Primary Industries  
Fisheries Management Branch  
Port Stephens Fisheries Centre  
Private Bag 1  
Nelson Bay NSW 2315  
Ph: (02) 4982 1232  
[www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

Queensland Parks and Wildlife Service  
Threatened Species and Ecosystems Unit  
Wildlife Conservation Branch  
PO Box 15155  
CITY EAST QLD 4002  
[www.epa.qld.gov.au](http://www.epa.qld.gov.au)

## 11. References

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6. Thompson C, Arthington A, Kennard M. Oxleyan pygmy perch *Nannoperca oxleyana* Whitley, 1940. *Aust Soc for Fish Biol Newsletter* 2000;30 (1): 31-32.