



Australian Government

Department of Sustainability, Environment, Water, Population and Communities

Assessment of the
**Commonwealth Bass Strait Central Zone
Scallop Fishery**

April 2013

© Commonwealth of Australia 2013

This work is copyright. Apart from any use as permitted under the Copyright Act 1968, no part may be reproduced by any process without prior written permission from the Commonwealth, available from the Department of Sustainability, Environment, Water, Population and Communities. Requests and inquiries concerning reproduction and rights should be addressed to:

Assistant Secretary
Marine Biodiversity and Biosecurity Branch
Department of Sustainability, Environment, Water, Population and Communities
GPO Box 787
Canberra ACT 2601

Disclaimer

This document is an assessment carried out by the Department of Sustainability, Environment, Water, Population and Communities 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 Sustainability, Environment, Water, Population and Communities on the fishery in relation to decisions under Part 13 and Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999*. The views expressed do not necessarily reflect those of the Minister for Sustainability, Environment, Water, Population and Communities or the Australian Government.

While reasonable efforts have been made to ensure that the contents of this report are factually correct, the Australian Government does not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this report. You should not rely solely on the information presented in the report when making a commercial or other decision.

Contents

Table 1: Summary of the Bass Strait Central Zone Scallop Fishery1

Table 1 contains a brief overview of the operation of the Bass Strait Central Zone Scallop Fishery including: the gear used, species targeted, byproduct species, bycatch species, annual catch, management arrangements and ecosystem impacts.

Table 2: Progress in implementation of recommendations made in the 2010 assessment of the Bass Strait Central Zone Scallop Fishery6

Table 2 contains an update on the progress that has been made by the Australian Fisheries Management Authority in implementing the recommendations made in the previous assessment of the fishery.

Table 3: The Department of Sustainability, Environment, Water, Population and Communities' assessment of the Bass Strait Central Zone Scallop Fishery against the requirements of the EPBC Act related to decisions made under Part 13 and Part 13A.....14

Table 3 contains the department's assessment of the fishery's management arrangements against all the relevant parts of the *Environment Protection and Biodiversity Conservation Act 1999* that the delegate must consider before making a decision.

The Department of Sustainability, Environment, Water, Population and Communities' final recommendations to the Australian Fisheries Management Authority for the Bass Strait Central Zone Scallop Fishery.....26

This section contains the department's assessment of the fishery's performance against the Australian Government's 'Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition' and outlines the reasons the department recommends that product derived from the fishery be included in the list of exempt native specimens.

Table 4: The Bass Strait Central Zone Scallop Fishery Assessment – Summary of Issues, and Recommendations, April 2013.....27

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 from the fishery in the list of exempt native specimens.

References32

Acronyms32

Table 1: Summary of the Bass Strait Central Zone Scallop Fishery

<p>Publicly available information relevant to the fishery</p>	<ul style="list-style-type: none"> ▪ <i>Fisheries Management Act 1991</i> ▪ Fisheries Management Regulations 1992 ▪ Bass Strait Central Zone Scallop Fishery Management Plan 2002 ▪ Australian Bureau of Agricultural and Resource Economics and Sciences – Fishery Status Reports 2009 ▪ Australian Bureau of Agricultural and Resource Economics and Sciences – Fishery Status Reports 2010 ▪ Australian Bureau of Agricultural and Resource Economics and Sciences – Fishery Status Reports 2011 ▪ Australian Fisheries Management Authority – Harvest Strategy for the Bass Strait Central Zone Scallop Fishery, 2012 ▪ Australian Fisheries Management Authority – Bass Strait Central Zone Scallop Fishery Bycatch And Discarding Work Plan, 1 May 2012 – 31 April 2014 ▪ Australian Fisheries Management Authority – Status Report for Re-assessment for Export Approval Under the EPBC Act, Bass Strait Central Zone Scallop Fishery, December 2012 ▪ Australian Fisheries Management Authority – Ecological Risk Management – Report for the Bass Strait Central Zone Scallop Fishery, November 2009 ▪ South-east Commonwealth Marine Reserves Network Management Plan 2013-23 ▪ Environment Australia – Strategic Assessment of the Bass Strait Central Zone Scallop Fishery, June 2002
<p>Area</p>	<p>The Bass Strait Central Zone Scallop Fishery covers the central Bass Strait area between the Victorian and Tasmanian scallop fisheries, which extend out to 20 nautical miles from the coastlines of the respective jurisdictions (Figure 1). All areas of the fishery remain closed unless opening criteria, developed by the Australian Fisheries Management Authority, are met. The area, or multiple areas, that are to be opened to fishing are to be done so in a rotational or staged manner.</p> <p>Although there is no Marine Bioregional Plan for the South-east Marine Region, the area of the fishery overlaps with a number of reserves in the South-east Commonwealth Marine Reserves Network. The ‘South-east Commonwealth Marine Reserves Network Management Plan 2013-23’ which will come into effect on 1 July 2013, prohibits scallop dredging in these areas. Further information on the South-east Commonwealth Marine Reserves Network is available at: http://www.environment.gov.au/marinereserves/south-east/index.html.</p>
<p>Target Species</p>	<p>Commercial scallop (<i>Pecten fumatus</i>) is the primary target species and is managed under quota. Recruitment of commercial scallops is sporadic and intermittent and the stock-recruitment relationship is poorly understood. Commercial scallops are also known to have highly variable levels of natural mortality (Semmens et al., 2012).</p>

Fishery status	The Bass Strait Central Zone Scallop Fishery commercial scallop stock is reported in the Australian Bureau of Agricultural and Resource Economics and Sciences 2011 fishery status report as 'not subject to overfishing', but is rated as 'uncertain' as to whether the stock is overfished. The uncertain classification was assigned given that scallops were previously considered overfished as a result of heavy fishing activity in the western part of the fishery's area. Since 2008, stock surveys have shown some recovery in the eastern region and new beds with small scallops continue to be found indicating that some recruitment is occurring. This recovery has not been quantified and there are no recent estimates of abundance in the western part of the fishery. Given the lack of knowledge about abundance in most of the historical fishing area, the stock biomass is classified as uncertain (Marton et al., 2012).
Byproduct Species	Doughboy scallops (<i>Chlamys (Mimachlamys) asperima</i>) are also managed under quota. Recently, doughboy scallops have not been retained as there is currently no market for this species.
Gear	<p>Commercial harvesting of scallops in the Bass Strait Central Zone Scallop Fishery is undertaken using a scallop harvester (dredge), whereby a toothbar or scraper bar positioned on the bottom of the leading edge of the harvester basket rakes scallops from the sand or mud bottom into the harvester.</p> <p>The scallop harvester is dragged along the seafloor for approximately 15 – 20 minutes per shot, after which the harvester is retrieved by the vessel and contents of the harvester are emptied onto the boat for sorting.</p>
Season	A seasonal closure is in place to protect areas during peak settlement periods and to optimise scallop condition. The seasonal closure also allows for the loss of scallop condition and quality over summer. The default fishing season is from 1 April until 31 December, but there is the facility to vary these dates.
Commercial harvest [2010 and 2011]	<p>In 2010 the harvest of commercial scallop was 2278 tonnes.</p> <p>In 2011, the harvest of commercial scallop was 454 tonnes. The sharp decline in catch in 2011 is considered to be as a result of a reduction in scallop abundance due to a die-off event between when the pilot survey was conducted in January 2011 and when commercial fishing operations commenced in July 2011 (Marton et al., 2012).</p>
Value of commercial harvest [2010 and 2011]	<p>The gross value of production for the 2009 – 10 financial year was \$3.9 million.</p> <p>The gross value of production for the 2010 – 11 financial year was \$2.9 million (Marton et al., 2012).</p>

Take by other sectors	<p>In addition to the Bass Strait Central Zone Scallop Fishery, commercial scallops are harvested in the Victorian Scallop Fishery and the Tasmanian Scallop Fishery. The Victorian and Tasmanian state governments manage scallop fishing in the Bass Strait out to 20 nautical miles from their respective shorelines under Offshore Constitutional Settlement Agreements.</p> <p>In 2011, the Victorian Scallop Fishery was inactive.</p> <p>In 2011, the Tasmanian Scallop Fishery landed 80.5 tonnes under survey permits.</p>
Commercial licences issued	There were 73 fishing permits issued for the 2011 season and there were 12 active vessels operating in the fishery.
Management arrangements	<p>The fishery is managed by the Australian Fisheries Management Authority under the Bass Strait Central Zone Scallop Fishery Management Plan 2002, in force under the <i>Fisheries Management Act 1991</i>. These legislative instruments have a supporting framework of regulations (such as the Fisheries Management Regulations 1992), statutory fishing right conditions, fishing permits and directions.</p> <p>In 2009, the implementation of the 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery' established a spatial management approach for the fishery, whereby a restricted area is opened to fishing while most of the fishing area remains closed. Other key management arrangements for the fishery include:</p> <ul style="list-style-type: none"> ▪ an annually set total allowable catch ▪ transferable quota via tradeable statutory fishing rights ▪ a seasonal closure.
Export	The primary market for commercial scallops is domestic (Marton et al., 2012).
Bycatch	There is little bycatch in the Bass Strait Central Zone Scallop Fishery due to generally low bycatch species diversity and abundance in the largely sand or mud bottom areas which are open to fishing (Haddon et al., 2006). Catch of juvenile commercial and doughboy scallops is also kept to a minimum as only discreet areas, where at least 80 per cent of scallops collected during pre-season surveys are over 90 mm, may be opened for fishing.

Interaction with Protected Species¹	<p>There have been no reported interactions with protected species since the implementation of the 'Bass Strait Central Zone Scallop Fishery Bycatch and Discarding Workplan – 1st June 2009 to 31st May 2011'. The Australian Fisheries Management Authority has advised that interactions have occurred with common weedfish and pot-bellied seahorse, which is a listed marine species, in the fishery during research surveys conducted between 2001 and 2004. No interactions with protected species have been reported since these research surveys and no protected species were assessed to be at high risk in the ecological risk assessment process for the fishery.</p>
Ecosystem Impacts	<p>Ecosystem impacts for the Bass Strait Central Zone Scallop Fishery are limited through the spatial and seasonal closures of the fishery. The entire fishery is closed with discrete areas of the fishery opening on a rotational or staged basis to fishing if they meet strict criteria. At least 40 per cent of a 'viable' area as determined by pre-season surveys must remain closed under the harvest strategy in order to preserve a viable spawning biomass.</p> <p>The 'Bass Strait Central Zone Scallop Fishery Bycatch and Discarding Workplan – 1 May 2012 to 31 April 2014' indicates that bycatch is generally low in the fishery as fishing is predominately conducted in areas dominated by scallops and species diversity is generally low.</p> <p>Habitat impacts have been found to be low at the scale of the fishery. Research surveys were unable to detect habitat impacts from scallop dredges in the region as fishing tends to take place in naturally dynamic habitats (Haddon et al., 2006)</p> <p>The level two Ecological Risk Assessment (Productivity Susceptibility Analysis) followed by a residual risk assessment produced a list of four 'high priority' species – King Island crassatella, southern blue-ringed octopus, pebble crab and black and white seastar. Potential impacts to these species are addressed through the Bycatch and Discarding Workplan. No habitats were assessed as at risk from fishing operations (Hobday et al., 2007).</p>

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

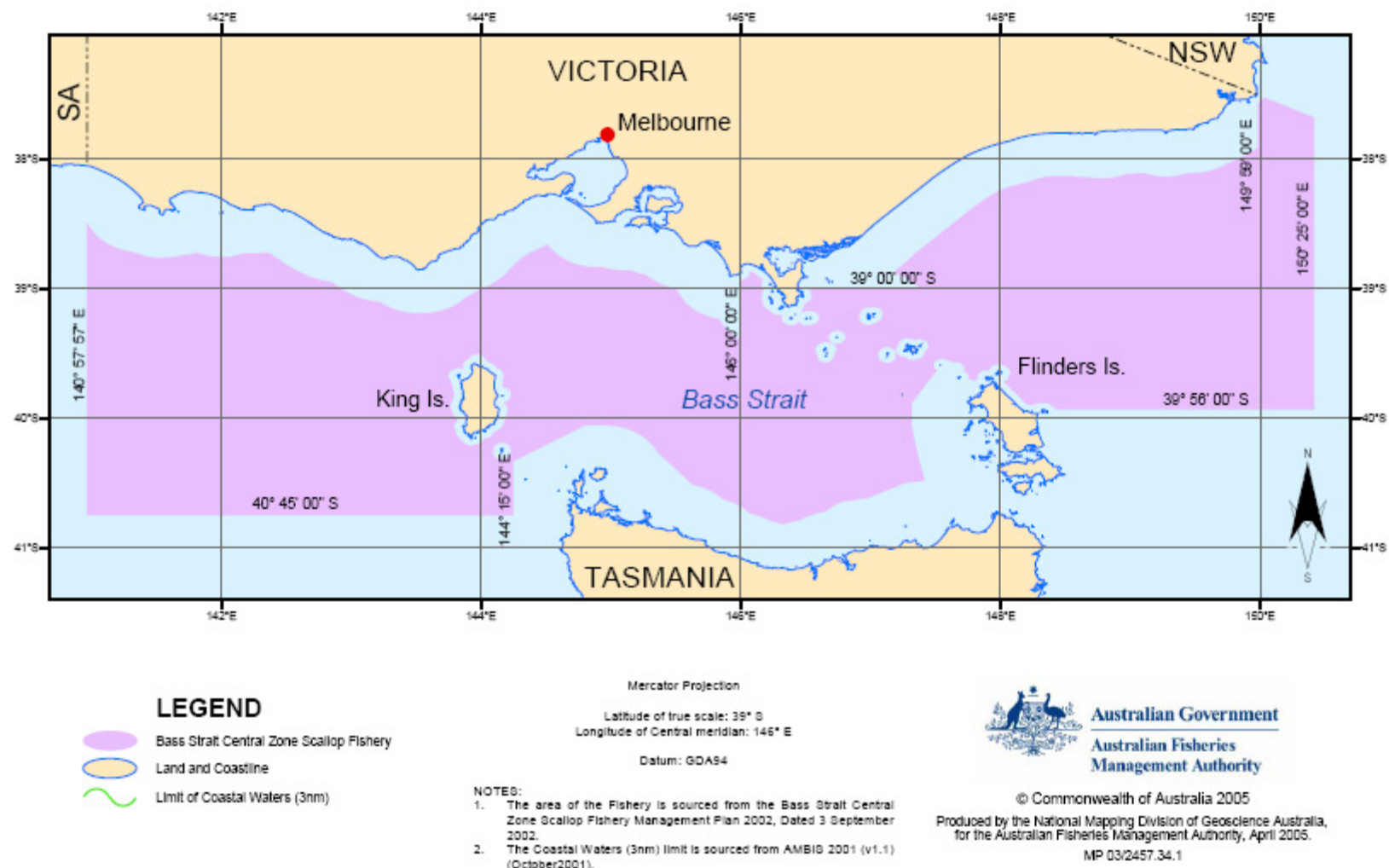


Figure 1: Area of the Bass Strait Central Zone Scallop Fishery
 (Source: Australian Fisheries Management Authority – Bass Strait Central Zone Scallop Fishery – Management Arrangements Booklet – 2012).

Table 2: Progress in implementation of recommendations made in previous assessment of the Bass Strait Central Zone Scallop Fishery

Recommendation	Progress	Recommended Action
<p>1. Operation of the fishery will be carried out in accordance with the management arrangements for the Bass Strait Central Zone Scallop Fishery (BSCZSF) in force under the <i>Fisheries Management Act 1991</i>.</p>	<p>The Bass Strait Central Zone Scallop Fishery has continued to be managed in accordance with the <i>Fisheries Management Act 1991</i>, Fisheries Management (Bass Strait Central Zone Scallop Fishery) Regulations 2002 and the Bass Strait Central Zone Scallop Fishery Management Plan 2002 (as amended).</p>	<p>The Department of Sustainability, Environment, Water, Population and Communities (the department) considers that this recommendation has been met.</p> <p>The department recommends that this action be continued (see Recommendation 1, Table 4).</p>
<p>2. AFMA to inform DEWHA of any intended amendments to the BSCZSF's management arrangements that may affect the assessment of the fishery against the criteria on which <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) decisions are based.</p>	<p>The Australian Fisheries Management Authority has continued to liaise with the Department of Sustainability, Environment, Water, Population and Communities regarding changes to the Bass Strait Central Zone Scallop Fishery open areas. There have been no changes to Bass Strait Central Zone Scallop Fishery management arrangements that would affect the previous assessment of the fishery.</p>	<p>The department considers that this recommendation has been met.</p> <p>The department recommends that this action be continued (see Recommendation 2, Table 4).</p>
<p>3. AFMA 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 Australian Fisheries Management Authority has provided annual status reports on the Bass Strait Central Zone Scallop Fishery to the department in March 2010 and in August 2011. The 2012 annual status report for the fishery was delayed, in agreement with the department, to combine the status report with the Australian Fisheries Management Authority's application to the department for reassessment, which was received in December 2012.</p>	<p>The department considers that this recommendation has been met.</p> <p>The department recommends that this action be continued (see Recommendation 3, Table 4).</p>

Recommendation	Progress	Recommended Action
<p>4. By 1 July 2010, AFMA to conduct a review of the performance of the Observer Program for the BSCZSF, and provide to DEWHA, a summary report on the outcomes of the performance review.</p>	<p>The review of the performance of the Australian Fisheries Management Authority observer program in the Bass Strait Central Zone Scallop Fishery was completed and a summary of the review was provided to the department in June 2010. The review found that the observer coverage in the 2009 season was not sufficient to achieve appropriate levels of temporal stratification. However in the 2010, 2011 and 2012 seasons, the only observer coverage of the fishery has taken place on survey trips. The department understands that placing observers onboard survey cruises is an effective way to assess available scallop resources, however is concerned that the observer coverage of actual fishing operations may not be adequate to meet the objectives of the observer program which includes categorising bycatch and monitoring discards and protected species interactions.</p>	<p>The department considers that this recommendation is ongoing.</p> <p>The department recommends that this action be continued (see Recommendation 4, Table 4).</p>
<p>5. By 1 August 2010, AFMA to provide a report based on the outcomes of the 2010 BSCZSF Harvest Strategy review.</p>	<p>A review of the 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery' was completed in May 2010. Review of the current harvest strategy is ongoing and will be further considered once a number of current project reports are made available. The Australian Fisheries Management Authority has continued to provide updates on the status of the review to the department.</p>	<p>The department considers that this recommendation is ongoing.</p> <p>The department recommends that this action be continued (see Recommendation 5, Table 4).</p>

Recommendation	Progress	Recommended Action
<p>6. Upon completion of the Fisheries Research and Development Corporation funded project on Australian scallop spatial management and harvest strategies, AFMA to provide an update of the outcomes of the project, outlining any effects of dredging on the environment.</p> <p>AFMA to consider issues identified in the report, including impacts on stock biomass, when developing future management arrangements.</p>	<p>The Fisheries Research and Development Corporation funded project, 'Establishing fine-scale industry based spatial management and harvest strategies for the commercial scallop fishery in South East Australia' has been delayed. The Australian Fisheries Management Authority expect to receive a draft report later in 2013.</p>	<p>The department considers that this recommendation is ongoing.</p> <p>The department recommends that this action be continued (see Recommendation 5, Table 4).</p>

Recommendation	Progress	Recommended Action
<p>7. AFMA to ensure improvements to the monitoring and analysis of bycatch and byproduct data is developed and implemented in the BSCZSF.</p> <p>This is to include improved methods for identification and recording of dredged bycatch and byproduct species.</p>	<p>The Australian Fisheries Management Authority has improved the identification guides used by observers. The Australian Fisheries Management Authority aims to use the same observers in the Bass Strait Central Zone Scallop Fishery to build experience in the fishery. The Australian Fisheries Management Authority is also considering aligning its observer program with the Institute of Marine and Antarctic Studies data collection protocols to ensure universal data collection. The department acknowledges the improvements to the observer program but considers that improving monitoring systems for fishers is an important element of improving the overall monitoring and analysis of bycatch and byproduct data in the fishery.</p>	<p>The department considers that this recommendation is ongoing.</p> <p>The department recommends that this action be continued (see Recommendation 4, Table 4).</p>
<p>8. AFMA to work with the relevant jurisdictions to actively pursue consistent and/or complementary management arrangements for the commercial scallop stock off southeast Australia, where appropriate.</p>	<p>State members are invited as permanent observers to all Resource Assessment Group and Management Advisory Committee meetings. A multi-jurisdictional steering committee was also established to oversee the project 'Future Management of South-east Australian Scallop Fishery'. The Australian Fisheries Management Authority has commissioned further work to consider economic issues which may arise in moving to a future integrated regime.</p>	<p>The department considers that this recommendation has been met.</p>

Recommendation	Progress	Recommended Action
<p>9. AFMA to commit to ensuring that mandatory closures are put in place for the scallop spawning season based on 1 January to 31 March, as advised/agreed in the recent 2009 ScallopMAC meeting.</p> <p>AFMA to ensure these dates are incorporated into the revised management plan amendments and the reviewed Harvest Strategy, expected February 2010.</p>	<p>The Bass Strait Central Zone Scallop Fishery Management Plan 2002 was amended to ensure that the fishery is closed from 1 January to 31 March if no direction has been given for the fishing year. The 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery 2012' defines the fishing season as 1 April to 31 December with a caveat that the Australian Fisheries Management Authority may determine different season dates in any year.</p>	<p>The department considers that this recommendation has been met.</p>
<p>10. AFMA to:</p> <p>a) retain the 90mm size in the Harvest Strategy, while allowing fishing in areas, if it can be demonstrated that scallops have had the opportunity to experience at least two major spawning events (based on advice by ScallopRAG); and</p> <p>b) monitor the impacts of any change in management arrangements regarding the minimum size limit of scallops.</p>	<p>a) The 90 mm size limit for scallops has been retained in the 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery 2012' in the criteria for opening viable areas. According to the harvest strategy, for an area to be considered 'viable' and able to be opened to fishing:</p> <ul style="list-style-type: none"> • at least 80 per cent of scallops must have a shell length of at least 90 mm, and • by the start of the relevant season, at least 80 per cent of scallops must be at least three years of age as confirmed by surveys. <p>b) the Australian Fisheries Management Authority is continuing to monitor changes in the fishery through surveys.</p>	<p>The department considers that this recommendation has been met.</p>

Recommendation	Progress	Recommended Action
11. AFMA to provide final copies of the Ecological Risk Assessment (ERA) and report for the BSCZSF by 1 July 2010.	The Australian Fisheries Management Authority provided copies of the Ecological Risk Assessment report, Residual Risk Assessment of the Level 2 Ecological Risk Assessment Species Results and the Ecological Risk Management report to the department in June 2010. These documents were also made available online on the Australian Fisheries Management Authority's website.	The department considers that this recommendation has been met.

Recommendation	Progress	Recommended Action
<p>12. AFMA to continue to implement appropriate management responses to address and mitigate risks and impacts, including those species identified at high risk, and review the effectiveness of management responses at appropriate intervals.</p>	<p>The review of the 'Bycatch and Discarding Workplan for the Bass Strait Central Zone Scallop Fishery' was completed in early 2012 and a new 'Bass Strait Central Zone Scallop Fishery Bycatch and Discarding Workplan – 1 May 2012 to 31 April 2014' has been adopted. Management actions to address risks to species identified as being at high risk from fishing operations and threatened, endangered or protected species are outlined in the workplan. The workplan will be reviewed annually by the Australian Fisheries Management Authority and formally reviewed biennially in consultation with the Bass Strait Central Zone Scallop Fishery Resource Assessment Group. The Australian Fisheries Management Authority has also completed an Ecological Risk Management strategy for the fishery. Four species have been assessed as being at high risk in the fishery. No interactions with these high risk species nor any protected species have been reported in the fishery since the commencement of the 2009 workplan. The department acknowledges that a number of actions in the workplan have been delayed until surveys have been undertaken and viable areas are opened to fishing.</p>	<p>The department considers that this recommendation has been met.</p>

Recommendation	Progress	Recommended Action
<p>13. AFMA to:</p> <p>a) Provide results of the formal two-year review of the Bycatch and Discarding Workplan to DEWHA by 31 July 2011;</p> <p>b) By 1 June 2011, implement a new Bycatch and Discarding Workplan that outlines the strategic approach to reduce bycatch and discards in the BSCZSF; and</p> <p>c) Ensure that the impacts of the fishery on bycatch are minimised and consistent with achieving the objectives of other legislative and policy requirements including:</p> <p>i. all relevant Recovery Plans</p> <p>ii. all relevant Threat Abatement Plans</p> <p>iii.all relevant National Plans of Action</p>	<p>The Bycatch and Discarding Workplan review was provided to the department in June 2012. The new Bycatch and Discarding Workplan for the fishery is in effect from 1 May 2012 until 31 April 2014. There are currently no Threat Abatement Plans, Recovery Plans or international agreements considered relevant to the fishery.</p>	<p>The department considers that this recommendation has been met.</p>

Recommendation	Progress	Recommended Action
<p>14. AFMA to ensure:</p> <p>a) The September 2009 survey report reflecting the location of new areas of scallops is made publicly available upon its finalisation; and</p> <p>b) Provide an update with the outcomes of the CSIRO/BRS project 'Reducing Uncertainty in Stock Status' upon its completion.</p>	<p>The 2009 survey report was made available on the Australian Fisheries Management Authority's website in 2010. Survey reports for 2010, 2011 and 2012 are also available on the Australian Fisheries Management Authority's website.</p> <p>The final report on the CSIRO/BRS project, 'Reducing Uncertainty in Stock Status', titled 'Management Strategy Evaluation testing of the Management Strategies used with South-Eastern Scallop Fisheries', was provided to the department in April 2013.</p>	<p>The department considers that this recommendation has been met.</p>
<p>15. AFMA to consider the impacts of post capture mortality of scallops when setting the annual TAC.</p>	<p>The Australian Fisheries Management Authority has advised that consideration will be given to the impacts of post capture mortality of scallops when setting the annual total allowable catch as part of the broader Harvest Strategy and management arrangements review.</p>	<p>The department considers that this recommendation is ongoing.</p> <p>The department recommends that this action be continued (see Recommendation 4, Table 4).</p>

Table 3: The Department of Sustainability, Environment, Water, Population and Communities' assessment of the Bass Strait Central Zone Scallop Fishery against the requirements of the 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 Part 13 and Part 13A. A complete version of the EPBC Act can be found on the department's website.

Part 13

Division 1 Listed threatened species Section 208A Minister may accredit plans or regimes	The department's assessment of the Bass Strait Central Zone Scallop Fishery
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(a) a plan of management within the meaning of section 17 of the <i>Fisheries Management Act 1991</i>;</p> <p>if satisfied 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>The Bass Strait Central Zone Scallop Fishery will be managed under the Bass Strait Central Zone Scallop Fishery Management Plan 2002 in force under the <i>Fisheries Management Act 1991</i>.</p> <p>The Bass Strait Central Zone Scallop Fishery Management Plan 2002 was accredited under section 208A of the EPBC Act in May 2009. The management plan was amended in 2010 to remove provisions which were inconsistent with the Bass Strait Central Zone Scallop Fishery's harvest strategy and to amend the default fishing season. Under section 22(2)(c) of the management plan, holders of statutory fishing rights must take reasonable precautions to ensure that the incidental catch of a species that the holder is not entitled to take is kept to a minimum. The department is satisfied that fishers operating in accordance with the Management Plan are required to take all reasonable steps to ensure that listed threatened species are not killed or injured as a result of fishing.</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>There have been no recorded interactions with listed threatened species in the Bass Strait Central Zone Scallop Fishery. In addition, results from ecological risk assessments of the fishery do not report any listed threatened species to be at high risk. Therefore, the department considers that the current operation of the fishery is not likely to adversely affect the survival or recovery in nature of any listed threatened species.</p>
---	---

Part 13 (cont.)

Division 2 Migratory species Section 222A Minister may accredit plans or regimes	The department's assessment of the Bass Strait Central Zone Scallop Fishery
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(a) a plan of management within the meaning of section 17 of the <i>Fisheries Management Act 1991</i>;</p> <p>if satisfied 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 Bass Strait Central Zone Scallop Fishery will be managed under the Bass Strait Central Zone Scallop Fishery Management Plan 2002 in force under the <i>Fisheries Management Act 1991</i>.</p> <p>The Bass Strait Central Zone Scallop Fishery Management Plan 2002 was accredited under section 222A of the EPBC Act in May 2009. The management plan was amended in 2010 to remove provisions which were inconsistent with the Bass Strait Central Zone Scallop Fishery's harvest strategy and to amend the default fishing season. Under section 22(2)(c) of the management plan, holders of statutory fishing rights must take reasonable precautions to ensure that the incidental catch of a species that the holder is not entitled to take is kept to a minimum. The department is satisfied that fishers operating in accordance with the Management Plan are required to take all reasonable steps to ensure that listed migratory species are not killed or injured as a result of fishing.</p> <p>There have been no recorded interactions with listed migratory species in the Bass Strait Central Zone Scallop Fishery. In addition, results from ecological risk assessments of the fishery do not report any listed migratory species to be at high risk. Therefore, the department considers that the current operation of 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.)

Division 3 Whales and other cetaceans Section 245 Minister may accredit plans or regimes	The department's assessment of the Bass Strait Central Zone Scallop Fishery
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(a) a plan of management within the meaning of section 17 of the <i>Fisheries Management Act 1991</i>;</p> <p>if satisfied 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 Bass Strait Central Zone Scallop Fishery will be managed under the Bass Strait Central Zone Scallop Fishery Management Plan 2002 in force under the <i>Fisheries Management Act 1991</i>.</p> <p>The Bass Strait Central Zone Scallop Fishery Management Plan 2002 was accredited under section 245 of the EPBC Act in May 2009. The management plan was amended in 2010 to remove provisions which were inconsistent with the Bass Strait Central Zone Scallop Fishery's harvest strategy and to amend the default fishing season. Under section 22(2)(c) of the management plan, holders of statutory fishing rights must take reasonable precautions to ensure that the incidental catch of a species that the holder is not entitled to take is kept to a minimum. The department is satisfied that fishers operating in accordance with the Management Plan are required to take all reasonable steps to ensure that cetaceans are not killed or injured as a result of fishing.</p> <p>There have been no recorded interactions with cetaceans in the Bass Strait Central Zone Scallop Fishery. In addition, results from ecological risk assessments of the fishery do not report any cetaceans to be at high risk. Therefore, the department considers that the current operation of 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.)

Division 4 Listed marine species Section 265 Minister may accredit plans or regimes	The department's assessment of the Bass Strait Central Zone Scallop Fishery
<p>(1) Minister may, by instrument in writing, accredit for the purposes of this Division:</p> <p>(a) a plan of management within the meaning of section 17 of the <i>Fisheries Management Act 1991</i>;</p> <p>if satisfied 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 Bass Strait Central Zone Scallop Fishery will be managed under the Bass Strait Central Zone Scallop Fishery Management Plan 2002 in force under the <i>Fisheries Management Act 1991</i>.</p> <p>The Bass Strait Central Zone Scallop Fishery Management Plan 2002 was accredited under section 265 of the EPBC Act in May 2009. The management plan was amended in 2010 to remove provisions which were inconsistent with the Bass Strait Central Zone Scallop Fishery's harvest strategy and to amend the default fishing season. Under section 22(2)(c) of the management plan, holders of statutory fishing rights must take reasonable precautions to ensure that the incidental catch of a species that the holder is not entitled to take is kept to a minimum. The department is satisfied that fishers operating in accordance with the Management Plan are required to take all reasonable steps to ensure that listed marine species are not killed or injured as a result of fishing.</p> <p>There have been no recorded interactions with listed marine species since prior to 2005 in the Bass Strait Central Zone Scallop Fishery. In addition, results from ecological risk assessments of the fishery do not report any listed marine species to be at high risk. Therefore, the department considers that the current operation of 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.*)

Section 303AA Conditions relating to accreditation of plans, regimes and policies	The department's assessment of the Bass Strait Central Zone Scallop Fishery
(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 Bass Strait Central Zone Scallop Fishery Management Plan 2002 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 the accreditation of the management regime for the Bass Strait Central Zone Scallop Fishery under Part 13.
(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 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 Bass Strait Central Zone Scallop 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 Bass Strait Central Zone Scallop Fishery be included in the list of exempt native specimens until 13 April 2018.</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>The Bass Strait Central Zone Scallop Fishery was Strategically Assessed under Part 10 of the EPBC Act in September 2005. As a result of that assessment, the department considered that actions taken under the management regime for the fishery would not have an unacceptable or unsustainable impact on the environment in a Commonwealth marine area.</p> <p>In 2010, the Bass Strait Central Zone Scallop Fishery Management Plan 2002 was amended to remove redundant or surplus provisions and remove provisions that were inconsistent with the Harvest Strategy for the Fishery. In April 2010, the department considered the impacts of actions on the environment of fishing operations approved in accordance with the management plan under section 146 (Part 10 of the EPBC Act). The department concluded that actions approved in accordance with the Bass Strait Central Zone Scallop Fishery Management Plan 2002 – as amended would not have an unacceptable or unsustainable impact on the environment in a Commonwealth marine area.</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 Bass Strait Central Zone Scallop Fishery, for a period of five years, until 13 April 2018 would be consistent with the provisions of Part 13A (listed above this table) as:</p> <ul style="list-style-type: none"> ▪ the fishery will not harvest any CITES listed species ▪ 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 Bass Strait Central Zone Scallop 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 or molluscs (such as scallops) 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. The Delegate of the Minister for Sustainability, Environment, Water, Population and Communities consulted with the Australian Fisheries Management Authority, which has management responsibility for the fishery concerned. In addition, the proposal to amend the list of exempt native specimens was advertised on the department's website and comment was invited from interested people for a period of 24 business days. 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 Bass Strait Central Zone Scallop Fishery made under section 303DC will be gazetted and made available on the department's website.</p>

Part 16

Section 391 Minister must consider precautionary principle in making decisions	The department's assessment of the Bass Strait Central Zone Scallop 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, such as an annually set total allowable catch, a seasonal closure from 1 January to 31 March and opening of discrete areas of the fishery on a rotational or staged basis only if strict opening criteria are met, 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 Sustainability, Environment, Water, Population and Communities' recommendations to the Australian Fisheries Management Authority for the Bass Strait Central Zone Scallop Fishery

The material submitted by the Australian Fisheries Management Authority indicates that the Bass Strait Central Zone Scallop Fishery operates in accordance with the Australian Government 'Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd Edition'.

Stock Status

The Australian Bureau of Agricultural and Resource Economics and Sciences 'Fishery Status Reports 2011' for the fishery categorises the target species, commercial scallop (*Pecten fumatus*) stock biomass as 'uncertain' due to a lack of information on abundance in historically fished areas. The fishing mortality is classified as 'not subject to overfishing' given the low catch (405 tonnes in 2011) and the small area opened to fishing. Pre-season surveys are conducted annually to assess scallop condition and determine viable areas to open for fishing.

The Bass Strait Central Zone Scallop Fishery is managed via a quota management system under the Bass Strait Central Zone Scallop Fishery Management Plan 2002. Total allowable commercial catch limits are set annually for the target species and take into account the above mentioned pre-season survey. The 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery 2012' outlines a series of control rules including seasons, opening areas, total allowable catch, mid-season area changes and surveys which are intended to maintain commercial stocks at ecologically sustainable levels.

Management arrangements include:

- annually set total allowable commercial catch limits for commercial and doughboy scallops, based on pre-season surveys.
- spatial closures, and
- a seasonal closure.

The department considers that the range of management measures is sufficient to ensure that the fishery is conducted in a manner that does not lead to overfishing. Although the stock biomass is classified as uncertain, the department considers that there are mechanisms in place to promote recovery to ecologically viable stock levels given that a primary objective of the Harvest Strategy is to keep stocks within the Bass Strait Central Zone Scallop Fishery at ecologically sustainable levels in accordance with the 'Commonwealth Fisheries Harvest Strategy Policy 2007'.

Ecosystem Impacts

Taking into account the management measures mentioned above, especially that only small areas of the fishery are opened to fishing activity, the department considers that the fishing operations under the Bass Strait Central Zone Scallop Fishery Management Plan 2002 will be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem.

Conclusion

The department considers that product taken in the Bass Strait Central Zone Scallop Fishery should be exempt from the export controls of Part 13A of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), with that exemption to be reviewed in five years. To contain and minimise the risks in the longer term, the recommendations listed in Table 4 have been made. Unless a specific timeframe is provided, each recommendation should be addressed during the five year period.

Table 4: The Bass Strait Central Zone Scallop Fishery Assessment – Summary of Issues and Recommendations April 2013

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 Sustainability, Environment, Water, Population and Communities 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>Recommendation 1:</p> <p>Operation of the Bass Strait Central Zone Scallop Fishery will be carried out in accordance with the Bass Strait Central Zone Scallop Fishery Management Plan 2002 in force under the <i>Fisheries Management Act 1991</i>.</p> <p>Recommendation 2:</p> <p>The Australian Fisheries Management Authority to inform the Department of Sustainability, Environment, Water, Population and Communities of any intended material changes to the management arrangements of the Bass Strait Central Zone Scallop Fishery that may affect the assessment against which <i>Environment Protection and Biodiversity Conservation Act 1999</i> decisions are based.</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 over the next five years. Annual reports should 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 the recommendations resulting from the previous assessment of the fishery (for a complete description of annual reporting requirements, see Appendix B of the 'Guidelines for the Ecologically Sustainable Management of Fisheries – 2nd edition' available from the department's website at http://www.environment.gov.au/coasts/fisheries/publications/guidelines.html).</p>	<p>Recommendation 3:</p> <p>The Australian Fisheries Management Authority to produce and present reports to the Department of Sustainability, Environment, Water, Population and Communities annually as per Appendix B to the 'Guidelines for the Ecologically Sustainable Management of Fisheries - 2nd Edition'.</p>

Issue	Recommendation
<p><u>Risks to Non-retained Species</u></p> <p>In the previous assessment of the Bass Strait Central Zone Scallop Fishery under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act), a recommendation was made for the Australian Fisheries Management Authority to “continue to implement appropriate management responses to address and mitigate risks and impacts [to the fishery], including those species identified at high risk”.</p> <p>Since the previous assessment of the fishery, the Australian Fisheries Management Authority has completed a review of the bycatch and discarding workplan and a new workplan has been adopted. A number of analyses and reports outlined for completion in February 2013 in the workplan have been delayed as pre-season surveys have not been undertaken in 2013 and the fishery has subsequently remained closed (under Australian Fisheries Management Authority Direction No. 1 2012).</p> <p><i>Observer coverage</i></p> <p>The department notes that scientific observers were present on the annual survey trips between 2010 and 2012, but that no observer coverage of actual fishing operations has taken place throughout the 2011 and 2012 fishing seasons. The department is concerned about the low level of observer coverage of the fishing season in recent years as it considers the use of observers as an important method of collecting reliable information on the fishery which can be used to ascertain the strength of catch data collected by fishers. While scientific observers have been present on survey trips, which is an efficient use of time and resources, the department is concerned that since survey cruises may investigate new fishing grounds (which may or may not actually open to fishing) the observer coverage on these trips may not be representative of actual fishing operations. The department therefore recommends that the Australian Fisheries Management Authority review the effectiveness of current observer coverage levels on fishing operations.</p>	<p>Recommendation 4:</p> <p>The Australian Fisheries Management Authority to continue to improve the understanding of non-retained species interactions by:</p> <ul style="list-style-type: none"> a) investigating methods to improve the monitoring of non-retained species, including by reviewing the effectiveness of current observer coverage levels on fishing operations and the quality of information recorded in logbooks b) developing materials to enable crew to identify species classified as high-risk through the ecological risk assessment for the fishery, and c) continuing to consider the impacts of post capture mortality of scallops when setting the annual total allowable catch.

Issue	Recommendation
<p><u>Risks to Non-retained Species (cont'd)</u></p> <p><i>Species at high risk to fishing operations</i></p> <p>The 'Residual Risk Assessment of the Level 2 Ecological Risk Assessment Species Results', published in 2009, identified four species at high risk to fishing activities in the Bass Strait Central Zone Scallop Fishery, Crassatella (<i>Eucrassatella kingicola</i>), southern blue ringed octopus (<i>Hapalochlaena maculosa</i>), pebble crab (<i>Bellidilia undecimspinosa</i>) and the black and white seastar (<i>Luidia australiae</i>). The level 2 Ecological Risk Assessment is designed to be highly conservative and species for which little information is available are given a high risk rating by default. The fishery's Management Advisory Committee and Resource Assessment Group consider that these four species were rated as high risk due to limited information regarding their abundance and distribution and that they are not at high risk from fishing operations and could be removed from the list of priority species given that there have been no reported interactions with any of these species.</p> <p>The department acknowledges that the Australian Fisheries Management Authority intends to review the Level 2 Ecological Risk Assessment which assigned the high risk rating to these four species. However, until this review takes place, the department considers it important for the Australian Fisheries Management Authority to improve identification materials for these high risk bycatch species in the fishery to better understand the occurrence and future likelihood of interactions. The department acknowledges that identification materials for the priority species have been developed for observers and that observers have not reported any interactions with these species on recent survey trips. While no interactions with these species have been reported in the fishery since the Level 2 Ecological Risk Assessment was undertaken, the department considers it possible that interactions could be currently under-reported, as fishers are not trained to identify these species. The department therefore recommends that close monitoring of bycatch and discards and improvement to the observer program should be continued. The development of identification materials for fishers which include those species identified as high-risk species may also strengthen future conclusions made about whether or not these species warrant a high-risk rating in the fishery.</p>	

Issue	Recommendation
<p><u>Risks to Non-retained Species (cont'd)</u></p> <p><i>Post capture mortality of scallops</i></p> <p>The previous assessment of the fishery included a recommendation for the Australian Fisheries Management Authority to consider the impacts of post capture mortality of scallops when setting the annual total allowable catch. The Australian Fisheries Management Authority has advised that post capture mortality of scallops will be considered as part of the Harvest Strategy and management arrangements review. The department recognises that the harvest strategy review has been delayed, pending the outcomes of the Fisheries Research and Development Corporation project 'Establishing fine-scale industry based spatial management and harvest strategies for the commercial scallop fishery in South East Australia' and that the fishery will not open in 2013 until surveys have been conducted and have shown that scallop beds are commercially viable. However, should the fishery open before the harvest strategy has been reviewed, the department recommends that post capture mortality of discarded scallops should be considered when setting the annual total allowable catch.</p>	

Issue	Recommendation
<p><u>Harvest Strategy Review</u></p> <p>In the previous assessment of the Bass Strait Central Zone Scallop Fishery, recommendations were made for the Australian Fisheries Management Authority to provide a report on the outcomes of the 2010 Harvest Strategy review and an update on the outcomes of the Fisheries Research and Development Corporation project 'Establishing fine-scale industry based spatial management and harvest strategies for the commercial scallop fishery in South East Australia' and to consider issues identified in the report when developing future management arrangements.</p> <p>A review of the (previous) 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery' was completed by the Resource Assessment Group in May 2010. The Management Advisory Committee considered a Harvest Strategy options paper in February 2011. The Australian Fisheries Management Authority has advised that the review of the new 'Harvest Strategy for the Bass Strait Central Zone Scallop Fishery – 2012' is currently underway and provided the department in January 2012 with an update on the status of the process to review the harvest strategy and the bycatch and discarding workplan.</p> <p>The final report on the Fisheries Research and Development Corporation project, 'Establishing fine-scale industry based spatial management and harvest strategies for the commercial scallop fishery in South East Australia' has not yet been published and the Australian Fisheries Management Authority has subsequently delayed a review of the harvest strategy until the outcomes of the report are finalised. Once the report has been finalised, the Australian Fisheries Management Authority intends to review the harvest strategy and will take into consideration the outcomes of the study. The department considers that the findings of this study will help to inform future management arrangements in the new harvest strategy. The department continues to recommend that the Australian Fisheries Management Authority consider the issues identified in the Fisheries Research and Development Corporation report including impacts on stock biomass, when developing future management arrangements.</p>	<p>Recommendation 5:</p> <p>The Australian Fisheries Management Authority to:</p> <ul style="list-style-type: none"> a) provide a report based on the outcomes of the Bass Strait Central Zone Scallop Fishery Harvest Strategy review, and b) consider the issues identified in the Fisheries Research and Development Corporation report, 'Establishing fine-scale industry based spatial management and harvest strategies for the commercial scallop fishery in South East Australia', including impacts on stock biomass, when developing future management arrangements.

References

- Haddon, M., Harrington, J.J. and Semmens, J.M. 2006. *Juvenile scallop discard rates and bed dynamics: testing the management rules for scallops in Bass Strait*, FRDC Project 2003/017. Fisheries Research and Development Corporation and Tasmanian Aquaculture and Fisheries Institute.
- Hobday, A.J., Dowdney, J., Bulman, C., Sporcic, M., Fuller, M., Goodspeed, M. and Hutchinson, E. 2007. *Ecological risk assessment for the effects of fishing: Bass Strait Central Zone Scallop Sub-Fishery*, report to the Australian Fisheries Management Authority, Canberra.
- Marton, N., Skirtun, M. and Vieira, S. 2012. *Bass Strait Central Zone Scallop Fishery*. In Woodhams, J., Vieira, S. and Stobutzki, I. (eds). 2012. *Fishery Status Reports 2011*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- Semmens, J., Jarvis, D., Piasente, M., Schubert, M., Sen, S., Moore, A., Stobutzki, I. and Marton, N. 2012. *Commercial Scallop Pecten fumatus*. In Flood, M., Stobutzki, I., Andrews, J., Begg, G., Fletcher, W., Gardner, C., Kemp, J., Moore, A., O'Brien, A., Quinn, R., Roach, J., Rowling, K., Sainsbury, K., Saunders, T., Ward, T. and Winning, M. (eds) 2012. *Status of key Australian fish stocks reports 2012*. Fisheries Research and Development Corporation, Canberra.

Acronyms

AFMA	Australian Fisheries Management Authority
BRS	Bureau of Rural Sciences
BSCZSF	Bass Strait Central Zone Scallop Fishery
CITES	Convention on the International Trade of Endangered Species
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEWHA	Department of Environment, Water, Heritage and the Arts
EPBC Act	Environment Protection and Biodiversity Conservation Act
ERA	Ecological Risk Assessment
ScallopMAC	Bass Strait Central Zone Scallop Fishery Management Advisory Committee
ScallopRAG	Bass Strait Central Zone Scallop Fishery Resource Assessment Group
TAC	Total Allowable Catch