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 2014/15.

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

Annual stock assessments of the fisheries that are subject to management are undertaken by the Department. These assessments, together with trends in catch and fishing activity, have been used to determine the sustainability status of the State's most significant commercial fisheries. Performance is measured as the proportion of fisheries (for which there is sufficient data) in which the breeding stocks of each target or indicator species are being maintained at sustainable levels given the fishing effort and normal environmental conditions; or they are recovering from a depleted state at an appropriate rate following management intervention. The Department's 2014/15 Budget Papers state that the target for the proportion of fisheries with breeding stocks at risk from fishing is less than 6%.

For the 2014/15 performance review, 38 fisheries have been reviewed, which is the same as for 2013/14.

For the 38 fisheries reviewed, the 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, 29 were considered to have adequate breeding stock levels and a further two fisheries – the West Coast Demersal Scalefish Fishery (WCDSF) and Shark Bay Crab Fishery – had breeding stocks considered to be recovering at acceptable rates (86% of fisheries). The WCDSF targets relatively long-lived species so its recovery is expected to take a number of years to complete. The management actions taken for the Shark Bay Crab Fishery includes a conservative Total Allowable Commercial Catch (TACC) being imposed since the resumption of commercial fishing to enable the recovery of this stock from the impact of the heatwave event four years ago.

Of the remaining 14% of fisheries, only the Australian Herring Fishery has been assessed as having stock levels that are not considered at sustainable levels, given usual fishing effort and current environmental conditions. A further four fisheries were also assessed as having inadequate breeding stocks solely because of the negative impacts of environmental influences, not as a result of fishing. The increased mortality of adults and extremely poor recruitment levels for scallops in Shark Bay and the Abrolhos Islands region, which was initiated during the marine heatwave that began in 2011, has continued with limited recovery in parts of Shark Bay. Consequently, these scallop fisheries remained closed during the reporting period. The stock of crabs in Cockburn Sound is again showing signs of environmental impact on its growth and recruitment, as is the case for the West Coast Beach Bait Fishery. Therefore, while a total of 14% of fisheries have stock levels that are not considered adequate, only the stocks in the herring fishery (or 3% of those assessed) are considered inadequate mostly as a result of exploitation. Revised management arrangements are progressing to deal with this issue (Overview Figure 1).

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

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). This involves assessing the actual catch or effort against a target catch or effort range that has been determined for each of the major commercial fisheries by the Department. The Department's 2014/15 Budget Papers state that the target is 95%.

For effort-managed fisheries in WA, each management plan seeks to directly control the amount of fishing effort applied to stocks, with the level of catch taken providing an indication of the plan's effectiveness. Where the plan is operating effectively, the catch by the fishery should fall within a projected range. The extent of this range reflects the degree to which normal environmental variations affect the recruitment of juveniles to the stock, which cannot be 'controlled' by the management plan. Additional considerations include market conditions, fleet rationalisation or other factors that may result in ongoing changes to the amount of effort expended in a fishery, which will, in turn, influence the appropriateness of acceptable catch ranges for certain fisheries.

For quota-managed fisheries, the management arrangements' success is determined by the majority of the Total Allowable Commercial Catch (TACC) being achieved with the catch taken using an acceptable amount of fishing effort. If unusually large effort is needed to take the TACC, or the industry fails to achieve the TACC by a significant margin, this may indicate that the abundance of the stock is

significantly lower than anticipated. For these reasons, an appropriate range of fishing effort to take the TACC has also been incorporated for assessing the performance of quota-managed fisheries.

The major commercial fisheries that 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 29 of the 38 fisheries referred to in the 'Stock status and catch ranges for major commercial fisheries' in Overview Table 1, which is one more than used last year.

There are still a relatively high number of fisheries not assessed. This is due to a combination of ongoing environmental issues affecting stocks in some regions (see previous page) and poor economic conditions for some fisheries. These factors meant a number of fisheries were either closed or did not have sufficient catch levels during this reporting period.

Three fisheries (Cockburn Sound Crabs, Shark Bay Scallops, Abrolhos Islands and Mid West (Scallops) Trawl), which were all affected by unusual environmental conditions, continue to have their recruitment impacted with the scallop fisheries' catches again set to zero (0) and with only very limited fishing for Cockburn Sound crabs occurring. The setting of zero or very limited catches in these fisheries highlights the significant management interventions we have made to recover and rebuild these stocks. These stocks are being closely monitored by the Department to allow the fisheries to re-open when stocks have rebuilt to the level to support sustainable fishing.

Of the 29 fisheries where 'target ranges' were available and a material level of fishing was undertaken in 2013/14, eleven were catch-quota managed with 18 subject to effort control management.

Ten of these 11 individually transferable quota (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 TACC is planned in the 2015 season.

In the 18 effort-controlled fisheries, 10 were within, one was acceptably above and six were acceptably below their target catch ranges. The catch of snapper in the West Coast Demersal Scalefish Fishery was unacceptably above the range for this species in some management areas, although the overall fishery catch was within the range. As a result, management arrangements for this fishery have now been adjusted. The West Coast Beach Bait Fishery catch was still well below historical levels, prompting a review of its status.

In summary, 26 of the 29 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 of 95%.

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

This indicator provides an assessment of the success of our management plans and regulatory activities in keeping fish catches by this sector at appropriate levels. This includes both stock sustainability (including stocks in a recovery phase) and our ability to meet Integrated Fisheries Management (IFM) objectives. For shared fisheries (those that have a material – or significant – commercial and recreational catch level), IFM determines the appropriate catch allocations to each sector with this process being progressively phased in over the next ten years.

The Department is beginning to determine explicit target catch or effort ranges for each of the major recreational fisheries in conjunction with any IFM-based allocation decisions. This is only the second time this indicator has been measured and the Department's 2014/15 Budget Papers state that the target is 80%.

For the purposes of this indicator, 19 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 resources for which there are other material sectoral shares (e.g. customary fishing). Of these 19, only seven currently have explicit catch ranges developed and another six have implicit ranges that can be used to assess acceptability. Of these 13 stocks or fisheries, 11 had catch levels that were within an acceptable catch range.

The continuing 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 heatwave. In addition, the recreational catch of one demersal scalefish species, in the northern section of the Gascoyne Demersal Scalefish Fishery, may be too high and we are therefore considering recommending management adjustments.

Consequently, the percentage of recreational fisheries with acceptable catch levels was 85%, which exceeds the target level of 80%. This has improved from last year when the percentage of recreational fisheries with acceptable catch levels was 77%.

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 consistent with categories established by the International Union for the Conservation of Nature

(https://cmsdata.iucn.org/downloads/iucn_categoriesmpa_eng.pdf) . 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
- Establishment of Fish habitat Protection Areas (FHPAs)
- Closures to fishing under section 43 of the Fish Resources Management Act 1994
- Establishment of marine parks through the Conservation and Land Management Act 1984 (CALM Act) and the Fish Resources Management Act 1994
- 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 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 and between Australian jurisdictions, 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 2014/15. 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 2014/15 and Activities of the Biosecurity Research Group 2014/15).

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 2014/15 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

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

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.

OVERVIEW TABLE 1

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), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
WEST COAST BIOREGION					
West coast rock lobster	Size-structured Population Model (Level 5)	Adequate	5,859 (Q)	5943 (t) 2 368 006 potlifts 2.51 kg/potlift	Acceptable A TACC of 5,859 t was set for the 2014 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	87 (Q) (530 – 640 days)	48.5 (328 days)	Acceptable Catch was less than the quota in Area 2 (62% caught), Area 5 (21% caught), Area 6 (10% caught) due to economic reasons (low value of catch) and high cost of accessing these areas. Area 8 fishery still closed due to catastrophic mortality by marine heat wave.
Octopus	Catch Rates (Level 2)	Adequate	50 - 250	204	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.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
WEST COAST BIOREGION (Continued)					
Cockburn Sound crab	Direct Survey (Level 4)	Environ. Limited	Under Revision	25	NA Stock levels continued to decline during the 2013/14 season with females dominating the catch earlier than usual in March and April with catch rates around 0.5 kg/traplift. The 2013/14 egg production index was below the limit and the juvenile index for 2014 was also below the limit, so the fishery was closed to commercial and recreational fishing in April and May, respectively, 2014.
Estuarine finfish (west coast)	No Assessment	N/A	75 – 220 (Peel-Harvey only)	130 (PH only)	Acceptable Catches of west coast estuarine finfish have been stable since 2000.
West coast beach bait and south west beach seine	Catch (Level 1)	Environ. Limited	60 – 275 (whitebait only)	12 (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 in 2013/14, following a similarly low catch in 2012/13. Management intervention may be required.
West coast purse seine	Catch (Level 1)	Adequate	0 – 3,000 (Q)	1,065 t (scaly mackerel and pilchard combined)	Acceptable Increase in catch due to increase in effort, current levels are highest reported since mid-2000s. Catch reported here includes catches from the managed fishery and the northern and southern developmental zones.
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. TDGDLF catches of demersal species were too high. WCDSIMF catches of snapper in the Mid-west and Kalbarri areas were too high. Management action has been taken.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
GASCOYNE COAST BIOREGION					
Shark Bay prawn	Direct Survey/Catch Rate (Level 4)	Adequate	1,350-2,150	1907	Acceptable Western king and brown tiger prawn annual landings were both within the target ranges.
Exmouth Gulf prawn	Direct Survey/Catch rate (Level 4)	Adequate	771 – 1,276	463	Acceptable Brown tiger prawns were well below the target catch range and western king prawns slightly below their target range. Endeavour prawn landings were also below the target catch range. The adjusted effort for 2014 was very low and was constrained to maintain the spawning stock within target levels.
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 due to continued influence of the extreme environmental conditions from heat wave events. A recovery of the stock in Denham Sound has been observed while that in northern Shark Bay is still below the target levels despite no retention of scallops between 2012 and 2014.
Shark Bay Crabs	Catch Rates & Direct Survey (Level 4)	Recovering	400 (Q)	371 (175 trap + 196 trawl) 147,421 traplifts CPUE 1kg/traplift	Acceptable Partial recovery of the stock during 2013 provided confidence to resume commercial fishing with a conservative TACC of 400 tonnes of which 93% was achieved. Ongoing stock monitoring surveys indicates increasing levels of recruitment and spawning biomass during 2014.
Shark Bay beach seine and mesh net	Catch Rates (Level 2) Fishing mortality (Level 3)	Adequate	235 – 335	212	Acceptable Total catch remained below the target range due to a further reduction in effort (lowest on record) and low catches of sea mullet and tailor. Catches of whiting and yellowfin bream were above the 10-year average.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
GASCOYNE COAST BIOREGION (Continued)					
West Coast Deep sea crab	Catch Rate (Level 2)	Adequate	140 (Q; crystal crabs) (55 000 - 105 000 standardised potlifts	140 crystal crab (60 669 standardised potlifts)	Acceptable The effort is within the target effort range, with the standardised catch rate of legal crabs at one of the highest levels in a decade.
Gascoyne Demersal Scalefish (Pink snapper only)	Composite Assessment (Level 5)	Adequate	277 (Q) (380 – 540 days)	240 (364 days) plus 30 recreational catch	Acceptable Spawning biomass is just below the target level; under current levels of catch, biomass will exceed the target level by the start of the 2016-17 season. Catch rate remains well above the threshold and maintained at highest levels since 1990s.
NORTH COAST BIOREGION					
Onslow prawn	Catch (Level 1)	Adequate	60 – 180	Negligible	NA Minimal fishing occurred in 2014.
Nickol Bay prawn	Catch (Level 1)	Adequate	90 – 300	211	Acceptable The total annual landings of banana prawns were within the target catch range and slightly above the predicted range.
Broome prawn	Catch (Level 1)	Adequate	55 – 260	0	NA No commercial prawn fishing occurred in this fishery for 2014.
Kimberley prawn	Catch (Level 1)	Adequate	240 – 500	287	Acceptable Banana prawns were within the catch prediction and the target range (230-350 t). Endeavour prawns were within the range and brown tiger prawns were slightly below. Overall effort continues to be lower than observed between 1990 and 2006.
Kimberley gillnet and barramundi	Catch Rates (Level 2)	Adequate	33 – 45 (barramundi)	44	Acceptable The catch of barramundi is within the target catch range and the catch rate is at the highest level since 1990.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
NORTH COAST BIOREGION (Continued)					
Northern demersal scalefish	Catch and Catch Rates/ Integrated Model (Level 2 & 5)	Adequate	Under revision	Total 1,111 (goldband 499) (red emperor 132)	NA Total catch is above the upper limit across the fishery due to an increase in catch in Zone B. Catches of goldband snapper and red emperor were both within the acceptable catch range. Full assessments are in progress.
Pilbara fish trawl	Catch and Catch Rates/ Fishing Mortality/ Integrated Model (Level 2, 3 & 5)	Adequate	Under revision	1,105 t and 591 days	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)	268 t and 208 days (trap) 40 t and 195 days (line)	Acceptable Trap and line catch were lower than the target catch ranges due to reduced effort in the fishery in 2014.
Mackerel	Catch (Level 1)	Adequate	246 – 410 (Q, Spanish Mackerel)	322	Acceptable Catches higher than previous year and remain within the acceptable range for the fishery.
Northern shark	No Assessment	NA	< 20 (sandbar)	0	NA There continued to be no fishing effort for this year.
Pearl oyster	Catch rate predictions, standardised CPUE (Level 3)	Adequate	754,800 oysters (Q) (14,071 – 20,551 dive hours)	627,634 oysters (12,976 dive hours)	Acceptable Quota this year also included 75,000 large mother-of-pearl (MOP) oysters. Only part of the Zone 1 quota (115,000 shell) was fished and some culture shell quota was not fished for economic reasons. Catch rate indices were above threshold levels.
Sea cucumber	Catch Rate (Level 2)	Adequate	Sandfish 20 – 100 Redfish 40 - 150	Sandfish 40 Redfish 48 Black teatfish 5	Acceptable Fishing recommenced in 2014 after a 1 year hiatus. New vessels fished the existing licences in 2014.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
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, there was a coincidental decline in targeted effort. The standardised catch rate for southern rock lobsters remains within its target region. 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	201.5 (Q) (907 – 1,339 days) (3440 - 5270 hours)	193 (1,578 days) (6,581 hours)	Not Acceptable Effort range (in days) exceeded due to lower abundance. TAC reduced by 30% in the Area 2 and 10% in the Area 3 fishery for 2015. Effort ranges have been reviewed and are now expressed as hours from 2014
Estuarine finfish (south coast)	Catch Rates (Level 2)	Adequate	200 – 500	190 (finfish) 39 (crab)	Acceptable Stock levels of key species are considered adequate. Crabs have replaced some finfish catches in recent years.
WA salmon	Catch Rates (Level 2)	Adequate	1,200 – 2,800	364	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	151	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.
Albany/King George Sound purse seine	Catch (Level 1)	Adequate	2,683 (Q)	885 t	Acceptable Effort and catches both lower than in 2012/13.
Bremer Bay purse seine	Catch (Level 1)	Adequate	1,500 (Q)	Not reportable - less than three licences operated	Acceptable Effort and catches both slightly higher than in 2012/13.

Fishery / Resource	Stock assessment method and level	Breeding stock assessment	Target catch (and effort) range in tonnes (days)	Catch (tonnes), Effort (days/hours) and Catch rate for season reported[1,2] 2013/14 or 2014	Catch (or effort or catch rate) level acceptable and explanation if needed
SOUTH COAST BIOREGION (Continued)					
Esperance purse seine	Catch (Level 1)	Adequate	1,500 (Q)	Not reportable - less than three licences operated	Acceptable Effort and catches both slightly lower than in 2012/13.
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)	841 (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	93 – 180	Not reportable - less than three licences operated.	Acceptable The catch was below the target range due to low effort In the fishery.

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.

OVERVIEW TABLE 2
EFFECTIVE PROTECTION STATUS OF BENTHIC HABITAT IN WESTERN AUSTRALIAN STATE WATERS

The areas and proportions making up continental shelf waters (< 200 m depth) where habitats are protected from the physical disturbance of trawl fishing in each Bioregion. 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%)

OVERVIEW TABLE 3

DETECTION OF MARINE PEST SPECIES IN 2014/15 RESULTING FROM SURVEILLANCE AT MAJOR PORTS

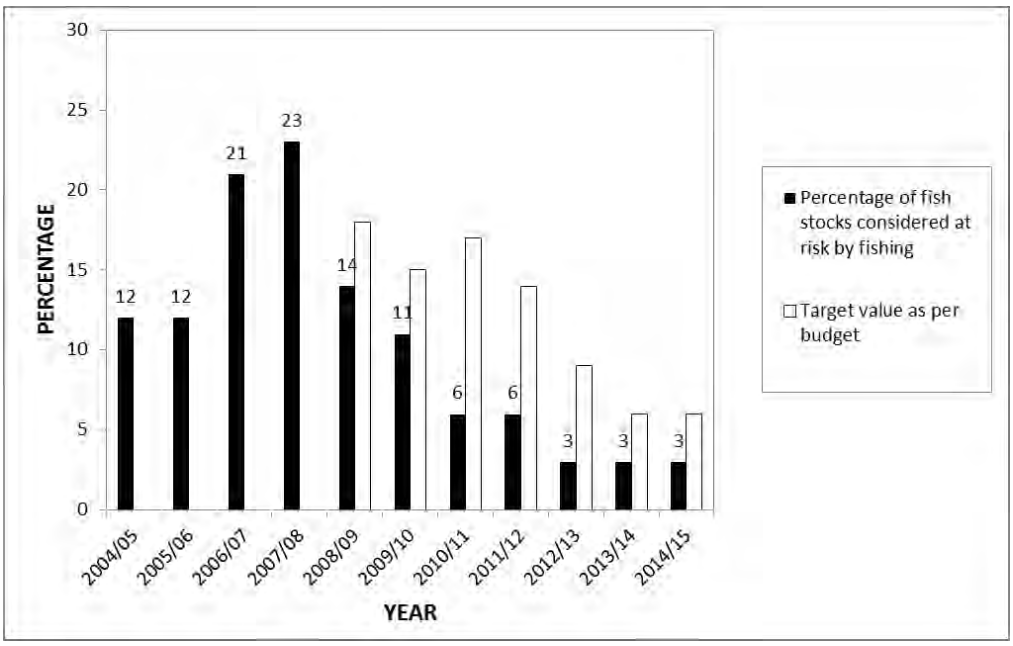
No pest monitoring was conducted in the Gascoyne in 2014/15.

Bioregion	Common Name	Scientific Name	Type of Organism	Pest status	Year detected
West Coast	Mediterranean fanworm	*Sabella spallanzanii*	Polychaete	Pest	2012/13
	Scallop	*Scaeochlamys livida*	Mollusc	Introduced species	2012/13
	Aeolid nudibranch	*Godiva quadricolor*	Mollusc	Introduced species	2013/14
		Alexandrium catanella	Dinoflagellate	Pest	2012/13
	Ciona	*Ciona intestinalis*	Ascidian	Introduced species	2013/14
	Asian paddle crab	*Charybdis japonica*	Crab	Pest	2013/14
	Ivory barnacle	*Balanus improvisus*	Barnacle	Pest	2013/14
		Balanus pulchellus	Barnacle	Introduced species	2013/14
		Amphibalanus amphitrite	Barnacle	Introduced species	2014/15
	Asian green mussel	*Perna viridis*	Mussel	Pest	2013/14
	Asian date mussel	*Arcuatula senhousia (previously Musculista senhousia)*	Mussel	Pest	2012/13
		Didemnum perlucidum	Ascidian	Introduced species –pest-like characters	2012/13
		Alexandrium sp.	Dinoflagellate	Pest	2014/15
	Striped Sandgoby	*Acentrogobius pflaumi*	Goby	Introduced species	2014/15
North Coast		*Theora fragilis*	Mollusc	Introduced species	2012/13
		Didemnum perlucidum	Ascidian	Introduced species – pest-like characters	2012/13
South Coast		*Didemnum perlucidum*	Ascidian	Introduced species –pest-like characters	2014/15
		Codium fragile subsp. fragile	Algae	Pest	2014/15
	Mediterranean fanworm	*Sabella spallanzanii*	Polychaete	Pest	2012/13

OVERVIEW TABLE 4

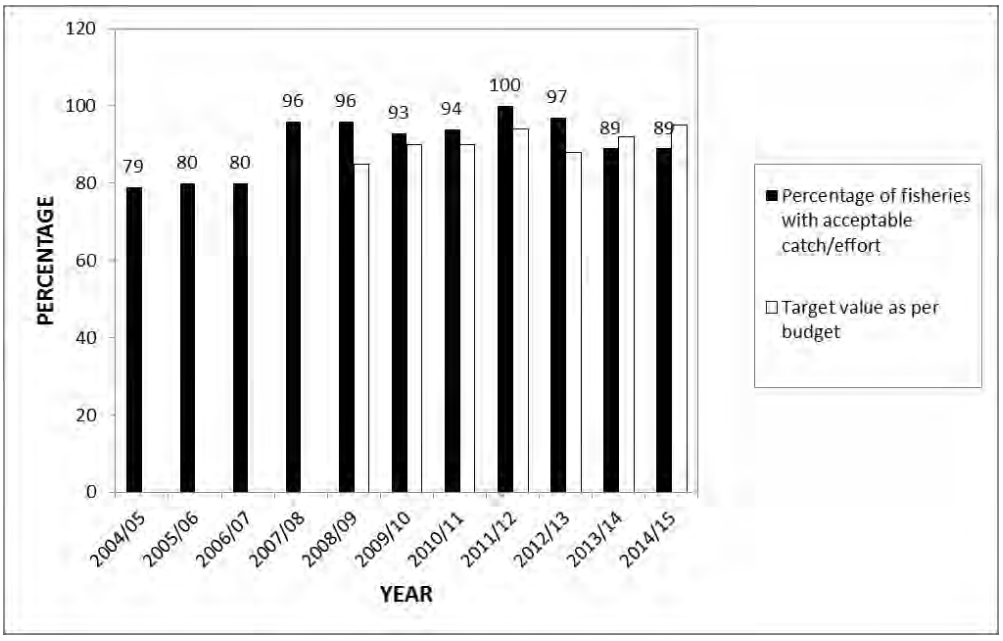
The number of significant fishkills investigated in Western Australia since the last SOE report

Year	Number of Fish Kills
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. Light 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. Light bars indicate target levels.