



Australian Government

Department of the Environment

Assessment of the
QUEENSLAND EEL FISHERY

April 2014

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Disclaimer

This document is an assessment carried out by the Department of the Environment of a commercial fishery against the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition*. It forms part of the advice provided to the Minister for the Environment on the fishery in relation to decisions under Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999*. The views expressed do not necessarily reflect those of the Minister for the Environment or the Australian Government.

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Table 4 contains a description of the issues identified by the Department with the current management regime for the fishery and outlines the proposed recommendations that would form part of the delegate's decision to include product derived from the fishery in the list of exempt native specimens.

TABLE 1: SUMMARY OF THE QUEENSLAND EEL FISHERY

Key documents relevant to the fishery	<ul style="list-style-type: none"> ▪ Queensland <i>Fisheries Act 1994</i> ▪ Queensland Fisheries Regulation 2008 ▪ <i>Stock status of Queensland's fisheries resources 2012</i> ▪ Queensland Eel Fishery, Annual fishery reports 2008 - 2012 ▪ Policy for Management Arrangements for the Commercial Harvesting and Use of Juvenile Eels, February 2006
Area	<p>All fishing occurs within Queensland state waters. The fishery consists of two sectors, with different areas prescribed for each sector.</p> <p><u>Adult eel sector - eels greater than 30 cm in length</u></p> <p>All Queensland East Coast Drainage Division catchments are open to adult eel trapping, except catchments on offshore islands. The adult eel fishery is restricted to either impoundments formed by dams, such as Cressbrook Dam (a public impoundment), or privately owned and artificially created impoundments, such as private farm dams. Most adult eel trapping occurs in privately owned farm dams rather than public waters.</p> <p>Natural freshwaters, such as rivers, streams, creeks, lagoons and natural swamps, and waters impounded by other structures, such as weirs, are not open to adult eel trapping.</p> <p><u>Juvenile eel sector - eels less than 30 cm in length</u></p> <p>Rivers in which collection of juvenile eels is permitted include the Albert, Barron, Burdekin, Burnett, Burrum, Caboolture, Coomera, Currumbin, Fitzroy, North and South Johnstone, Kolan, Logan, Maroochy, Mary, Mooloolah, Mulgrave, Nerang, Noosa, North and South Pine and Tully Rivers.</p> <p>Within these rivers, juvenile eels may be collected at, or downstream of, the most downstream dam or weir in the river. Collection is also permitted up to 200 m either side of the mouths of these rivers.</p>
Target Species	<p>The Queensland Eel Fishery targets the long-finned eel (<i>Anguilla reinhardtii</i>) and the short-finned eel (<i>A. australis</i>).</p> <p>Both species have similar life cycles, beginning with a spawning migration from eastern Australian inland rivers to the Coral Sea. Females produce 5-10 million eggs which hatch into larvae after 2-10 days. These larvae are carried to the continental shelf by ocean currents, where they metamorphose into an unpigmented juvenile stage known as 'glass eels'. Long-finned glass eels enter estuary systems in</p>

	<p>summer and autumn, while short-finned glass eels move into estuaries in late autumn and spring.</p> <p>As glass eels develop pigment, they are described as 'elvers'. Both elvers and glass eels make up the juvenile eel sector of the Queensland Eel Fishery. Elvers move upstream into lakes, swamps, farm dams and the freshwater reaches of rivers and creeks to complete their juvenile migration. Long-finned eels usually move upstream in summer and spring, while short-finned eels migrate upstream in winter months. Male eels generally settle in the lower reaches of river systems while females are more often found further inland.</p> <p>The age at maturity of freshwater eels varies considerably in the wild, with estimates of 8-12 years for males and 10-30 years for females. When maturity is reached, freshwater eels move downstream to the entrances of rivers and creeks before returning to the Coral Sea to spawn. The eels undergo several physical and physiological changes in preparation for this return migration, becoming silvery with enlarged eyes and gonads. The stomachs of these mature 'silver eels' degenerate and are absorbed and the eels cease feeding. It is likely that all mature eels die after spawning.</p>
Fishery status	<p>The <i>Stock status of Queensland's fisheries resources 2012</i> assessed the Queensland Eel Fishery as 'sustainably fished', after adult and juvenile catch rate performance measures were not triggered in 2011. A healthy distribution of length classes was apparent from data from 1999-2007, despite fluctuating harvests over this period due to environmental factors and market driven effects.</p>
Byproduct Species	<p>None. Freshwater eels are the only species permitted to be taken for trade or commerce from fresh water in Queensland.</p>

Gear	<p><u>Adult eel sector:</u> Commercial harvest of adult eels is only permitted with baited eel traps or round traps. These are usually set on the bottoms of impoundments and baited with pilchards or mullet. All traps are required to have a single point of entry and floating cod-end, to provide a breathing space for accidentally trapped air-breathing animals, such as turtles.</p> <p><u>Juvenile eel sector:</u> Fyke nets (bag-shaped nets held open by hoops) with floating cod-ends, dip nets and flow traps (with an approved bycatch excluder) are permitted in the juvenile eel sector of the fishery.</p> <p>The number, dimensions and mesh sizes of gear used by all commercial fishers are subject to restrictions.</p> <p><u>Recreational:</u> Recreational fishing for eels is only permitted using line methods.</p>												
Season	<p>The Queensland Eel Fishery is open year round, with the fishing year commencing on 1 January each year. There are no closed seasons, although effort in the juvenile eel sector is subject to fluctuation due to environmental effects.</p>												
Commercial harvest	<p>The most recent full reporting period for commercial harvest is 2012. Harvest of eels has been stable in the fishery over the past five years.</p> <table data-bbox="654 1198 1278 1646"> <tr> <th>Year</th><th>Catch (tonnes)</th></tr> <tr> <td>2008</td><td>24.8</td></tr> <tr> <td>2009</td><td>21.8</td></tr> <tr> <td>2010</td><td>24.2</td></tr> <tr> <td>2011</td><td>23.0</td></tr> <tr> <td>2012</td><td>21.0</td></tr> </table> <p>Figure 1. Catch of adult eels from Queensland waters (both species combined).</p> <p>There are no harvest figures available for the juvenile eel sector due to confidentiality reasons, however, total harvest of juvenile eels in 2012 was less than 100 kg.</p>	Year	Catch (tonnes)	2008	24.8	2009	21.8	2010	24.2	2011	23.0	2012	21.0
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Value of commercial harvest	<p>The value of the adult eel harvest in 2012 was approximately \$230 000.</p> <p>The value of the juvenile harvest in 2012 is not available for confidentiality reasons, due to the low levels of harvest.</p>
Take by other sectors	<p>Freshwater eels are not a popular recreational species in Queensland and are mostly taken as bycatch by recreational fishers. A Queensland Statewide Recreational Fishing Survey undertaken in 2010 indicated that recreational take of eels was approximately 2000 adult eels per year.</p>
Commercial licences issued	<p>In 2012, 19 licences were issued in the adult eel sector and 14 licences were issued in the juvenile eel sector.</p>
Management arrangements	<p>The fishery is managed under the Queensland <i>Fisheries Act 1994</i> and the Queensland Fisheries Regulations 2008, through input and output controls including:</p> <ul style="list-style-type: none"> • limited entry • size limits • gear restrictions, and • spatial closures.
Export	<p>The majority of adult eels caught in the Queensland Eel Fishery are exported live to Asia, primarily Hong Kong, China and Taiwan.</p> <p>The export of juvenile eels is not permitted. Juveniles may only be sold to aquaculture operations within Australia for growing out.</p>
Bycatch	<p>Bycatch in the Queensland Eel Fishery is considered low, with most bycatch animals being locally abundant species that are released alive.</p>
Interaction with Protected Species¹	<p>A total of 2479 interactions with freshwater turtle species were reported through Species Of Conservation Interest (SOCI) logbooks in 2012. More than 98% of those species interacted with were released alive. Operators reported that 3 of the animals released were injured.</p> <p>All freshwater turtle species are protected in Queensland, however, only one of the species recorded as bycatch in the Queensland Eel Fishery is also protected under the EPBC Act, the saw-shelled turtle (<i>Wollumbinia belli</i>), listed as vulnerable. In 2012, 19 saw-shelled turtles were recorded as bycatch in the Queensland Eel Fishery, with 17 released alive and 2 recorded as mortalities.</p>

¹ 'Protected species' means all species listed under Part 13 of the EPBC Act, including whales and other cetaceans and listed threatened, listed marine and listed migratory species.

	<p>In general the Queensland Eel Fishery is regarded as a relatively benign fishery, operators utilise low impact gear and are only active in selected waterways. Therefore, the Department considers that the potential impact of the fishery on EPBC Act protected species is likely to be low.</p>
Ecosystem Impacts	<p>Impacts on the ecosystem caused by the Queensland Eel Fishery are considered to be low. The fishing gear used has minimal impact on the physical environment and non-target species. There are also restrictions in place on the locations and number of traps that can be used to minimise any potential risks.</p>
Impacts on World Heritage property/Ramsar site	<p>Waterways fished by the Queensland Eel Fishery traverse, or are adjacent to, several World Heritage properties, including Gondwana Rainforest properties, the Great Barrier Reef and the Wet Tropics of Queensland. The listed World Heritage values for these properties focus on these areas being outstanding examples of Earth's evolutionary history, ongoing geological and biological processes, exceptional natural beauty and exceptional biological diversity.</p> <p>The fishery also operates in waterways connected to the Ramsar listed wetlands of Moreton Bay, Bowling Green Bay, Shoalwater and Corio Bays and the Great Sandy Strait. Key attributes of these sites that enable them to meet Ramsar criteria include: providing key habitat for listed threatened species, supporting high biodiversity and supporting large biomass.</p> <p>Given the management arrangements for target species, the relatively benign fishing methods and the low impact on bycatch and protected species in this fishery, the Department considers that an action taken by an individual fisher, acting in accordance with the management regime for the Queensland Eel Fishery enforced under the Queensland <i>Fisheries Act 1994</i>, would not be expected to have a significant impact on a matter protected under the EPBC Act.</p>

Table 2: Progress in implementation of recommendations made in previous assessment of the Queensland Eel Fishery

Recommendation	Progress	Recommended Action
<p>1. Operation of the fishery will be carried out in accordance with the management regime in force under the Queensland <i>Fisheries Act 1994</i>, the Queensland <i>Fisheries Regulation 2008</i> and the <i>Fisheries (Freshwater) Management Plan 1999</i>.</p>	<p>The <i>Fisheries (Freshwater) Management Plan 1999</i> (the Plan) was repealed in March 2010. All relevant legislation from the Plan was moved into the <i>Fisheries Regulation 2008</i>, in force under the Queensland <i>Fisheries Act 1994</i>.</p> <p>All operations in the Queensland Eel Fishery since the previous assessment were carried out in accordance with the appropriate legislation.</p>	<p>The Department of the Environment (the Department) considers that this recommendation has been met.</p> <p>The Department proposes that this recommendation be continued (see Recommendation 1, Table 4).</p>
<p>2. QPIF to inform DEWHA of any intended amendments to the management arrangements that may affect the assessment of the QEF against the criteria on which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are based.</p>	<p>There have been no changes made to the management arrangements for the Queensland Eel Fishery that would affect the EPBC Act decisions made following the Department's assessment of the fishery in 2009.</p>	<p>The Department considers that this recommendation has been met.</p> <p>The Department proposes that this recommendation be continued (see Recommendation 2, Table 4).</p>
<p>3. QPIF to produce and present reports to DEWHA annually as per Appendix B to the <i>Guidelines for the Ecologically Sustainable Management of Fisheries 2nd Edition</i>.</p>	<p>The Queensland Department of Agriculture, Fisheries and Forestry (DAFF) has produced publicly available, fishery-specific reports on an annual basis. The Queensland Eel Fishery 2012 fishing year report is the latest report to be published.</p>	<p>The Department considers that this recommendation has been met.</p> <p>The Department proposes that this recommendation be continued (see Recommendation 3, Table 4).</p>

Recommendation	Progress	Recommended Action
<p>4. QPIF to collaborate with other jurisdictions in pursuing consistent and complementary research needs and management arrangements for target species.</p>	<p>As part of the outcomes of the fishery's Performance Measurement System review conducted in January 2010, the Queensland DAFF engaged in discussions with New South Wales, Victorian and Tasmanian fishery agency representatives regarding national take of freshwater eels. To address the panmictic distribution (single stock, spread across multiple jurisdictions) of freshwater eel species into the performance of the fishery, the Queensland DAFF developed a performance measure that considers the total harvest of eels in all four Australian east coast states. The Queensland DAFF has subsequently engaged in regular cross-jurisdictional communication with relevant fishery agency representatives, to aid in the identification and mitigation of issues regarding the sustainability of eel stocks and to ensure that future management arrangements consider changes in the whole east coast eel population.</p> <p>The most recent catch from other states is detailed in the latest Queensland Eel Fishery Annual Fishery Report (2012 Fishing Year Report).</p>	<p>The Department considers that this recommendation has been met.</p> <p>The Department proposes that this recommendation be continued (see Recommendation 4, Table 4).</p>

Recommendation	Progress	Recommended Action
<p>5. By November 2010, QPIF to:</p> <ul style="list-style-type: none"> a) develop and implement species specific reporting of interactions with protected species in the QEF, especially freshwater turtles; and b) in the event that a significant number of interactions with species protected under the EPBC Act becomes apparent, a clear timetable for the implementation of appropriate management responses to be made within 3 months. 	<p>In February 2011, the Queensland DAFF finalised a package for commercial fishers in the fishery containing a new Queensland East Coast Freshwater Turtle Identification Guide (the guide), an updated Species of Conservation Interest (SOCI) Logbook and a red-eared slider turtle warning pamphlet.</p> <p>The guide was developed in collaboration with turtle experts from the Queensland Department of Environment and Resource Management. The guide was developed for use by commercial fishers operating in the Queensland Eel Fishery and only contains those freshwater turtle species that inhabit the area covered by the fishery. The guide contains a shell anatomy tool that details the terminology used to describe components of the plastron and carapace of a freshwater turtle; a dichotomous key by catchment that includes diagrams and explanations (with terms from the shell anatomy key) and a photo identification key showing examples of freshwater turtles at genus and species levels.</p> <p>The combined use of the guide and updated SOCI logbook has enabled fishers to report by species, with more than 98% of turtles captured in 2012 being identified to species level. The Queensland DAFF considers that current level of turtle interactions and the high proportion of turtles released alive has not yet required a management response.</p>	<p>The Department considers that this recommendation has been met.</p>

Table 3: The Department of the Environment’s assessment of the Queensland Eel Fishery against the requirements of the EPBC Act related to decisions made under Part 13A.

Please Note – the table below is not a complete or exact representation of the EPBC Act. It is intended as a summary of relevant sections and components of the EPBC Act to provide advice on the fishery in relation to decisions under Part 13A. A complete version of the EPBC Act can be found at <http://www.comlaw.gov.au/>.

Part 13A

Section 303BA Objects of Part 13A
<p>(1) The objects of this Part are as follows:</p> <ul style="list-style-type: none">(a) to ensure that Australia complies with its obligations under CITES² and the Biodiversity Convention;(b) to protect wildlife that may be adversely affected by trade;(c) to promote the conservation of biodiversity in Australia and other countries;(d) to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way;(e) to promote the humane treatment of wildlife;(f) to ensure ethical conduct during any research associated with the utilisation of wildlife; and(h) to ensure the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife.

² Convention on International Trade in Endangered Species of Wild Fauna and Flora

Part 13A

Section 303DC Minister may amend list	The Department's assessment of the Queensland Eel Fishery
<p>(1) Minister may, by instrument published in the Gazette, amend the list referred to in section 303DB (list of exempt native specimens) by:</p> <ul style="list-style-type: none"> (a) including items in the list; (b) deleting items from the list; or (c) imposing a condition or restriction to which the inclusion of a specimen in the list is subject; or (d) varying or revoking a condition or restriction to which the inclusion of a specimen in the list is subject; or (e) correcting an inaccuracy or updating the name of a species. 	<p>The Department recommends that product derived from the Queensland Eel Fishery be included in the list of exempt native specimens until 17 April 2019.</p>
<p>(1A) In deciding whether to amend the list referred to in section 303DB (list of exempt native specimens) to include a specimen derived from a commercial fishery, the Minister must rely primarily on the outcomes of any assessment in relation to the fishery carried out for the purposes of Division 1 or 2 of Part 10.</p>	<p>No assessment of the Queensland Eel Fishery has been carried out under Part 10 of the EPBC Act.</p>
<p>(1C) The above does not limit the matters that may be taken into account in deciding whether to amend the list referred to in section 303DB (list of exempt native specimens) to include a specimen derived from a commercial fishery.</p>	<p>It is not possible to list exhaustively the factors that you may take into account in amending the list of exempt native specimens. The objects of Part 13A, which are set out above this table, provide general guidance in determining factors that might be taken into account. A matter that is relevant to determining whether an amendment to the list is consistent with those objects is likely to be a relevant factor.</p> <p>The Department considers that the amendment of the list of exempt native specimens to include product taken in the Queensland Eel Fishery until 17 April 2019 would be consistent with the provisions of Part 13A (listed above) as:</p> <ul style="list-style-type: none"> ▪ the fishery will not harvest any Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listed species

	<ul style="list-style-type: none"> ▪ there are management arrangements in place to ensure that the resource is being managed in an ecologically sustainable way (see Table 1) ▪ the operation of the Queensland Eel Fishery is unlikely to be unsustainable and threaten biodiversity within the next five years, and ▪ the Environment Protection and Biodiversity Conservation Regulations 2000 do not specify fish as a class of animal in relation to the welfare of live specimens.
<p>(3) Before amending the list referred to in section 303DB (list of exempt native specimens), the Minister:</p> <ul style="list-style-type: none"> (a) must consult such other Minister or Ministers as the Minister considers appropriate; and (b) must consult such other Minister or Ministers of each State and self-governing Territory as the Minister considers appropriate; and (c) may consult such other persons and organisations as the Minister considers appropriate. 	<p>The Department considers that the consultation requirements have been met.</p> <p>The application from the Queensland Department of Agriculture, Fisheries and Forestry (DAFF) was released for public comment from 3 March 2014 to 3 April 2014. The public comment period sought comment on:</p> <ul style="list-style-type: none"> ▪ the proposal to amend the list of exempt native specimens to include product derived from the Queensland Eel Fishery, and ▪ the Queensland DAFF application for the Queensland Eel Fishery. <p>No comments were received</p>
<p>(5) A copy of an instrument made under section 303DC is to be made available for inspection on the Internet.</p>	<p>The instrument for the Queensland Eel Fishery made under section 303DC will be gazetted and made available through the Department's website.</p>

Part 16

Section 391 Minister must consider precautionary principle in making decisions	The Department's assessment of the Queensland Eel Fishery
(1) The Minister must take account of the precautionary principle in making a decision under section 303DC and/or section 303FN, to the extent he or she can do so consistently with the other provisions of this Act.	Having regard to the precautionary management measures in place in this fishery, summarised in Table 1, the Department considers that the precautionary principle has been accounted for in the preparation of advice in relation to a decision under section 303DC.
(2) The precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.	

The Department of the Environment's final recommendations to the Queensland Department of Agriculture, Fisheries and Forestry for the Queensland Eel Fishery

The material submitted by the Queensland Department of Agriculture, Fisheries and Forestry (DAFF) indicates that the Queensland Eel Fishery operates in accordance with the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition*.

Stock status

The Department of the Environment (the Department) considers that the management measures in place in the Queensland Eel Fishery are sufficient to ensure that the fishery is conducted in a manner that does not lead to over-fishing and that stocks are not currently overfished.

Management arrangements in place in the fishery include:

- annual review of catch rate performance against management action triggers
- limited numbers of commercial licences
- limited access to waters where commercial fishing is allowed
- size limits
- gear restrictions, and
- possession limits (recreational sector).

Ecosystem impacts

Taking into account the management arrangements for target species, the relatively benign fishing methods (traps, small fyke nets and small dip nets) and the low impact on bycatch and protected species in this fishery, the Department considers that fishing operations are managed to minimise their impact on the structure, productivity and biological diversity of the ecosystem.

Given these management measures the Department considers that product taken in the Queensland Eel Fishery should be included in the list of exempt native specimens under Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) until 17 April 2019. To ensure that the decisions for the Queensland Eel Fishery under the EPBC Act remain valid, and to contain and minimise the risks in the longer term, the recommendations listed in Table 4 have been made. Unless a specific time frame is provided, each recommendation should be addressed during the five year period.

Table 4: Queensland Eel Fishery Assessment – Summary of Issues, Recommendations - April 2014

Issue	Recommendation
<p><u>General Management</u></p> <p>Export decisions relate to the arrangements in force at the time of the decision. To ensure that these decisions remain valid and export approval continues uninterrupted, the Department of the Environment needs to be advised of any changes that are made to the management regime and make an assessment that the new arrangements are equivalent or better, in terms of ecological sustainability, than those in place at the time of the original decision. This includes operational and legislated amendments that may affect the sustainability of the target species or negatively impact on byproduct, bycatch, protected species or the ecosystem.</p>	<p>Recommendation 1: Operation of the fishery will be carried out in accordance with the management regime under the Queensland <i>Fisheries Act 1994</i> and the Queensland Fisheries Regulation 2008.</p> <p>Recommendation 2: The Queensland Department of Agriculture, Fisheries and Forestry (DAFF) to inform the Department of the Environment (the Department) of any intended material changes to the Queensland Eel Fishery management arrangements that may affect the assessment against which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are made.</p>
<p><u>Annual reporting</u></p> <p>It is important that reports be produced and presented to the Department annually in order for the performance of the fishery and progress in implementing the recommendations in this report and other managerial commitments to be monitored and assessed throughout the life of the declaration. Annual reports should follow Appendix B to the <i>Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition</i> and include a description of the fishery, management arrangements in place, research and monitoring outcomes, recent catch data for all sectors of the fishery, status of target stock, interactions with EPBC Act protected species, impacts of the fishery on the ecosystem in which it operates and progress in implementing the Department's recommendations. Electronic copies of the guidelines are available from the Department's website at http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries</p>	<p>Recommendation 3: The Queensland DAFF to produce and present reports to the Department annually as per Appendix B of the <i>Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition</i>.</p>

Cross jurisdictional cooperation

Freshwater eels are harvested in Queensland, New South Wales, Victoria, South Australia, Tasmania and New Zealand. The two key target species, the long-finned eel (*Anguilla reinhardtii*) and the short-finned eel (*A. australis*), are likely to belong to a single genetic stock with a panmictic distribution that extends into all of these jurisdictions. Cross jurisdictional communication between the management agencies responsible for the commercial harvest of these species is therefore important to identify and address sustainability issues for eel stocks.

As part of a 2010 review of the Queensland Eel Fishery's Performance Measurement System, the Queensland DAFF engaged with fisheries management agencies in New South Wales, Victoria and Tasmania. To account for the panmictic distribution of freshwater eels in the performance of the Queensland Eel Fishery, the fishery has since maintained a performance measure that annually considers the total harvest of freshwater eels in all four Australian east coast states.

Given the difficulty in traditional stock and biomass assessments for these species, the Department considers it important that the Queensland DAFF continue to maintain close links with other jurisdictions to ensure management arrangements can take account of changes in the national freshwater eel population.

Recommendation 4: The Queensland DAFF to continue to collaborate with other jurisdictions to pursue consistent and complementary research needs and management arrangements for target species.

