

OVERVIEW OF THE STATUS OF KEY ECOLOGICAL RESOURCES (ASSETS)

ECOSYSTEM STRUCTURE AND BIODIVERSITY

Fisheries and Stocks

Annual stock assessments, including analyses of trends in catch and fishing activity, are used each year to determine the status of each of the State's most significant fisheries and are presented in detail in the rest of this document. This section provides an overview of the outcomes of the Department's management systems by collectively examining the status of all the commercial fisheries and commercially harvested fish stocks in WA. The material presented in this section is based on the analyses and text presented in the Key Performance Indicators section of the Department of Fisheries Annual Report to the Parliament 2013/14.

The proportion of fish stocks identified as being at risk or vulnerable through exploitation

To measure the performance of management, the proportion of fisheries for which the breeding stocks of each of their major target or indicator species are being maintained at acceptable levels (or they are now recovering from a depleted state at an appropriate rate following management intervention), is measured annually.

For the 38 fisheries reviewed, the 'Stock Status and Catch Ranges for Major Commercial Fisheries' in the Outcomes section of the Annual Report (http://www.fish.wa.gov.au/Documents/annual_reports/annual_report_2013-14.pdf) records that breeding stock assessments are available for the major species taken in 36 (95%) of these fisheries. For the other two fisheries, insufficient data were available on the target species to make a critical assessment. In situations where unmonitored stocks are assessed as having the potential to become overfished, they are given priority for new research and/or management.

Within the group of 36 assessed fisheries, 28 involve stocks that were considered to either have adequate breeding stock levels and a further three (West Coast Demersal Scalefish Fishery, the Southern and Northern Shark Fisheries) to have breeding stocks considered to be recovering at acceptable rates (86 per cent of fisheries). Each of these three recovering fisheries target relatively long lived species so their recovery is expected to take a number of years to complete. The management generated reductions in catch levels for all sectors of the West Coast Demersal Scalefish Fishery have now been in place for a number of years and the detailed reassessment outlined in last year's report indicated that these actions appear to be successful in initiating a recovery for this suite of species. For the Southern Shark Fishery the most recent assessments also showed continued recovery of dusky and whiskery sharks. The Northern Shark Fishery continues not to operate assisting in the recovery of sandbar sharks.

Of the remaining 14% of fisheries, only the Australian Herring Fishery has been assessed as having stock levels that are not considered adequate to ensure catches could be sustained at desirable levels given effort levels and normal environmental conditions. A further four fisheries were also assessed as having inadequate breeding stocks solely resulting from the negative impacts of environmental perturbations, not fishing. The increased mortality of adults and extremely poor recruitment levels observed for Shark Bay crabs, Shark Bay scallops and scallops in the Abrolhos Island region which was initiated during the marine heat wave event which began in 2011 have continued with some recovery only being shown for Shark Bay crabs. Consequently, these scallop fisheries remained closed for the past season to protect residual stocks and Shark Bay crabs had only limited experimental fishing activity. The stock of crabs in Cockburn Sound is also showing signs of environmental impacts on their growth and recruitment. Therefore, while a total of 14 per cent of fisheries have stock levels that are not considered adequate, only one fishery (or 3% of those assessed) is considered inadequate as a result of exploitation (Overview Figure 1).

The proportion of commercial fisheries where acceptable catches (or effort levels) are achieved

A target catch or effort range has been determined for each of the major commercial fisheries (see Overview Table 1) by the Department's Research Division. This indicator provides an assessment of the success of the Department's management plans and regulatory activities in keeping fish catches at appropriate levels (including those in a recovery phase). The Department's 2012/13 Budget Papers state that the target is eighty eight percent (88%).

The Major Commercial Fisheries which have target catch or effort ranges account for most of the commercial value of WA's landed catch. Comparisons between the actual catches (or effort) with the target ranges have been undertaken for 27 of the 38 fisheries referred to in Overview Table 1, three less than the number used last year. The increase in the number of fisheries not assessed was generated by a combination of ongoing environmentally induced stock issues in some regions (see above) and poor economic conditions for some fisheries which meant a number of fisheries were either closed or did not have material levels of catches during this reporting period. Three fisheries (Shark Bay crabs, Shark Bay scallops, Abrolhos Islands and mid-west trawl) which were affected by unusual environmental conditions that impacted their recruitment to the extent that the scallop fisheries were again set to zero (0) catches and only very limited experimental fishing for Shark Bay crabs occurred. The setting of zero or very limited catches in these fisheries highlights the significant management interventions of the Department to reduce further impacting of the stocks by fisheries, permitting the recovery and rebuilding of these stocks. These stocks are being closely monitored by the Research Division to allow their reopening when stocks have

rebuilt to the level to support sustainable fishing.

Of the 27 fisheries where ‘target ranges’ were available and a material level of fishing was undertaken in 2012/13, ten were catch-quota managed [through a TAC allocated through Individually Transferable Quotas (ITQ)] with 17 subject to effort control management.

Nine of these ten ITQ-managed fisheries operated within their target effort/catch ranges or were acceptably below the effort range (Roe’s abalone, pearl oysters, purse seine fisheries). The south coast greenlip/brownlip abalone fishery had an effort level that exceeded the acceptable level and a reduction in TAC will occur in the 2014. In the 17 effort-controlled fisheries, all but two produced catches that were within (9) or acceptably above (1) or below (5) their target catch ranges. The catch of snapper in the West Coast Demersal was unacceptably above the range for this species in some management areas, although the overall fishery catch was within the range. Management of this fishery is currently being reviewed. The west coast beach bait fishery catch was well below historical levels prompting a review of its status.

In summary, 24 of the 27 commercial fisheries assessed (89%) were considered to have met their performance criteria, or were affected by factors outside the purview of the management plan/arrangements (Overview Figure 2), which is close to the target level.

The proportion of recreational fisheries where acceptable catches (or effort levels) are achieved

Target catch or effort ranges are beginning to be determined for each of the major recreational fisheries by the Department’s Research Division. This indicator provides an assessment of the success of the Department’s management plans and regulatory activities in keeping fish catches by this sector at appropriate levels for both stock sustainability and to meet integrated fisheries management objectives. This is the first time this indicator has been measured.

For the purposes of this indicator, 17 fisheries or stocks have been identified as having a ‘material’ recreational catch share. Over time, the indicator may need to expand to include reference to fisheries or stocks for which there are other ‘material’ sectoral shares (e.g. customary fishing). Of these 17 only seven currently have explicit catch ranges developed and another six have implicit ranges that can be used to assess acceptability. For these 13 fisheries, five had catch levels that were within the acceptable catch range, the marron fishery catch was also acceptably below the range and another four without explicit ranges were clearly acceptable. The low levels of recreational catch for the west coast abalone fishery indicate there may be concerns for the reef platform part of this stock following the marine heat wave. In addition, the recreational catch of some demersal scalefish species in the northern sections of both the West Coast Demersal and Gascoyne Demersal fisheries are too high and appropriate management adjustments are in the process of being developed. Consequently the percentage of recreational fisheries with acceptable catch levels was 77%, which is close to the target level of 80%.

Benthic Habitat and Biodiversity

Monitoring

A range of monitoring tools is used to assess the condition of ecosystems and associated biodiversity within the context of Ecosystem Based Fisheries Management. Detailed assessments of risk to the structure and benthic habitat of specific ecosystems can be found within each bioregional risk assessment of ecological assets. Across the marine bioregions, risks to benthic habitat and ecosystem structure and biodiversity have been generally assessed as ranging from negligible to at most only moderate. The exceptions to this are the estuarine ecosystems of the West Coast Bioregion which are identified as being at significant risk due to pressures from external (non-fishing) pressures largely associated with deteriorating water quality.

Management

Based on the results of marine ecosystem monitoring coupled to specifically identified management objectives, different degrees of protection are afforded to areas in accordance with categories established by the International Union for the Conservation of Nature (IUCN; http://www.iucn.org/about/work/programmes/pa/pa_products/wcpa_categories/). These categories range from sustainably managed multiple use categories (Category VI) to complete no take areas where no extractive activity is permitted (Category I). Spatial closures are identified following a risk based assessment of ecological parameters within a defined bioregion, and can involve total or partial closures to fishing activity. Closures can be used alone, but are often used in combination with other fisheries management tools to achieve specific objectives.

Mechanisms in use for the protection of marine habitats in Western Australian state waters include:

- Spatial closure to trawl-based fisheries under the Fish Resources Management Act 1994 (IUCN management category IV)
- Establishment of Fish habitat Protection Areas (FHPAs; IUCN management category I)
- Closures to fishing under section 43 of the Fish Resources Management Act 1994 (IUCN management category III)
- Establishment of marine parks through the Conservation and Land Management Act 1984 (CALM Act) and the Fish Resources Management Act 1994 (IUCN management categories I-VI)
- Marine protected areas off WA can also be created in Commonwealth waters under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC).

A summary of the effective habitat protection afforded to shelf waters off WA is detailed in Overview Table 2.

Listed species

In accordance with EBFM principles, risk-based assessment of the impact of commercial and recreational fishing activities on listed fish and non-fish species is undertaken. Specific detail may again be found within each bioregional

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risk assessment of ecological assets. Risks associated with interactions with listed species were generally assessed as being negligible to low with the exception of risks to mammals (dolphins) resulting from the Pilbara trawl fishery. Dolphin exclusion devices have reduced the incidence to acceptable levels and further refinements to net design are in progress. Risks associated with birds and mammals (sea lions) in the South Coast Bioregion were also assessed as moderate and appropriate management measures are being undertaken to attempt to mitigate these risks. Most recently the level of entanglements of whales in pot ropes has required establishment of a steering group and initiation of research projects for additional mitigation.

GENERAL ENVIRONMENTAL IMPACTS

Introduced Pests and Diseases

The Department of Fisheries is the lead state government agency responsible for the management of aquatic biosecurity in Western Australia. Aquatic biosecurity threats include disease outbreaks in wild and farmed fish and the introduction of marine and freshwater pest species that are not native to WA.

Introduced marine species are organisms that have moved, or been moved from their natural environment to another area. Many of these organisms remain inconspicuous and innocuous causing no known adverse effects. However, some can potentially threaten human health, economic values or the environment, in which case they are then referred to as marine pests. Introduced marine species are a global problem, and second only to habitat change and loss in reducing global biodiversity (Millennium Ecosystem Assessment, 2005)¹.

The introduction of marine species into a new region can be deliberate or accidental. Deliberate introductions may result from aquaculture practices or releases from aquariums. Accidental introductions are primarily due to shipping and recreational craft moving from country to country, with the pests being transported in ballast water, on ship hulls, or within a vessel's internal seawater pipes. Introduced marine species also arrive naturally via marine debris and ocean currents.

In recognition of an increasing risk presented by aquatic pests and diseases to WA associated with increasing international travel, transport and trade, the Department has developed the capacity for rapid detection and identification of aquatic pests and diseases. Rapid detection of introduced aquatic pests and diseases is important in preventing their spread and establishment. This section provides an overview of the Department's activities with respect to marine pests and diseases monitoring in the state in 2013/14. Further detail is reported at the bioregional level and further information on Departmental activity in this field may be found in the appendix (Activities of the Fish Health Unit during 2013/14 and Activities of the Biosecurity Research Group 2013/14).

The Marine Biosecurity Research group has implemented a system to monitor high risk ports around the state for the presence of marine pests. As an ocean bound nation Australia relies heavily on maritime transport, with over 95% of our imports and exports carried by sea. The large ocean going vessels that transport these goods represent one of the largest vectors of introduced species, while recreational vessels represent the major secondary vector that can spread pests from ports and marinas around the coastline. For these reasons our ports and marinas become high risk areas for the introduction of a marine pest. The Commonwealth Government, together with the states and territories have developed a national system of policies and procedures to try and reduce the risk of marine pests arriving in Australian waters. Part of this system includes the monitoring of high risk ports, which are those ports that receive large numbers of vessels, high risk vessels (such as dredges) or are geographically close to areas with known invasive marine species. This section details the results of the monitoring conducted in 2012/13 for detection of introduced marine pests (Overview Table 3).

The Department provides the Federal Department of Agriculture Forestry and Fisheries with a quarterly report on nationally notifiable aquatic diseases detected in Western Australia. This information is compiled with that of other Australian jurisdictions and is provided quarterly to the World Organisation for Animal Health (OIE). Summary data is available at <http://www.oie.int/>

The Department coordinates the fish kill response program within Western Australia. This program forms part of a national program endorsed by Primary Industries Standing Committee and Natural Resource Management Standing Committee in December 2006. The number and cause of fish kills is also a key indicator in the "State of the Environment Report" (SOE) issued from time to time by the environmental protection authority (IW19 Number and location of significant fishkills). The number of significant fishkills investigated in Western Australia since the last SOE report is shown in Overview Table 4.

¹ Millennium Ecosystem Assessment (2005) Ecosystems and human well-being: Biodiversity synthesis. World Resources Institute, Washington DC. 86 pp.

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Stock Status, Catch & Effort Ranges for the Major Commercial Fisheries

NA - Not applicable, Q - Quota management, TAC - Total Allowable Catch, TACC - Total Allowable Commercial Catch

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
WEST COAST BIOREGION					
West coast rock lobster	Size-structured Population Model (Level 5)	Adequate	5,554 (Q)	5640	Acceptable A Total Allowable Commercial Catch (TACC) of 5,554 t was set for the 2013 season. The total landings were slightly greater than the TACC due to a water loss adjustment. Due to the conservative nature of the TACC, egg production is at record high levels.
Roe's abalone	Catch Rates & Direct Survey (Level 4)	Adequate	92.8 (Q) (530 – 640 days)	73.2 (457 days)	Acceptable Catch was less than the quota in Area 5 (50% caught) and Area 6 (60% caught) due to economic reasons (low value of catch) and high cost of accessing these areas. Area 8 fishery remains closed due to catastrophic mortality by marine heat wave. Catch rates in Areas 2 and 7 were below threshold level and 10% reduction in TACC imposed.
Octopus	Catch Rates (Level 2)	Adequate	50 - 250	226	Acceptable Fishery in development phase. Target range to be reviewed following completion of initial assessments.
Abrolhos Islands and mid west trawl	Direct Survey & Catch Rates (Level 4)	Environ. Limited	95 – 1,830 (set to 0 for this year)	0	NA The fishery was not opened due to annual survey indicating low scallop abundance with a catch prediction below the target level for fishing. This has resulted from continued effects of low recruitment due to the extreme environmental conditions of early 2011. The low recruitment has resulted in a very low spawning stock despite no fishing activity.

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Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
WEST COAST BIOREGION (Continued)					
					NA
Cockburn Sound crab	Direct Survey (Level 4)	Environ. Limited	Under Revision	61	While catch improved from 11/12 juvenile recruitment was very low possibly due to lack of growth of the large juvenile cohort resulting in poor mating success and subsequent low numbers of berried females over the 2012/13 summer. Given low juvenile abundance in 2013, the fishery in 2013/14 was monitored closely and an early closure was recommended.
Estuarine finfish (west coast)	No Assessment	N/A	75 – 220 (Peel-Harvey only)	120 (PH only)	Acceptable Catches of west coast estuarine finfish have been stable since 2000.
West coast beach bait	Catch (Level 1)	Environ. Limited	60 – 275 (whitebait only)	13 (whitebait only)	Not Acceptable Annual whitebait catch fluctuates in response to environmental variations. Catch decline follows recent years of exceptionally warm ocean temperatures. Catch is significantly below acceptable range. Management intervention may be required.
West coast purse seine	Catch (Level 1)	Adequate	0 – 3,000 (Q)	219 t (scaly mackerel and pilchard combined)	Acceptable Continued low catches compared to pre-2005 due to low fishing effort levels. 2013 catch includes catches from the managed fishery and the northern and southern developmental zones. This is the first year that catches from both developmental zones are reported.
West coast demersal scalefish	Catch by sector (Level 1) Fishing Mortality (F) (Level 3)	Recovering	< 450 (Demersal Suite)	395	Not Acceptable The total catch of the demersal suite by all commercial fisheries was within acceptable levels. WCDSIMF catches of snapper in the Mid-west and Kalbarri areas and of WA dhufish in the Mid-west area were too high.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
GASCOYNE COAST BIOREGION					
Shark Bay prawn	Direct Survey/Catch Rate (Level 4)	Adequate	1,350-2,150	1815	Acceptable King and tiger prawn catches were both within the target ranges.
Exmouth Gulf prawn	Direct Survey/Catch rate (Level 4)	Environ. Limited	771 – 1,276	585	Acceptable The total catch was below target range from poor recruitment of tiger prawns due to environmental conditions. The landings were higher than the extremely low catches in 2012 indicating some recovery.
Shark Bay scallop	Catch Rates and Direct Survey (Level 4)	Environ. Limited	1,250 – 3,000 (fishery closed this year)	0	NA The fishery did not open due to very low recruitment and stock abundance over the past 3 years due to continued influence of the extreme environmental conditions from heat wave events. No recovery observed despite no fishing by the scallop boats and no retention by the prawn trawl sector.
Shark Bay Crabs	Catch Rates/Size Distributions (Level 3)	Environ. Limited	Fishery closed from April 2012 to Sept. 2013. Harvest strategy under development	36 (20 trap + 16 trawl)	NA The fishery remained closed until September 2013 due to poor recruitment and stock levels resulting from extreme environmental conditions. Biomass indices showed partial recovery, which was confirmed by experimental commercial fishing.
Shark Bay beach seine and mesh net	Catch Rates (Level 2)	Adequate	235 – 335	211	Acceptable Total catch remained below the target range due to a further reduction in effort and decline in sea mullet catch; catches of whiting increased to highest level since mid-1980s.

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Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
GASCOYNE COAST BIOREGION (Continued)					
West Coast Deep sea crab	Catch Rate (Level 2)	Adequate	154 (Q) (50,000 - 80,000 potlifts)	140 crystal crab (53,414 potlifts)	Acceptable The catch is within the target catch range, with the standardised catch rate of legal crabs at the highest level in a decade with effort within its target range. Nominal effort estimate at the lower end of the target range.
Gascoyne Demersal Scalefish (Snapper only)	Composite Assessment (Level 5)	Adequate	277 (Q) (380 – 540 days)	233 (328 days) plus 40 recreational catch	Acceptable Spawning biomass is above the threshold level and, at the current TACC, is projected to reach the target level by 2014-15. Catch rate is well above the threshold and at highest level since mid-1990s.
NORTH COAST BIOREGION					
Onslow prawn	Catch (Level 1)	Adequate	60 – 180	Negligible	NA Minimal fishing occurred in 2013.
Nickol Bay prawn	Catch (Level 1)	Adequate	90 – 300	106	Acceptable Catch of banana prawns were within the target catch range and slightly lower than the predicted catch.
Broome prawn	Catch (Level 1)	Adequate	55 – 260	2	NA The very low level of effort continued because of the cost of fishing, high fuel prices and long distances to steam, and low returns.
Kimberley prawn	Catch (Level 1)	Adequate	240 – 500	154	Acceptable The banana prawn catches were well below the catch prediction and the target range. The effort in the fishery was the second lowest recorded since 1990.
Kimberley gillnet and barramundi	Catch Rates (Level 2)	Adequate	32 – 45 (barramundi)	52	Acceptable The catch of barramundi is slightly above the acceptable range. The harvest strategy needs to be reviewed.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
NORTH COAST BIOREGION (Continued)					
					NA
Northern demersal scalefish	Catch and Catch Rates/ Integrated Model (Level 2 & 5)	Adequate	Under revision	Total 1,228 (goldband 493) (red emperor 131)	Total catch is above the upper limit across the fishery due to an increase in catch in Zone A. Catches of goldband snapper and red emperor were both within the acceptable catch range. Full assessments and a review of catch ranges are in progress.
Pilbara fish trawl	Catch and Catch Rates/ Fishing Mortality/ Integrated Model (Level 2, 3 & 5)	Adequate	Under revision	1,074	NA Reduced catch due to reductions in effort quota since 2009. Full assessment and review of catch range scheduled over the next 12 months.
Pilbara demersal trap and line	Catch and Catch Rates/ Fishing Mortality/ Integrated Model (Level 2, 3 & 5)	Adequate	400 – 600 (trap) 50 – 115 (line)	339 (trap) 85 (line)	Acceptable Trap catch was lower than the target catch range due to reduced effort in the fishery in 2013. The line catch was within the target catch range.
Mackerel	Catch (Level 1)	Adequate	246 – 410 (Q, Spanish Mackerel)	277	Acceptable Catches lower than previous few years but remain within the acceptable range for the fishery.
Northern shark	No Assessment	NA	< 20 (sandbar)	0	NA No fishing effort continued for this year.
Pearl oyster	Catch rate predictions, standardised CPUE (Level 3)	Adequate	754,800 oysters (Q) (14,071 – 20,551 dive hours)	517,653 oysters (11,995 dive hours)	Acceptable Quota this year also included 150,000 large mother-of-pearl (MOP) oysters fished under a research and development permit to explore the potential for an MOP fishery. The Zone 1 quota (115,000 shell) was not fished and some culture shell quota was not fished for economic reasons. Catch rate indices were above threshold levels.

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Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
NORTH COAST BIOREGION (Continued)					
Beche-de-mer	Catch Rate (Level 2)	Adequate	Sandfish 20 – 100 Redfish 40 - 150	Sandfish 0 Redfish 0	NA There was no fishing for sandfish or redfish in 2013. Industry undergoing restructures. New vessels expected to fish the existing licenses in 2014.
SOUTH COAST BIOREGION					
South Coast crustacean	Standardised Catch Rate (Level 2)	Adequate	50 – 80 (southern rock lobster)	46 (southern rock lobster)	Acceptable While catch was below the target range for southern rock lobster, the standardised catch rate was within its target region and increased from the 2011/12 level. Catch and catch rates of deep sea crabs (secondary target species) is currently being assessed.
Abalone (greenlip/brownlip)	Standardised Catch Rate plus Fishing Mortality (Level 3)	Adequate	209 (Q) (907 – 1,339 days) (3440 - 5270 hours)	201 (1,558 days) (5,990 hours)	Not Acceptable Effort range (in days) exceeded due to lower abundance. TAC reduced by 10% in the Area 3 fishery for 2014. Effort ranges have been reviewed and will be expressed in hours from 2014 onwards.
Estuarine finfish (south coast)	Catch Rates (Level 2)	Adequate	200 – 500	215 (finfish) 32 (crab) 2 (other)	Acceptable Stock levels of key species are considered adequate.
WA salmon	Catch Rates (Level 2)	Adequate	1,200 – 2,800	232	Acceptable Recent catches continue to be low relative to historic levels, due to low effort from limited market demand. A review of the target catch range needs to be undertaken.
Australian herring	Fishing mortality (Level 3)	Inadequate	Under revision	251 (south coast only)	NA Formal stock assessment completed in late 2012. Historically low commercial catch reflects poor recent recruitment and low stock abundance. The acceptable catch range is therefore under revision.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes) and Effort (days/hours) for season reported ^{1,2} 2012/13 or 2013	Catch (or effort) level acceptable and explanation if needed
SOUTH COAST BIOREGION (Continued)					
Albany/King George Sound purse seine	Catch (Level 1)	Adequate	2,683 (Q)	1,513	Acceptable Effort and catches slightly lower than in 2011/12.
Bremer Bay purse seine	Catch (Level 1)	Adequate	1,500 (Q)	Less than three licences operated	Acceptable Effort and catches lower than in 2011/12.
Esperance purse seine	Catch (Level 1)	Adequate	1,500 (Q)	Three licences operated	Acceptable Effort and catches slightly higher than in 2011/12.
Southern and West Coast demersal gillnet and longline	Gummy shark - CPUE (relative to previous Level 5 assessment) (Level 2) Dusky shark - CPUE (relative to previous Level 4 assessment) (Level 2) Sandbar shark - CPUE (relative to previous Level 4 assessment) (Level 2) Whiskery shark - Age Structured Model (Level 5)	Gummy and whiskery sharks: Adequate. Dusky and sandbar sharks: recovering.	725 – 1,095 (key species only)	750 (key species only)	Acceptable Total catch within target range, similar to previous years and acceptable given effort levels. Dusky catch was slightly below its target range due to decline in effective effort. Catch rate similar to previous year. Whiskery catch has been maintained below their historical target range due to reductions in effort and the intended effects of the seasonal closure.
NORTHERN INLAND BIOREGION					
Lake Argyle catfish	Catch (Level 1)	Adequate	90 – 155	78	Acceptable Catch is below the acceptable range due to reduced effort.

1 Catch figures supplied for latest year/ season available.

2. Where there are three or less licences operating in the fishery annual catch levels are not reported due to confidentiality requirements.

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EFFECTIVE PROTECTION STATUS OF BENTHIC HABITAT IN WESTERN AUSTRALIAN STATE WATERS

The areas and proportions of the West Coast Bioregion making up continental shelf waters (< 200 m depth) where habitats are protected from the physical disturbance of trawl fishing. The areas which are formally closed to trawling would be equivalent to meet the IUCN criteria for classification as marine protected areas as category IV. The area of habitat effectively protected refers to the area where trawling doesn't occur. This table does not yet include the closures that may be implemented by the Commonwealth as part of their marine planning zones.

Bioregion	Total Area of Shelf (sq nm)	Area of shelf equivalent to IUCN marine protected area ≤Category IV (sq nm) (%)	Maximum area of Actual trawling activity (sq nm)	Total area of habitat effectively protected (%)
West Coast	19600	11000 (56%)	300	19300 (98%)
Gascoyne	15800	5600 (35%)	1100	14700 (93%)
North Coast	98600	40700 (41%)	10500	88100 (89%)
South Coast	31800	-	500	31200 (98%)
TOTAL	165800	57300 (35%)	12400	153300 (92%)

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DETECTION OF MARINE PEST SPECIES IN 2012/14 RESULTING FROM SURVEILLANCE AT MAJOR PORTS

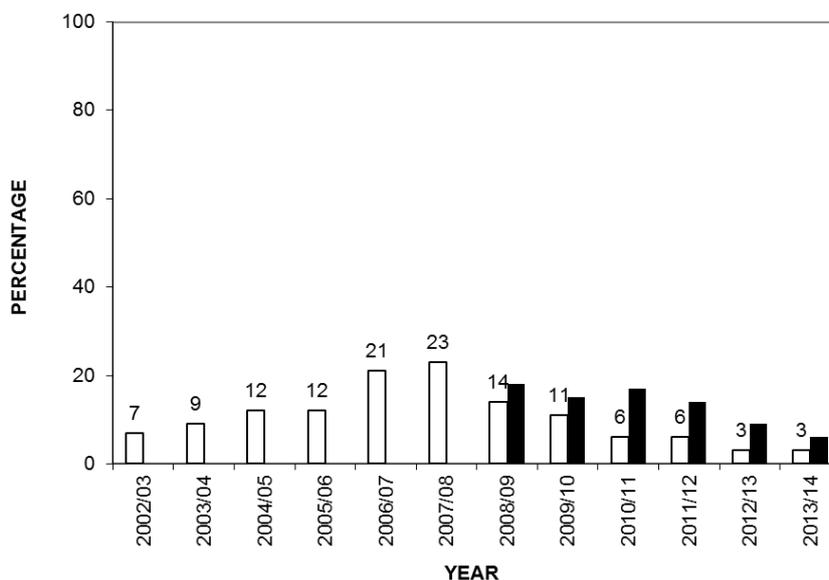
No pest monitoring was conducted in the Gascoyne or South Coast Bioregions in 2013/14.

Bioregion	Common Name	Scientific Name	Type of Organism	Pest status	Year detected
West Coast	Mediterranean fanworm	<i>Sabella spallanzanii</i>	Polychaete	Pest	2012/13
	Scallop	<i>Scaechlamys livida</i>	Mollusc	Introduced species	2012/13
	Aeolid nudibranch	<i>Godiva quadricolor</i>	Mollusc	Introduced species	2013/14
		<i>Alexandrium catanella</i>	Dinoflagellate	Pest	2012/13
	Ciona	<i>Ciona intestinalis</i>	Ascidian	Introduced species	2013/14
	Asian paddle crab	<i>Charybdis japonica</i>	Crab	Pest	2013/14
	Ivory barnacle	<i>Balanus improvisus</i>	Barnacle	Pest	2013/14
		<i>Balanus pulchellus</i>	Barnacle	Introduced species	2013/14
	Asian green mussel	<i>Perna viridis</i>	Mussel	Pest	2013/14
	Asian date mussel	<i>Arcuatula senhousia</i> (previously <i>Musculista senhousia</i>)	Mussel	Pest	2012/13
		<i>Didemnum perlucidum</i>	Ascidian	Introduced species – pest-like characters	2012/13
	North Coast	<i>Theora fragilis</i>	Mollusc	Introduced species	2012/13
		<i>Didemnum perlucidum</i>	Ascidian	Introduced species – pest-like characters	2012/13

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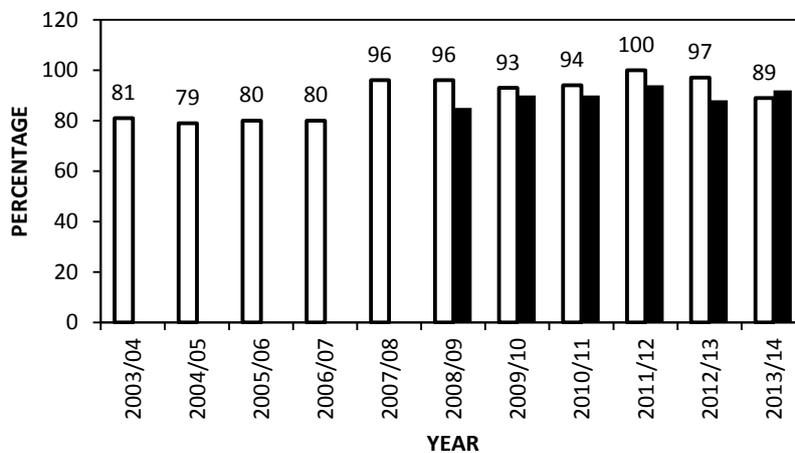
The number of significant fishkills investigated in Western Australia since the last SOE report

Year	Number of FishKills
2007	23
2008	36
2009	18
2010	18
2011	29
2012	34
2013	25
2014	19



OVERVIEW FIGURE 1

The proportion (%) of commercial fisheries where breeding stocks of the major target species are both assessed and considered to be at risk from fishing related impacts. Dark bars indicate target levels.



OVERVIEW FIGURE 2

The proportion (%) of commercial fisheries where the catch or effort reported is acceptable relevant to the management range being applied. Dark bars indicate target levels.