



**Australian Government**  

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**Department of the Environment**

# **Assessment of the Torres Strait Bêche-de-mer Fishery**

June 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 13 and Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999*.

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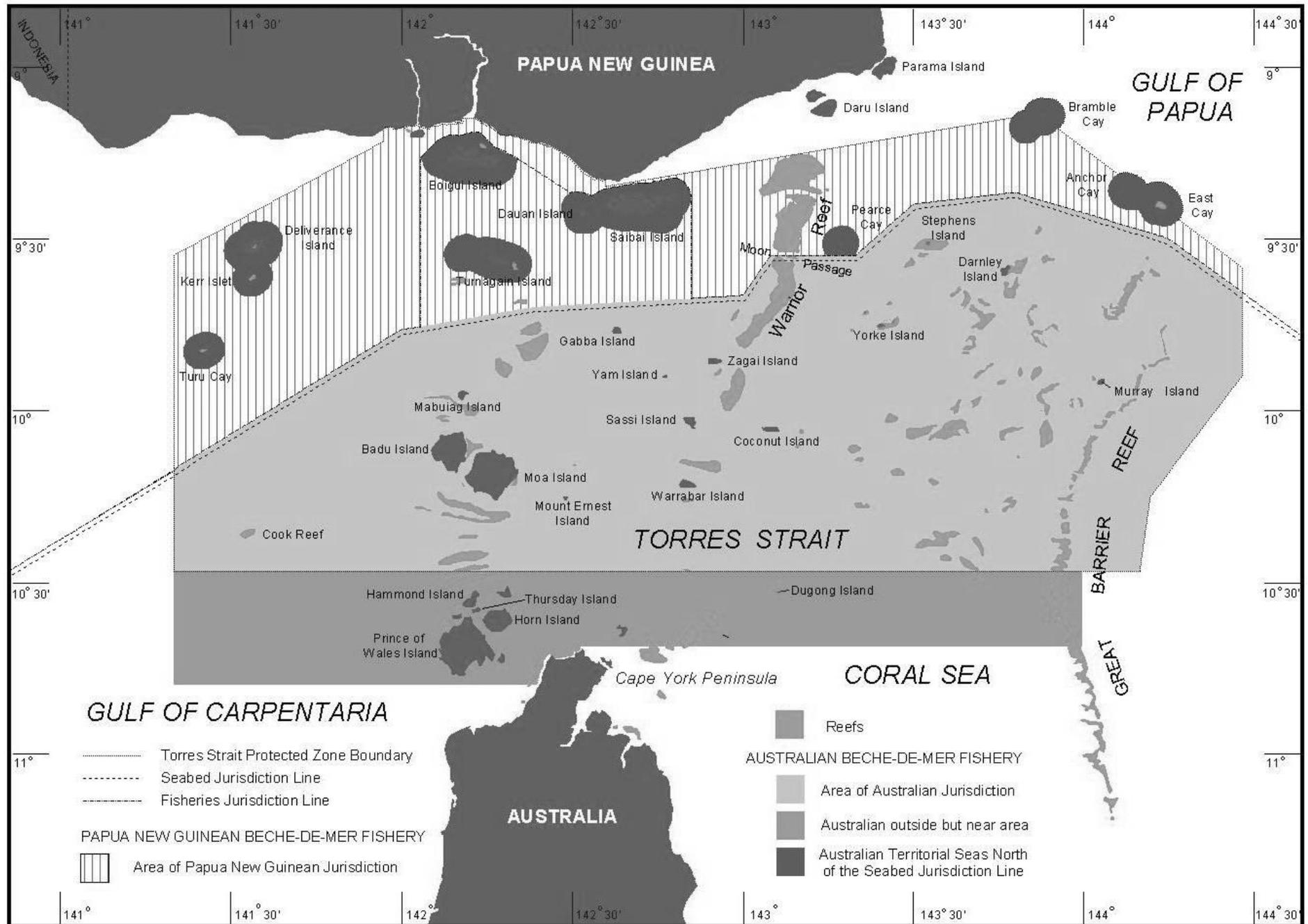


**TABLE 1: SUMMARY OF THE TORRES STRAIT BÊCHE-DE-MER FISHERY**

<p><b>Introduction to Torres Strait Fisheries</b></p>	<p>The Torres Strait Treaty<sup>1</sup> between Australia and Papua New Guinea (PNG) was ratified in 1985. It requires that the two countries conserve and achieve optimal utilisation of the Torres Strait fisheries and maximise the opportunities for the traditional inhabitants of both countries to participate in the fisheries. The treaty describes the boundaries between Australia and PNG and describes how the shared sea resources are managed. The treaty established the Torres Strait Protected Zone (Figure 1, page 2) and the rights of Australia and PNG to share the commercial fisheries of the protected zone.</p> <p>The enacting legislation for the treaty in the area under Australian jurisdiction is the <i>Torres Strait Fisheries Act 1984</i>, which establishes the Protected Zone Joint Authority (PZJA). Membership of the PZJA comprises the Australian Government and Queensland Government ministers responsible for fisheries and the chair of the Torres Strait Regional Authority.</p> <p>The <i>Torres Strait Fisheries Act 1984</i> provides for the Protected Zone Joint Authority to make plans or policies for the management of fisheries in the Torres Strait.</p> <p>In general, two sectors operate within all Torres Strait commercial fisheries:</p> <ul style="list-style-type: none"> <li>• Traditional Inhabitant boat (TIB) licences are available to Traditional Inhabitant fishers only</li> <li>• transferable vessel holder (TVH) licences are available to other commercial fishers.</li> </ul>
<p><b>Description of the Torres Strait Bêche-de-mer Fishery</b></p>	<p>The Torres Strait Bêche-de-mer Fishery is managed on behalf of the PZJA under the <i>Torres Strait Fisheries Act 1984</i> by the Australian Fisheries Management Authority (AFMA). The fishery provides for the harvest of multiple species of sea cucumber for the production of bêche-de-mer. The terms bêche-de-mer (French) and trepang (Indonesian) are interchangeable. However, "trepang" is usually considered to be the dried body wall, while "bêche-de-mer" is considered to be the cooked body wall of sea cucumber.</p> <p>The area of the fishery is defined in the Torres Strait Fisheries Regulations 1985. It extends from the tip of Cape York to the northern border of Australian jurisdiction in the Torres Strait Protected Zone and includes the territorial waters of islands recognised in the Torres Strait Treaty as being Sovereign Islands of Australia (Figure 1, page 2). Historically, sea cucumbers have been harvested on and to the east of Warrior Reef (Figure 1). The western Torres Strait reefs have been documented as having a very low abundance of all sea cucumber species.</p> <p>From around 2003 to 2011 there was little activity in the fishery, as a result of the prohibition on harvest of many of the high value species in the fishery including sandfish, black teatfish and surf redfish. The results of surveys undertaken from 2009 to 2012 provide an indication that most stocks are now recovering.</p> <p>Participation in the fishery is limited to Traditional Inhabitants only, with the exception of one long term non-Traditional sunset licence holder who was active in the fishery prior to the introduction of limited entry to the fishery in 1999.</p>

<sup>1</sup> Treaty between Australia and the Independent State of Papua New Guinea concerning Sovereignty and Maritime Boundaries in the area between the two Countries, including the area known as Torres Strait, and Related Matters

Figure 1. Area of the Torres Strait Bêche-de-mer Fishery (Source: AFMA)



<p><b>Publicly available information relevant to the fishery</b></p>	<ul style="list-style-type: none"> <li>• Treaty between Australia and the Independent State of Papua New Guinea concerning Sovereignty and Maritime Boundaries in the area between the two Countries, including the area known as Torres Strait, and Related Matters (the Torres Strait Treaty)</li> <li>• <i>Torres Strait Fisheries Act 1984</i></li> <li>• Fisheries Management Notice 64 - Torres Strait Sea Cucumber Fishery - Prohibition on taking sea cucumber (gear and size restrictions)</li> <li>• Fisheries Management Notice 47 - Torres Strait Fisheries (restrictions on the size of boats)</li> <li>• Torres Strait Fisheries Regulations 1985</li> <li>• Annual Report Torres Strait Bêche-de-mer Fishery 2013</li> </ul>
<p><b>Target Species and Stock Status</b></p>	<p>At least 16 species of sea cucumber are known to have been taken commercially in the Torres Strait Bêche-de-mer Fishery including sandfish, white teatfish, prickly redfish, deepwater redfish and blackfish species.</p> <p>Sea cucumbers are found on coral reefs and adjacent shoals, seagrass beds and sandy and silty benthos in shallow tropical seas. The habitat of sea cucumber species ranges from intertidal and inshore mudflats to inshore reefs and deepwater areas.</p> <p>Sea cucumber stocks generally are considered particularly vulnerable to over-exploitation due to limited dispersal, patchy distribution, ease of collection, slow recovery from overfishing and the limited available information on biological and spatial distribution. Woodhams and Rogers (2010) conclude that the sessile nature of sea cucumbers and their relatively restricted mobility make them inherently vulnerable to localised depletion.</p> <p>Due to observed declines in abundance, take of three sea cucumber species is prohibited in the Torres Strait Bêche-de-mer Fishery (annual total allowable catch of these species is set at zero):</p> <ul style="list-style-type: none"> <li>• sandfish (<i>Holothuria scabra</i>) since 1998</li> <li>• pacific black teatfish (<i>H. whitmaei</i>) since 2003</li> <li>• surf redfish (<i>Actinopyga mauritiana</i>) since 2003 (Historic catch reported as surf redfish is now considered to have been a suite of blackfish and redfish species, excluding surf redfish—see Flood and George 2013).</li> </ul> <p>The stock status of Torres Strait Bêche-de-mer Fishery sea cucumber stocks in 2012 was classified by Flood and George (2013) as:</p> <ul style="list-style-type: none"> <li>• sandfish: overfished, but not subject to overfishing</li> <li>• black teatfish: not overfished, not subject to overfishing (Between consecutive resource surveys in 2005 and 2009, the density of black teatfish had increased to near unfished densities (Skewes et al. 2010))</li> <li>• prickly redfish: not overfished, not subject to overfishing</li> <li>• white teatfish: not overfished, not subject to overfishing</li> <li>• all other sea cucumber species combined: uncertain if overfished and if subject to overfishing (see Flood and George (2013) for a detailed analysis of individual species in the 'other sea cucumber' category) .</li> </ul>

<b>Byproduct, bycatch and protected species interactions<sup>2</sup></b>	Due to the highly selective harvest methods (hand-collection only, with the use of self contained underwater breathing apparatus (SCUBA) and hookah gear not permitted) and targeted harvesting, there is no byproduct or bycatch in the fishery and interactions with protected species are likely to be minimal. No interactions with protected species have been reported from the fishery to date.												
<b>Gear</b>	<p>Fisheries Management Notice 47 (size of boats) and Fisheries Management Notice 64 (gear restrictions) limit Traditional Inhabitant fishing for sea cucumbers to hand collection while walking on reef tops or free diving from vessels less than 7 m in length. This effectively restricts collection to depths less than approximately 10m. Hand held non mechanical devices may be used.</p> <p>Conditions on the long term non-Traditional licence include provision for a primary vessel up to 20 m in length, with up to 5 dinghies and up to six divers.</p> <p>The use of self contained underwater breathing apparatus (SCUBA) and hookah<sup>3</sup> gear is prohibited in the fishery. Some limited trial fishing for white teatfish using hookah gear was undertaken in 2010-11 and 2011-12. No decision has been made on whether to allow the permanent use of hookah gear.</p>												
<b>Season</b>	Year round (January - December).												
<b>Australian commercial harvest 2013</b>	<p>The catch of sea cucumber species reported in docket books and catch disposal records in 2013 included:<sup>4</sup></p> <table border="1" data-bbox="395 992 1066 1294"> <thead> <tr> <th data-bbox="395 992 826 1037"><b>Species</b></th> <th data-bbox="826 992 1066 1037"><b>2013 Catch (kg)</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="395 1037 826 1081">White teatfish</td> <td data-bbox="826 1037 1066 1081">9,891</td> </tr> <tr> <td data-bbox="395 1081 826 1126">Prickly redfish</td> <td data-bbox="826 1081 1066 1126">2,782</td> </tr> <tr> <td data-bbox="395 1126 826 1171">Blackfish</td> <td data-bbox="826 1126 1066 1171">130</td> </tr> <tr> <td data-bbox="395 1171 826 1216">Deepwater redfish</td> <td data-bbox="826 1171 1066 1216">3,174</td> </tr> <tr> <td data-bbox="395 1216 826 1283">Golden sandfish</td> <td data-bbox="826 1216 1066 1283">21</td> </tr> </tbody> </table> <p data-bbox="395 1317 1530 1361">For confidentiality reasons the value of the commercial catch is not reported publicly.</p>	<b>Species</b>	<b>2013 Catch (kg)</b>	White teatfish	9,891	Prickly redfish	2,782	Blackfish	130	Deepwater redfish	3,174	Golden sandfish	21
<b>Species</b>	<b>2013 Catch (kg)</b>												
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<b>Take by other sectors</b>	<p>As sea cucumber is believed not to be part of the traditional Indigenous diet, recreational and traditional catch is assumed by AFMA to be minimal. Possession limits apply to non-commercial fishing.</p> <p>In 2011, two five-year developmental fishing permits were issued by Fisheries Queensland to allow for limited annual harvest of a range of sea cucumber species in the Queensland Gulf of Carpentaria, to the south west of the Torres Strait Bêche-de-mer Fishery. The Department understands that harvest under these permits has been very low.</p> <p>In 2009, the PNG Sea Cucumber Fishery immediately to the north of the Torres Strait Bêche-de-mer Fishery was closed for a period of three years.</p>												

<sup>2</sup> 'Protected species' means all species protected under Part 13 of the EPBC Act, including whales and other cetaceans and listed threatened, marine and migratory species.

<sup>3</sup> Hookah are air hoses used by divers.

<sup>4</sup> Because reporting is not compulsory, AFMA believes that there may be additional unreported catch.

<p><b>Take by other sectors</b> (<i>cont.</i>)</p>	<p>The closure was subsequently extended for a further three year period. It is thought that prior to the closure of the PNG Sea Cucumber Fishery, considerable exploitation of sea cucumber in the area of the Warrior Reef complex by illegal foreign fishers occurred, focussing on species for which take was prohibited in the Torres Strait Bêche-de-mer Fishery. With the closure of the PNG fishery and consequently a lack of buyers in PNG, AFMA considers that the risk of illegal fishing has declined markedly since 2009.</p>
<p><b>Commercial licences issued</b></p>	<p>There were two active licences in 2011 and 2012 from a total of 59 licences.</p>
<p><b>Management arrangements</b></p>	<p>The <i>Torres Strait Fisheries Act 1984</i> provides for the PZJA to make plans or policies for the management of fisheries in the Torres Strait. There is no formal plan of management in place for the Torres Strait Bêche-de-mer Fishery. The fishery is managed under a policy formulated by the PZJA under the <i>Torres Strait Fisheries Act 1984</i>. The policy is implemented through the <i>Torres Strait Fisheries Act 1984</i>, Torres Strait Fisheries Regulations 1985 and legislated through Fisheries Management Instruments<sup>5</sup> issued under the <i>Torres Strait Fisheries Act 1984</i> and through licence conditions.</p> <p>The management objectives for the Torres Strait Bêche-de-mer Fishery are:</p> <ul style="list-style-type: none"> <li>• to ensure the sustainable use of all sea cucumber in Torres Strait</li> <li>• to ensure that utilisation of the sea cucumber resources is for the direct benefit of the Australian Traditional Inhabitants of the Torres Strait</li> <li>• to ensure increased involvement in the management and control of all aspects of the fishery by the Australian traditional inhabitants of the Torres Strait</li> <li>• to promote a cooperative approach to management with Papua New Guinea</li> <li>• in consultation with industry and traditional fishers, to ensure the recovery of the sandfish stock on Warrior Reef by adopting a precautionary approach when setting catch levels in the early years of rebuilding the fishery.</li> </ul> <p>Management arrangements include a range of input and output controls, including:</p> <p><b><i>Input controls</i></b></p> <ul style="list-style-type: none"> <li>• entry limited to Traditional Inhabitant Boat licence holders (except for one long term non-Traditional Transferable Vessel Holder licence holder)</li> <li>• vessel restrictions—see Gear above</li> <li>• collection is by hand or non mechanical hand held devices</li> <li>• the use of hookah and SCUBA gear is prohibited.</li> </ul> <p><b><i>Output controls</i></b></p> <ul style="list-style-type: none"> <li>• minimum size limits on 10 species in the fishery</li> <li>• zero total allowable catch for sandfish, black teatfish (see below) and surf redfish</li> <li>• competitive annual total allowable catch for white teatfish (15 t) and prickly redfish (20 t)</li> <li>• combined total allowable catch for remaining sea cucumber species of 80 t.</li> </ul>

<sup>5</sup> previously termed Fisheries Management Notices

<p><b>Management arrangements</b> (<i>cont.</i>)</p>	<p><b><i>Non-commercial Fishing Controls</i></b></p> <ul style="list-style-type: none"> <li>• bag limits of three sea cucumbers per person or six per boat.</li> </ul> <p><b><i>Total allowable catch recommendations</i></b></p> <p>AFMA has advised that implementation of recommended amendments to total allowable catches and the introduction of recommended trigger limits (Skewes et al. 2010) is in progress through the PZJA (see Table 4).</p> <p><b><i>Management of black teatfish</i></b></p> <p>Based on survey evidence of recovery of the black teatfish stock (Skewes et al. 2010), the PZJA has endorsed a one month trial of fishing for black teatfish, with a 15 t total allowable catch, prior to considering longer term arrangements for this species.</p>
<p><b>Export</b></p>	<p>Most product is processed for export, primarily to south east Asia.</p>
<p><b>Ecosystem Impacts</b></p>	<p>AFMA considers that the potential impacts of the operation of the fishery on the ecosystem include:</p> <ul style="list-style-type: none"> <li>• potential over-exploitation of target species</li> <li>• potential translocation of species via hull and anchor fouling</li> <li>• potential impacts of anchoring/mooring and other anthropogenic activities such as treading on reef top habitat.</li> </ul> <p>Due to harvesting methods in the fishery being restricted to hand collection, impacts on the physical ecosystem are likely to be limited.</p> <p>Sea cucumbers are believed to play a role in the nutrient recycling pathways of benthic environments. The setting of total allowable catches in the fishery minimises the potential for unsustainable removal of sea cucumber species.</p>

**TABLE 2: PROGRESS WITH IMPLEMENTING THE CONDITIONS AND RECOMMENDATIONS FROM THE 2011 ASSESSMENT OF THE TORRES STRAIT BÊCHE-DE-MER FISHERY.**

Condition	Progress	Recommended Action
<p>1. Operation of the fishery will be carried out in accordance with the management regime in force under the Torres Strait <i>Fisheries Act 1984</i> and the Torres Strait <i>Fisheries Regulations 1985</i>.</p>	<p>The Australian Fisheries Management Authority (AFMA) has advised that the Torres Strait Bêche-de-mer Fishery continues to be managed in accordance with the management regime made under the <i>Torres Strait Fisheries Act 1984</i> and the Torres Strait Fisheries Regulations 1985.</p>	<p>The Department of the Environment considers that this condition has been met.</p> <p>The Department recommends that a new approved wildlife trade operation declaration for the Torres Strait Bêche-de-mer Fishery specify a similar condition (see <b>Condition 1</b>, Table 4).</p>
<p>2. The Protected Zone Joint Authority to inform the Department of Sustainability, Environment, Water, Population and Communities of any intended amendments to the Torres Strait Bêche-de-mer Fishery management arrangements that may affect the assessment of the fishery against the criteria on which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are based.</p>	<p>The Department has been informed in advance of the proposed trial increase in the total allowable catch for black teatfish.</p>	<p>The Department considers that this condition has been met.</p> <p>The Department recommends that a new approved wildlife trade operation declaration for the Torres Strait Bêche-de-mer Fishery specify a similar condition (see <b>Condition 2</b>, Table 4).</p>
<p>3. The Protected Zone Joint Authority to produce and present reports to the Department of Sustainability, Environment, Water, Population and Communities annually as per Appendix B to the <i>Guidelines for the Ecologically Sustainable Management of Fisheries - 2<sup>nd</sup> Edition</i>.</p>	<p>No report was provided for the period July 2011 to June 2012. However, the operation of the fishery during this period is included in the 2013 annual report. The Protected Zone Joint Authority (PZJA) has indicated that it intends to resume regular annual reporting and AFMA has devoted staff resources to this task.</p>	<p>The Department considers that this condition has been partially met.</p> <p>The Department recommends that a new approved wildlife trade operation declaration for the Torres Strait Bêche-de-mer Fishery specify a similar condition (see <b>Condition 3</b>, Table 4).</p>

Recommendation	Progress	Recommended Action
<p>1. The Protected Zone Joint Authority to:</p> <p>a) implement strategies to improve estimates of commercial (community) harvest from the Torres Strait Bêche-de-mer Fishery; and</p> <p>b) develop and implement appropriate strategies to obtain improved estimates of all removals from sea cucumber stocks.</p>	<p>Catch reporting in the Traditional Inhabitant sector of the fishery is voluntary via the Torres Strait seafood buyers and processors docket book, which provides a record of product landed. While this is a voluntary measure, AFMA considers it a promising source of data regarding catch level in the fishery.</p> <p>AFMA has advised that during the proposed one month 15 t trial for black teatfish, all fishery participants will be strongly encouraged to report all catches. The PZJA has developed specialised catch record data sheets on waterproof paper for fishers to record daily catches during the trial. AFMA has advised that community consultation visits will occur prior to the trial to inform participants of the importance of catch reporting and the use of the information collected in managing the long term sustainability of the black teatfish fishery.</p> <p>AFMA has previously advised that in 2012 the Torres Strait Scientific Advisory Committee identified improvement of monitoring of catch and effort in the Traditional Inhabitant sector of all Torres Strait fisheries as a research priority. AFMA is currently researching the use of smart phone technology for catch monitoring in Torres Strait fisheries, with a trial under way in the Torres Strait Finfish Fishery. It is envisaged that through the use of a smart phone application, the fishermen will have the ability to record and submit their daily catch and effort information. AFMA expects that the outputs from this project will lead to improved catch monitoring processes in other Torres Strait fisheries including the Torres Strait Bêche-de-mer Fishery.</p> <p>While believed to have reduced significantly since the closure of the PNG sea cucumber fishery in 2009, the actual level of illegal take is unknown. The Department notes that in recognition of the uncertainty in the actual level of removals, conservative total allowable catches are set, especially for any trial fishing of previously overfished species.</p>	<p>The Department considers this recommendation to be ongoing (see <b>Recommendation 1, Table 4</b>).</p>

Recommendation	Progress	Recommended Action
<p>2. The Protected Zone Joint Authority to:</p> <ul style="list-style-type: none"> <li>a) develop strategies for implementing the existing draft community based harvest strategies to include meaningful performance indicators, performance measures and responses;</li> <li>b) extend the development of harvest strategies to other communities in the area of the Torres Strait Bêche-de-mer Fishery as appropriate; and</li> <li>c) consider formalising performance indicators, performance measures and responses for those areas of the fishery not covered by community based harvest strategies.</li> </ul>	<p>AFMA anticipates that the draft harvest strategies for sea cucumber developed with the Erub and Warraber communities in 2010 will be considered as part of a management strategy evaluation for the Traditional Inhabitant Boat sector of the fishery. AFMA advises that the Torres Strait Harvest Collectables Working Group is currently considering research priorities for 2014 and that the priority and timing of a management strategy evaluation is under discussion. AFMA advises that future meetings of the working group will need to address community concerns on legislating responses to performance measures and indicators before further expansion of harvest strategies based on community co-management can be progressed.</p>	<p>The Department recommends that the Protected Zone Joint Authority, in conjunction with all sectors of the fishery, continue to work towards the implementation of species based harvest strategies for sea cucumber species in the Torres Strait Bêche-de-mer Fishery that are based on knowledge of the biology and ecology of the species or species groups concerned and include meaningful performance indicators, performance measures and management responses. (see <b>Recommendation 2, Table 4</b>).</p>
<p>3. The Protected Zone Joint Authority to continue to identify and pursue opportunities for research relevant to species harvested in the Torres Strait Bêche-de-mer Fishery.</p>	<p>A lack of information on individual target species to inform the setting of sustainable catch levels was identified as an issue in previous assessments of the fishery.</p> <p>The Hand Collectables Working Group considers research opportunities relevant to hand collectable fisheries as a standing agenda item at each meeting and provides research priorities to the Torres Strait Scientific Advisory Committee. During Australia—PNG annual bilateral meetings in 2012, investigating opportunities for collaborative research on sea cucumbers was identified as a high priority. The Department understands that the PNG National Fisheries Authority has indicated its willingness to contribute financially to stock assessments.</p> <p>The Department notes the current research proposal for a management strategy evaluation for the fishery and considers that this project could inform information needs for longer term management.</p>	<p>The Department considers this recommendation to be ongoing (see <b>Recommendation 3, Table 4</b>).</p>

Recommendation	Progress	Recommended Action
<p>4. The Protected Zone Joint Authority and the Australian Fisheries Management Authority to continue and encourage further co-operation with other relevant jurisdictions to pursue increased knowledge and complementary management of sea cucumber resources across fisheries and across jurisdictions.</p>	<p>AFMA has advised that:</p> <ul style="list-style-type: none"> <li>• engagement with PNG continues through annual bilateral meetings and ongoing collaboration on research and compliance matters</li> <li>• the PNG National Fisheries Authority is a member of the Torres Strait Scientific Advisory Committee</li> <li>• CSIRO, which conducts research in the Torres Strait Bêche-de-mer Fishery, also provides advice on the assessment and management of other Australian and international sea cucumber fisheries (in particular the Queensland Sea Cucumber Fishery (East Coast))</li> <li>• some industry members of the Hand Collectables Working Group hold licences in other sea cucumber fisheries and are active in the management of those fisheries, providing for cross fishery exchange of information.</li> </ul>	<p>The Department considers this recommendation to be ongoing (see <b>Recommendation 4, Table 4</b>).</p>

**TABLE 3: THE DEPARTMENT OF THE ENVIRONMENT’S ASSESSMENT OF THE TORRES STRAIT BÊCHE-DE-MER FISHERY AGAINST THE REQUIREMENTS OF THE *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999* (EPBC ACT) RELATED TO DECISIONS MADE UNDER PART 13 AND 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 Parts 13 and 13A. A complete version of the EPBC Act can be found at <http://www.comlaw.gov.au/>.

**Part 13**

<p><b>Division 1 Listed threatened species Section 208A Minister may accredit plans or regimes</b></p>	<p><b>The Department of the Environment’s assessment of the Torres Strait Bêche-de-mer Fishery</b></p>
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(e) a policy formulated by the Protected Zone Joint Authority under paragraph 34(b) of the <i>Torres Strait Fisheries Act 1984</i> for managing a fishery for which a plan of management (within the meaning of section 15A of the <i>Torres Strait Fisheries Act 1984</i>) is not in force;</p> <p>if <b>satisfied</b> that:</p> <p>(f) the plan, regime or policy requires persons engaged in fishing under the plan, regime or policy to take all reasonable steps to ensure that members of listed threatened species (other than conservation dependent species) are not killed or injured as a result of the fishing; and</p> <p>(g) the fishery to which the plan, regime or policy relates does not, or is not likely to, adversely affect the survival or recovery in nature of the species.</p>	<p>The Torres Strait Bêche-de-mer Fishery will be managed under the policy for the fishery formulated under the <i>Torres Strait Fisheries Act 1984</i>.</p> <p>Fisheries Management Notice 64 issued under the <i>Torres Strait Fisheries Act 1984</i> specifies that sea cumbers may only be taken by hand collection methods. Due to the selective nature of the hand collection fishing method, the likelihood of interactions with listed threatened species is very low.</p> <p>Therefore, the Department considers the policy for the management of the Torres Strait Bêche-de-mer Fishery requires operators to take all reasonable steps to ensure that members of listed threatened species are not killed or injured and that the fishery is not likely to adversely affect the survival or recovery in nature of any listed threatened species.</p>

**Part 13 (cont.)**

<p><b>Division 2 Migratory species</b>  <b>Section 222A Minister may accredit plans or regimes</b></p>	<p><b>The Department of the Environment’s assessment of the Torres Strait Tropical Rock Lobster Fishery</b></p>
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(e) a policy formulated by the Protected Zone Joint Authority under paragraph 34(b) of the <i>Torres Strait Fisheries Act 1984</i> for managing a fishery for which a plan of management (within the meaning of section 15A of the <i>Torres Strait Fisheries Act 1984</i>) is not in force;</p> <p>if <b>satisfied</b> that:</p> <p>(f) the plan, regime or policy requires persons engaged in fishing under the plan, regime or policy to take all reasonable steps to ensure that members of listed migratory species are not killed or injured as a result of the fishing; and</p> <p>(g) the fishery to which the plan, regime or policy relates does not, or is not likely to, adversely affect the conservation status of a listed migratory species or a population of that species.</p>	<p>The Torres Strait Bêche-de-mer Fishery will be managed under the policy for the fishery formulated under the <i>Torres Strait Fisheries Act 1984</i>.</p> <p>Fisheries Management Notice 64 issued under the <i>Torres Strait Fisheries Act 1984</i> specifies that sea cumbers may only be taken by hand collection methods. Due to the selective nature of the hand collection fishing method, the likelihood of interactions with listed migratory species is very low.</p> <p>Therefore, the Department considers the policy for the management of the Torres Strait Bêche-de-mer Fishery requires operators to take all reasonable steps to ensure that members of listed migratory species are not killed or injured and that the fishery is not likely to adversely affect the conservation status of a listed migratory species or a population of that species.</p>

**Part 13 (cont.)**

<p><b>Division 3 Whales and other cetaceans</b>  <b>Section 245 Minister may accredit plans or regimes</b></p>	<p><b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b></p>
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(e) a policy formulated by the Protected Zone Joint Authority under paragraph 34(b) of the <i>Torres Strait Fisheries Act 1984</i> for managing a fishery for which a plan of management (within the meaning of section 15A of the <i>Torres Strait Fisheries Act 1984</i>) is not in force;</p> <p>if <b>satisfied</b> that:</p> <p>(f) the plan, regime or policy requires persons engaged in fishing under the plan, regime or policy to take all reasonable steps to ensure that cetaceans are not killed or injured as a result of the fishing; and</p> <p>(g) the fishery to which the plan, regime or policy relates does not, or is not likely to, adversely affect the conservation status of a species of cetacean or a population of that species.</p>	<p>The Torres Strait Bêche-de-mer Fishery will be managed under the policy for the fishery formulated under the <i>Torres Strait Fisheries Act 1984</i>.</p> <p>Fisheries Management Notice 64 issued under the <i>Torres Strait Fisheries Act 1984</i> specifies that sea cumpers may only be taken by hand collection methods. Due to the selective nature of the hand collection fishing method, the likelihood of interactions with cetaceans is very low.</p> <p>Therefore, the Department considers the policy for the management of the Torres Strait Bêche-de-mer Fishery requires operators to take all reasonable steps to ensure that cetaceans are not killed or injured and that the fishery is not likely to adversely affect the conservation status of a species of cetacean or a population of that species.</p>

Part 13 (cont.)

<b>Division 4 Listed marine species</b> <b>Section 265 Minister may accredit plans or regimes</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(e) a policy formulated by the Protected Zone Joint Authority under paragraph 34(b) of the <i>Torres Strait Fisheries Act 1984</i> for managing a fishery for which a plan of management (within the meaning of section 15A of the <i>Torres Strait Fisheries Act 1984</i>) is not in force;</p> <p>if <b>satisfied</b> that:</p> <p>(f) the plan, regime or policy requires persons engaged in fishing under the plan, regime or policy to take all reasonable steps to ensure that members of listed marine species are not killed or injured as a result of the fishing; and</p> <p>(g) the fishery to which the plan, regime or policy relates does not, or is not likely to, adversely affect the conservation status of a listed marine species or a population of that species.</p>	<p>The Torres Strait Bêche-de-mer Fishery will be managed under the policy for the fishery formulated under the <i>Torres Strait Fisheries Act 1984</i>.</p> <p>Fisheries Management Notice 64 issued under the <i>Torres Strait Fisheries Act 1984</i> specifies that sea cumpers may only be taken by hand collection methods. Due to the selective nature of the hand collection fishing method, the likelihood of interactions with listed marine species is very low.</p> <p>Therefore, the Department considers the policy for the management of the Torres Strait Bêche-de-mer Fishery requires operators to take all reasonable steps to ensure that members of listed marine species are not killed or injured and that the fishery is not likely to adversely affect the conservation status of a listed marine species or a population of that species.</p>

**Part 13 (cont.)**

<b>Section 303AA Conditions relating to accreditation of plans, regimes and policies</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(1) This section applies to an accreditation of a plan, regime or policy under section 208A, 222A, 245 or 265.	The Department recommends that the Torres Strait Bêche-de-mer Fishery be accredited under sections 208A, 222A, 245 and 265.
(2) The Minister may accredit a plan, regime or policy under that section even though he or she considers that the plan, regime or policy should be accredited only:  (a) during a particular period; or  (b) while certain circumstances exist; or  (c) while a certain condition is complied with.  In such a case, the instrument of accreditation is to specify the period, circumstances or condition.	The Department considers that no conditions are required for accreditation of the policy for management of the Torres Strait Bêche-de-mer Fishery.
(7) The Minister must, in writing, revoke an accreditation if he or she is satisfied that a condition of the accreditation has been contravened.	

## **Part 13A**

### **Section 303BA Objects of Part 13A**

- (1) The objects of this Part are as follows:
- (a) to ensure that Australia complies with its obligations under CITES<sup>6</sup> 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;
  - (h) to ensure the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife.

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<sup>6</sup> Convention on International Trade in Endangered Species of Wild Fauna and Flora

Part 13A (cont.)

Section 303FN Approved wildlife trade operation	The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery
(2) The Minister may, by instrument published in the <i>Gazette</i> , declare that a specified wildlife trade operation is an <b>approved wildlife trade operation</b> for the purposes of this section.	
(3) The Minister must not declare an operation as an approved wildlife trade operation unless the Minister is satisfied that: <p>(a) the operation is consistent with the objects of Part 13A of the Act; and</p>	<p>The Department considers that the operation of the Torres Strait Bêche-de-mer Fishery is consistent with the objects of Part 13A (listed before this table) as:</p> <ul style="list-style-type: none"> <li>• the fishery will not harvest any CITES listed species</li> <li>• there are management arrangements in place to ensure that the resource is being managed in an ecologically sustainable way (refer to Table 1)</li> <li>• the operation of the fishery during the period of the recommended declaration as an approved wildlife trade operation (three years) is unlikely to be unsustainable and threaten biodiversity</li> <li>• the Environment Protection and Biodiversity Regulations 2000 do not specify sea cucumbers (class Holothuroidea) as a class of animal in relation to the welfare of live specimens.</li> </ul>
(b) the operation will not be detrimental to: <p>i. the survival of a taxon to which the operation relates; or</p> <p>ii. the conservation status of a taxon to which the operation relates; and</p>	<p>The Department considers that the operation of the Torres Strait Bêche-de-mer Fishery during the period of the recommended declaration as an approved wildlife trade operation will not be detrimental to the survival or conservation status of a taxon to which it relates, given the management measures currently in place (see Table 1), which include:</p> <ul style="list-style-type: none"> <li>• competitive total allowable catches, based on stock surveys, for all species harvested in the fishery, including a zero total allowable catch for overfished species</li> <li>• a prohibition on the use of hookah and self contained underwater breathing apparatus (SCUBA) equipment providing protection to target species inhabiting deepwater habitats</li> <li>• size limits on all high value, medium value and two low value species</li> <li>• harvesting is limited to hand collection or hand held non-mechanical devices only.</li> </ul>

<b>Section 303FN Approved wildlife trade operation</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
<p>(ba) the operation will not be likely to threaten any relevant ecosystem including (but not limited to) any habitat or biodiversity; and</p> <p>(c) if the operation relates to the taking of live specimens that belong to a taxon specified in the regulations – the conditions that, under the regulations, are applicable to the welfare of the specimens are likely to be complied with; and</p> <p>(d) such other conditions (if any) as are specified in the regulations have been, or are likely to be, satisfied.</p>	<p>The Department considers that the operation of the Torres Strait Bêche-de-mer Fishery during the period of the recommended declaration as an approved wildlife trade operation will not threaten any relevant ecosystem, given the management measures currently in place (see Table 1), which include:</p> <ul style="list-style-type: none"> <li>• vessel restrictions</li> <li>• harvesting by hand or hand held non-mechanical devices only</li> <li>• a prohibition on the use of hookah and SCUBA equipment, providing protection for deepwater habitat and species</li> <li>• total allowable catches and size limits for target species (see (3)(b) above).</li> </ul> <p>The Environment Protection and Biodiversity Regulations 2000 do not specify sea cucumbers (class Holothuroidea) as a class of animal in relation to the welfare of live specimens.</p> <p>No other conditions are specified in relation to commercial fisheries in the Environment Protection and Biodiversity Regulations 2000.</p>

Section 303FN Approved wildlife trade operation	The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery
<p>(4) In deciding whether to declare an operation as an approved wildlife trade operation the Minister must have regard to:</p> <p>(a) the significance of the impact of the operation on an ecosystem (for example, an impact on habitat or biodiversity); and</p> <p>(b) the effectiveness of the management arrangements for the operation (including monitoring procedures).</p>	<p>The Department considers that the operation of the Torres Strait Bêche-de-mer Fishery during the period of the recommended declaration as an approved wildlife trade operation will not have adverse impacts on any relevant ecosystem, given the management measures currently in place (see Table 1), which include:</p> <ul style="list-style-type: none"> <li>• vessel restrictions</li> <li>• harvest limited to hand collection or hand held non-mechanical devices</li> <li>• a prohibition on the use of hookah and SCUBA equipment, providing protection to target species inhabiting deepwater habitats</li> <li>• total allowable catches and size limits for target species (see (3)(b) above).</li> </ul> <p>The Department considers that the management arrangements that will be employed for the Torres Strait Bêche-de-mer Fishery (see Table 1 and (3) and (4) above) are likely to be effective.</p>
<p>(5) In deciding whether to declare an operation as an approved wildlife trade operation the Minister must have regard to:</p> <p>(a) whether legislation relating to the protection, conservation or management of the specimens to which the operation relates is in force in the State or Territory concerned; and</p> <p>(b) whether the legislation applies throughout the State or Territory concerned; and</p> <p>(c) whether, in the opinion of the Minister, the legislation is effective.</p>	<p>The Torres Strait Bêche-de-mer Fishery will be managed under the <i>Torres Strait Fisheries Act 1984</i> and Torres Strait Fisheries Regulations 1985.</p> <p>The <i>Torres Strait Fisheries Act 1984</i> and Torres Strait Fisheries Regulations 1985 apply throughout the Torres Strait Protected Zone.</p> <p>The Department considers that the legislation is likely to be effective.</p>

<b>Section 303FN Approved wildlife trade operation</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(10) For the purposes of section 303FN, an operation is a wildlife trade operation if, and only if, the operation is an operation for the taking of specimens and:  (d) the operation is a commercial fishery.	The Torres Strait Bêche-de-mer Fishery is a commercial fishery.
(10A) In deciding whether to declare that a commercial fishery is an approved wildlife trade operation for the purposes of this section, 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.	The impact of actions under the policy for the Torres Strait Bêche-de-mer Fishery formulated under the <i>Torres Strait Fisheries Act 1984</i> was assessed under Part 10 of the EPBC Act in June 2005. That assessment concluded that actions taken in the Torres Strait Bêche-de-mer Fishery would not have an unacceptable or unsustainable impact on the environment in a Commonwealth marine area.
(10B) Subsection (10A) does not limit the matters that may be taken into account in deciding whether to declare that a fishery is an approved wildlife trade operation for the purposes of this section.	

<b>Section 303FR Public consultation</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(1) Before making a declaration under section 303FN, the Minister must cause to be published on the Internet a notice:  (a) setting out the proposal to make the declaration; and  (b) setting out sufficient information to enable persons and organisations to consider adequately the merits of the proposal; and  (c) inviting persons and organisations to give the Minister, within the period specified in the notice, written comments about the proposal.	A public notice, which:  <ul style="list-style-type: none"> <li>• set out the proposal to declare the Torres Strait Bêche-de-mer Fishery an approved wildlife trade operation</li> <li>• included the application from the Australian Fisheries Management Authority</li> <li>• invited persons and organisations to give written comments about the proposal within the period 22 April to 23 May 2014.</li> </ul> was published on the Department's website.

<b>Section 303FR Public consultation</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(2) A period specified in the notice must not be shorter than 20 business days after the date on which the notice was published on the Internet.	The period specified in the notice included a total of 22 business days.
(3) In making a decision about whether to make a declaration under section 303FN, the Minister must consider any comments about the proposal to make the declaration that were given in response to the invitation in the notice.	No comments about the proposal were received.

<b>Section 303FT Additional provisions relating to declarations</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(1) This section applies to a declaration made under section 303FN, 303FO or 303FP.	The Department recommends that the Torres Strait Bêche-de-mer Fishery be declared an approved wildlife trade operation under section 303FN.
(4) The Minister may make a declaration about a plan or operation even though he or she considers that the plan or operation should be the subject of the declaration only: <ul style="list-style-type: none"> <li>(a) during a particular period; or</li> <li>(b) while certain circumstances exist; or</li> <li>(c) while a certain condition is complied with.</li> </ul> In such a case, the instrument of declaration is to specify the period, circumstances or condition.	The Department considers that the Torres Strait Bêche-de-mer Fishery should be the subject of a declaration under section 303FN only if the conditions described in Table 4 are complied with.  The instrument of declaration for the Torres Strait Bêche-de-mer Fishery specifies the conditions.
(8) A condition may relate to reporting or monitoring.	Condition 3 relates to reporting.
(9) The Minister must, by instrument published in the Gazette, revoke a declaration if he or she is satisfied that a condition of the declaration has been contravened.	

<b>Section 303FT Additional provisions relating to declarations</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(11) A copy of an instrument under section 303FN or this section is to be made available for inspection on the Internet.	The instrument for the Torres Strait Bêche-de-mer Fishery made under section 303FN and the conditions under section 303FT will be gazetted and made available through the Department's website.

## Part 16

<b>Section 391 Minister must consider precautionary principle in making decisions</b>	<b>The Department of the Environment's assessment of the Torres Strait Bêche-de-mer Fishery</b>
(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.	The Department has considered the precautionary principle in the preparation of advice in relation to the recommended decision under section 303FN.
(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 CONDITIONS AND RECOMMENDATIONS TO THE PROTECTED ZONE JOINT AUTHORITY FOR THE TORRES STRAIT BÊCHE-DE-MER FISHERY

The Torres Strait Bêche-de-mer Fishery targets a range of sea cucumber species. Although currently of low value compared to other Torres Strait fisheries, the fishery has in the past provided an important source of income for Traditional Inhabitants. Traditional Inhabitants have been proactive in researching community based harvest strategies for sea cucumbers and co-management opportunities for the long term future management of this largely Traditional Inhabitant fishery (Tawake et al. 2010).

There was little activity in the fishery during much of the past decade owing to the prohibition on harvest of many of the high value species including sandfish, black teatfish and surf redfish. Total allowable catches of these species have been set at zero since 1998 for sandfish and for black teatfish and surf redfish since 2003, due to marked declines in abundances as a result of fishing activities. Resource surveys undertaken in 2009 (Skewes *et al* 2010), 2010 (Murphy *et al* 2010) and 2012 (Murphy et al 2012a) provide an indication that most stocks are recovering.

The material submitted by the Australian Fisheries Management Authority (AFMA) on behalf of the Torres Strait Protected Zone Joint Authority in April 2014 demonstrates that the management arrangements for the Torres Strait Bêche-de-mer Fishery continue to meet most of the requirements of the Australian Government *Guidelines for the Ecologically Sustainable Management of Fisheries - 2<sup>nd</sup> edition*.

### **Stock Status and Recovery**

Management arrangements in the Torres Strait Bêche-de-mer Fishery include input and output controls (see Table 1.) Competitive total allowable catches are set for all species in the fishery and minimum size limits are set for all high and medium value species and some low value species, based on size at reproductive maturity. While there is considerable uncertainty surrounding the actual level of removals, conservative total allowable catches are set as a result. The Department considers that overall the management policy for the fishery aims to ensure that fishing is conducted in a manner that does not lead to over-fishing.

However, the stock status of sandfish remains overfished and that of surf redfish remains uncertain (Flood and George 2013) and formal recovery strategies linked to target recovery timeframes and reference points, as outlined in the guidelines<sup>7</sup>, are not in place.

### ***Sandfish recovery***

Sandfish has traditionally been a primary target species in the Torres Strait with the majority of the fishing for this species taking place on the Warrior Reef complex. Past fishing pressure led to a marked decline in the stock, and a zero total allowable catch was introduced for this species in 1998. Sandfish stocks were classified as overfished and not subject to overfishing in 2012 (Flood and George 2013). A zero total allowable catch for sandfish in the Torres Strait Bêche-de-mer Fishery allows for recovery of the stock.

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<sup>7</sup> *Guidelines for the Ecologically Sustainable Management of Fisheries - 2<sup>nd</sup> edition*, 1.2.1.

AFMA considers that due to the closure of the Papua New Guinea (PNG) Sea Cucumber Fishery in October 2009, there has been less illegal fishing by PNG fishers in Australian waters, reducing the risk of overfishing of sandfish. Surveys of sandfish carried out in 2010 and 2012 show some evidence that the stock is recovering (Murphy et al. 2012a).

### ***Black teatfish recovery***

Following surveys of sea cucumbers in the Torres Strait Bêche-de-mer Fishery in 2002, from which it was concluded that black teatfish was overexploited, a zero total allowable catch for black teatfish in the fishery was introduced in 2003. The most recent survey in 2009 found that the density of black teatfish had increased to near unfished densities (Skewes et al. 2010). Based on these results, the PZJA has endorsed a one month trial of fishing for black teatfish, with a 15 t total allowable catch, prior to considering longer term arrangements for this species (see Table 1).

### ***Surf Redfish***

Surf redfish, previously classified as overfished, is now considered by AFMA to have been misidentified. AFMA suggests that the component of the catch reported as surf redfish was made up of blackfish and other redfish and that surf redfish were uncommon in the fishery. A zero total allowable catch for surf redfish remains in place.

### **Ecosystem Impacts**

Given the hand collection methods employed and taking into account management measures in place (see above and Table 1), the Department considers that the management regime for the Torres Strait Bêche-de-mer Fishery provides for fishing operations to be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem.

### **Conclusion**

The Department considers that a number of previously identified risks and uncertainties still remain, which must be managed to ensure that impacts are minimised, including:

- the inherent vulnerability of sea cucumber species in general to over-exploitation
- the lack of robust data collection in the fishery owing to the voluntary nature of fishery dependant data collection (docket books)
- the lack of information on the biology of key target species
- remaining uncertainty regarding the stock status of several target species
- the need for continued collaborative management with other jurisdictions exploiting similar species and/or joint stocks of sea cucumbers.

The Department considers that, until it can be demonstrated that these issues have been adequately addressed, declaration of the harvest operations of the Torres Strait Bêche-de-mer Fishery as an approved wildlife trade operation for three years, until 15 June 2017, is appropriate. The Department considers that the declaration should be subject to the conditions listed in Table 4. To contain and minimise the risks in the longer term the recommendations to help improve the management of the fishery outlined in Table 4 have been made.

**TABLE 4: TORRES STRAIT BÊCHE-DE-MER FISHERY ASSESSMENT–SUMMARY OF ISSUES, CONDITIONS AND RECOMMENDATIONS–  
JUNE 2014**

Issue	Condition
<p><b>General Management</b></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 sustainability of the target species or negatively impact on byproduct, bycatch, protected species or the ecosystem.</p>	<p><b>Condition 1:</b></p> <p>Operation of the Torres Strait Bêche-de-mer Fishery will be carried out in accordance with the management regime for the fishery made under the <i>Torres Strait Fisheries Act 1984</i> and the <i>Torres Strait Fisheries Regulations 1985</i>.</p> <p><b>Condition 2:</b></p> <p>The Protected Zone Joint Authority to inform the Department of the Environment of any intended amendments to the Torres Strait Bêche-de-mer Fishery management arrangements that may affect the assessment of the fishery against the criteria on which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are based.</p>
<p><b>Annual Reporting</b></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 conditions and 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 - 2<sup>nd</sup> 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 protected species, impacts of the fishery on the ecosystem in which it operates and progress in implementing conditions and recommendations. Electronic copies of the guidelines are available from the Department's website at <a href="http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries">http://www.environment.gov.au/resource/guidelines-ecologically-sustainable-management-fisheries</a>.</p>	<p><b>Condition 3:</b></p> <p>The Protected Zone Joint Authority to produce and present reports for the Torres Strait Bêche-de-mer Fishery to the Department of the Environment annually as per Appendix B to the <i>Guidelines for the Ecologically Sustainable Management of Fisheries - 2<sup>nd</sup> Edition</i>.</p>

Issue	Recommendation
<p><b>Harvest levels and catch monitoring</b></p> <p>The primary source of catch and effort monitoring relevant to the Torres Strait Bêche-de-mer Fishery is the voluntary buyers and processors Docket Book System. This system applies to Traditional Inhabitant Boat (TIB) community fishing. The Docket Book System is a voluntary system introduced in 2003-04 that depends on the cooperation of the buyers and sellers to record the catches sold and ancillary information about the fishing operation.</p> <p>While the Australian Fisheries Management Authority (AFMA) carries out regular follow up and extension with buyers and processors, AFMA acknowledges that reported catch does underestimate actual catch. There is also some uncertainty surrounding species identification (see Flood et al. 2011, Woodhams et al. 2012).</p> <p>Information needs identified in annual fishery status reports include understanding sea cucumber catch, particularly the development of the ability to effectively monitor catch and stop harvesting when species reference points are reached. This applies particularly to those species for which a total allowable catch is constraining harvest, including species such as teatfish species where periodic opening of the fishery to allow low levels of harvest is being trialled (Woodhams and Rodgers 2010, Flood et al. 2011, Woodhams et al. 2012, Flood and George 2013).</p> <p>The Department notes that in 2013 the Torres Strait Scientific Advisory Committee approved funding for production of a sea cucumber species guide to assist in catch identification and reporting. The Department understands that AFMA has consulted with Torres Strait communities and the Torres Strait 'Hand Collectables Working Group' regarding the type of information in and the layout of the guide and that the guide is expected to be completed in 2014.</p> <p>The proposed trial opening of the black teatfish fishery has provided an opportunity for participative research and extension of the importance and use of catch information in the management of the fishery (see Table 2). In addition, research is underway into alternative technologies for catch and effort reporting and utilisation of the resulting information. These initiatives aim to encourage participation in catch reporting by being relevant to the Traditional Inhabitant sector across all Torres Strait fisheries (for example, the use of smart phone technology which is currently being trialled in the Torres Strait Finfish Fishery). The Department considers that developing reliable catch estimates should be an integral part of the development and evaluation of harvest strategies for sea cucumber species.</p> <p style="text-align: right;"><i>.../cont.</i></p>	<p><b>Recommendation 1:</b></p> <p>The Protected Zone Joint Authority to continue to develop and implement:</p> <ol style="list-style-type: none"> <li>a. strategies to improve estimates of commercial (community) harvest from the Torres Strait Bêche-de-mer Fishery</li> <li>b. appropriate strategies to obtain improved estimates of all removals from sea cucumber stocks.</li> </ol>

Issue	Recommendation
<p data-bbox="91 169 645 201"><i>Illegal, unreported and unregulated fishing</i></p> <p data-bbox="91 233 1413 379">Illegal fishing by foreign nationals has been identified as a compliance risk in the Torres Strait Bêche-de-mer Fishery. While the closure of the Papua New Guinea (PNG) Sea Cucumber Fishery, which has been in effect since 2009, has reduced the incidence of illegal fishing, the PZJA is aware of anecdotal reports of recent illegal harvest occurrences.</p> <p data-bbox="91 416 1420 639">The Department acknowledges the inherent difficulties in estimating the level of illegal fishing. The Department also notes that the risk of illegal fishing in the Torres Strait Bêche-de-mer Fishery has decreased with the closure of the PNG Sea Cucumber Fishery in 2009. Nonetheless, the Department considers that there is an ongoing need to continue to improve estimates of all removals from sea cucumber stocks to ensure that total allowable catch recommendations are based on the best possible information. This may include allowances for illegal harvest if appropriate.</p>	

Issue	Recommendation
<p><b>Harvest strategies</b></p> <p>Management arrangements for the Torres Strait Bêche-de-mer Fishery are currently implemented through the use of fishery management notices under the <i>Torres Strait Fisheries Act 1984</i> and licence conditions. Management measures include limited entry, gear restrictions, vessel length limits, species-specific size limits based on estimates of size at reproductive maturity and total allowable catch limits.</p> <p>Previous assessments of the fishery under the EPBC Act have recommended the development of fishery specific objectives, performance measures and performance indicators, including as part of a formal harvest strategy for the fishery (Department of Sustainability, Environment, Water, Population and Communities, 2011). Documentation of recovery strategies for a number of species which were historically overfished, but no longer subject to overfishing, was also recommended.</p> <p>In terms of licence numbers, the Torres Strait Bêche-de-mer Fishery is predominantly a Traditional Inhabitant fishery and there has been interest from this sector in co-management in the form of ‘community based management’ (Tawake et al. 2010). This would incorporate conventional (western) management strategies and traditional fishing practices with local decision making, aiming to achieve the most effective management practice for the fishery.</p> <p>The Department notes previous research on community based harvest strategies for sea cucumber species, utilising a co-management approach, and the current research proposal for a management strategy evaluation for the fishery. Developing community understanding of the science results that influence current management arrangements will help supplement local knowledge to inform co-management strategies, if co-management is to be implemented in the fishery. While noting the challenges posed by the need to integrate both the long term Traditional Vessel Holder licence and Traditional Inhabitant Boat licences into the management of the fishery, the Department recommends that the PZJA continue to work towards formal species based harvest ‘strategies’ for sea cucumbers in the fishery.</p> <p>The Department notes that, in the interim, the PZJA is progressing the implementation additional species-specific total allowable catches and trigger limits for species in the ‘other sea cucumber’ species group recommended by Skewes et al. (2010). A 5 t trigger limit has been recommended for all species that do not have a species specific total allowable catch.</p> <p style="text-align: right;">.../cont.</p>	<p><b>Recommendation 2</b></p> <p>The Protected Zone Joint Authority to continue to work towards species based harvest strategies for sea cucumbers in the Torres Strait Bêche-de-mer Fishery. The harvest strategies should take account of:</p> <ul style="list-style-type: none"> <li>• species specific biology and ecology, where relevant</li> <li>• the uncertainty associated with estimates of total removals of each species</li> <li>• the differing levels of fishing capacity between Traditional and non-Traditional fishers</li> <li>• Traditional Inhabitant community knowledge relevant to the management of sea cucumbers (including community based harvest strategies developed for Erub and Warraber communities).</li> </ul>

Issue	Recommendation
<p>Exceeding the trigger limit for a species would result in a review of the catch data for that species, and a recommendation for future exploitation levels and/or data requirements for that species. AFMA is currently developing options for the PZJA to remove a number of species from the overall 'other sea cucumber' basket, to allow for total allowable catches for those species.</p>	
<p><b>Biological and Stock Characteristics</b></p> <p>The Torres Strait Bêche-de-mer Fishery is a multispecies fishery. Individual species of sea cucumbers have different biological and ecological characteristics and as such require species specific management. A lack of information on individual target species to inform the setting of sustainable catch levels has been identified as an issue in previous assessments of the fishery. Information requirements identified include the need to address key gaps in the understanding of the biology and ecology of sea cucumber species and to provide reliable biomass estimates.</p> <p>The Department acknowledges that participatory research is an important source of information on species recovering from historical overfishing—for example, the 2012 experimental fishing trial of the Warrior Reef sandfish stock (Flood and George 2013) and the proposed trial opening of fishing for black teatfish, with catch limits based on biomass surveys, and the 'reef gardens' project (Murphy et al. 2012). The Department also acknowledges that the current research proposal for a management strategy evaluation for the fishery would likely inform information needs for longer term management of the fishery.</p> <p>The Department notes the role of the Hand Collectables Working Group in identifying research priorities for the Torres Strait Bêche-de-mer Fishery (see Table 2). The Department understands that development of an updated five year research strategy, to replace the 2009 <i>Strategic Research Plan for Torres Strait Fisheries</i>, is underway. The Department encourages the review and update of this strategic research document. The Department considers that understanding of the target species is an important step towards the ecological sustainability of the Torres Strait Bêche-de-mer Fishery and recommends that the PZJA continue to identify and pursue opportunities for research relevant to the management of sea cucumber species harvested in the fishery.</p>	<p><b>Recommendation 3:</b></p> <p>The Protected Zone Joint Authority to continue to identify and pursue opportunities for research relevant to species harvested in the Torres Strait Bêche-de-mer Fishery.</p>

Issue	Recommendation
<p><b>Collaborative approach to management of regional sea cucumber harvest</b></p> <p>The sea cucumber fisheries of northern Australia generally harvest many of the same species and face many of the same issues. In addition, the 2006 examination of the sustainability of Torres Strait sea cucumber stocks concluded that it is likely the Torres Strait and PNG sandfish stocks are shared between the two jurisdictions (Skewes et al. 2006). The Department acknowledges the PZJA's continued liaison with PNG to manage sea cucumber stocks.</p> <p>The PZJA provides a valuable link between sea cucumber fisheries managed by AFMA and those managed by Fisheries Queensland. The Department understands that, more recently, information exchange about sea cucumber management between AFMA and Fisheries Queensland currently occurs through:</p> <ul style="list-style-type: none"> <li>• related research and development activities in the Queensland Sea Cucumber Fishery (East Coast) and adjacent fisheries managed by AFMA - the Torres Strait Bêche-de-mer Fishery (on behalf of the PZJA) and the Coral Sea Fishery</li> <li>• Queensland's role as a part of the PZJA</li> <li>• Fisheries Queensland undertaking the licensing role for Torres Strait fisheries for the PZJA.</li> </ul> <p>It is less clear to what extent liaison with the Northern Territory and Western Australian governments occurs.</p> <p>In an effort to better manage sea cucumbers globally, international trade in sea cucumbers was discussed at the 12th Conference of the Parties to CITES in 2002. A technical workshop was held in 2004 to consider and review biological and trade information to assist establishing conservation priorities for sea cucumbers. Subsequently, attention focussed on the development of recommendations for Parties to improve the conservation of sea cucumber stocks.</p> <p>At the 14th Conference of the Parties in 2007, the Parties adopted a decision to bring the need to increase efforts to address challenges in the sustainable management of sea cucumber fisheries to the specific attention of the Food and Agriculture Organisation of the United Nations (FAO). Following a series of workshops and evaluation from 2007 to 2013, the Animals Committee of CITES recommended the issuance of a Notification to Parties to highlight the information available via FAO on sustainable management of sea cucumbers, to assist Parties to improve the conservation status of these species.</p> <p style="text-align: right;"><i>.../cont.</i></p>	<p><b>Recommendation 4:</b></p> <p>The Protected Zone Joint Authority and the Australian Fisheries Management Authority to continue and encourage further co-operation with other relevant jurisdictions to pursue increased knowledge and complementary management of sea cucumber resources across fisheries and across jurisdictions.</p>

Issue	Recommendation
<p>Given:</p> <ul style="list-style-type: none"> <li>• the inherent risk of localised and serial depletion of sea cucumber species, as witnessed globally</li> <li>• the value of international trade in sea cucumbers</li> <li>• the potential for effort to transfer rapidly amongst Australian fisheries harvesting sea cucumbers to meet international market demands,</li> </ul> <p>the Department considers that close co-operation between all jurisdictions responsible for managing Australian and shared sea cucumber resources is necessary.</p> <p>The Department recommends that the PZJA and AFMA continue to maintain a high level of collaboration with other relevant jurisdictions with the aim of increasing the knowledge and complementary management of Australia's sea cucumber resources.</p>	

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## **Acronyms**

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
PNG	Papua New Guinea
PZJA	Protected Zone Joint Authority
SCUBA	self contained underwater breathing apparatus
TIB	Traditional Inhabitant Boat (licence)
TVH	Transferable Vessel Holder (licence)