

West Coast Deep Sea Crab (Interim) Managed Fishery Status Report

Prepared by R. Melville-Smith, with management input by D. Griffiths

FISHERY DESCRIPTION

The West Coast Deep Sea Crab (Interim) Managed Fishery targets giant (king) crabs (*Pseudocarcinus gigas*), crystal (snow) crabs (*Chaceon bicolor*) and champagne (spiny) crabs (*Hypothalassia acerba*) using baited pots operated in a longline formation in the offshore waters of the west coast.

Governing legislation/fishing authority

West Coast Deep Sea Crab Fishery (Interim) Management Plan 2003

Consultation process

Department–industry meetings

Boundaries

The West Coast Deep Sea Crab Fishery, which during the season being reported (2003) was in an interim management phase, operates between Cape Leeuwin and the Northern Territory border and is divided into five areas. Vessels are only permitted to fish outside the 150 m depth contour.

Management arrangements

The West Coast Deep Sea Crab (Interim) Managed Fishery is a limited entry 'pot' fishery. The fishery operates in depths of 150–1,200 m with the only allowable method for capture being baited pots (traps). Each licensee is permitted to use 700 pots in the fishery. These are operated in long lines which have between 50 and 100 pots attached to a main line marked by a float at each end.

For all species of deep sea crabs the Department either has in place, or is currently introducing, regulations to protect breeding females by the establishment of appropriate minimum size limits.

There are currently five full-time permits and two part-time permits to operate in the fishery. The interim management plan is due to expire in December 2004 and should the fishery continue to demonstrate its sustainability, consideration will be given to providing equal access to all seven permit holders. Consultation with industry regarding the new management plan is already underway, with consideration being given to the reduction and control of effort.

Research summary

Research for this fishery has involved assessing the current status of the west coast deep sea crab stocks based on commercial catch returns, log book information and at-sea research monitoring of the catch. Funding was granted in 1999 by the FRDC to develop an understanding of the biology and fishery of champagne crabs. Further funding was made available in 2001 for similar research to be undertaken on crystal crabs. Final reports for these research projects are due in the second half of 2005.

RETAINED SPECIES

Commercial production (season 2003): 193 tonnes

Landings

A catch of 193 t of crystal crabs was taken in the fishery in 2003, a decrease of 6% on the catch taken in the 2002 season (205 t), but nevertheless high compared to earlier years in this fishery (Deep Sea Crab Figure 1). As in 2002, catches of champagne and giant crabs on the west coast were negligible.

Fishing effort/access level

Effort increased by 14% from an estimated 111,500 pot lifts in the 2002 season to 127,000 pot lifts in the 2003 season. This effort estimate is based on a combination of compulsory catch and effort returns and voluntary research log book data.

Catch rate

The catch per unit of fishing effort for crystal crabs decreased by 21%, from 1.9 kg/pot lift in 2002 to 1.5 kg/pot lift in 2003. This CPUE estimate is based on research log book data.

Recreational component:

Nil

There is no recreational fishery for any of the deep sea crab species, as a result of the distance off shore and depth of the fishing grounds, which require large vessels and specialist gear.

STOCK ASSESSMENT

Assessment complete:

Preliminary

Although a full stock assessment cannot be undertaken until the current exploratory project is completed in 2005, some preliminary analysis of the survey data has now been undertaken. This indicates that catch rates in the crystal crab fishery have fallen by 53% between 2000 and 2003. These data, together with a number of reasonable assumptions (based on research on similar crabs elsewhere), have been used in a depletion assessment using the CPUE between 2000 and 2003 plotted against cumulative catch (West Coast Deep Sea Crab Figure 2). This has provided a first estimate of the fishable biomass of crabs at the start of the fishery. Using these results, an estimate of the future sustainable yield for the crystal crab fishery, relative to annual recruitment, has been calculated as being between 15 and 60 t per annum. This is substantially lower than the current level of catch (193 t), which is thought to be based on harvesting the accumulation of large crabs expected in a virgin stock.

Exploitation status:

Not assessed

Breeding stock levels:

Adequate

In crystal, champagne and giant crab species, the males grow considerably larger than the females. The legal minimum sizes of 92 mm carapace length for champagne crabs and 140 mm carapace length for giant crabs, together with the voluntarily agreed minimum of 120 mm carapace width for crystal crabs, offer significant protection for the female portion of the populations. Furthermore, preliminary evidence shows that sizes at maturity for males and females of both crystal and champagne crabs are well below these minimum

sizes in both species (Kim Smith, Murdoch University, unpub. data). Therefore, the broodstock is well protected.

A greater level of research has been undertaken on the state of the breeding stock levels of giant crabs than for crystal and champagne crabs. Estimates made by Andrew Levings of Deakin University (unpub. data) suggest that the 140 mm carapace length minimum size protects 40% of pristine egg production in the Western Australian portion of Australia's giant crab population.

NON-RETAINED SPECIES

Bycatch species impact: Low

The gear used in this fishery generates minimal bycatch and the single-compartment design of the pots is such that they are unlikely to 'ghost fish' if lost.

Protected species interaction: Negligible

The pots and ropes used in crab longlines have minimal capacity to interact with protected species in this fishing area.

ECOSYSTEM EFFECTS

Food chain effects: Negligible

Catches of the three species of deep sea crabs landed represent a very small biomass, and any impact of fishing on the general food chain is expected to be minimal.

Habitat effects: Low

Crab potting is considered to have a low impact on the largely soft mud habitat over which the fishery operates.

SOCIAL EFFECTS

The developing fishery is based on mobile vessels that employ two or three crew. The product is landed live at ports between Carnarvon and Fremantle, generating some additional economic activity and benefits.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year 2003:
\$2.5 million

The beach value of the fishery was about \$2.5 million in 2003, based on an average beach price of \$13/kg for crystal, \$9.5/kg for champagne and \$25/kg for giant crabs. The majority of the catch is exported live to south-east Asia.

FISHERY GOVERNANCE

Acceptable catch range for next season: — Not assessed

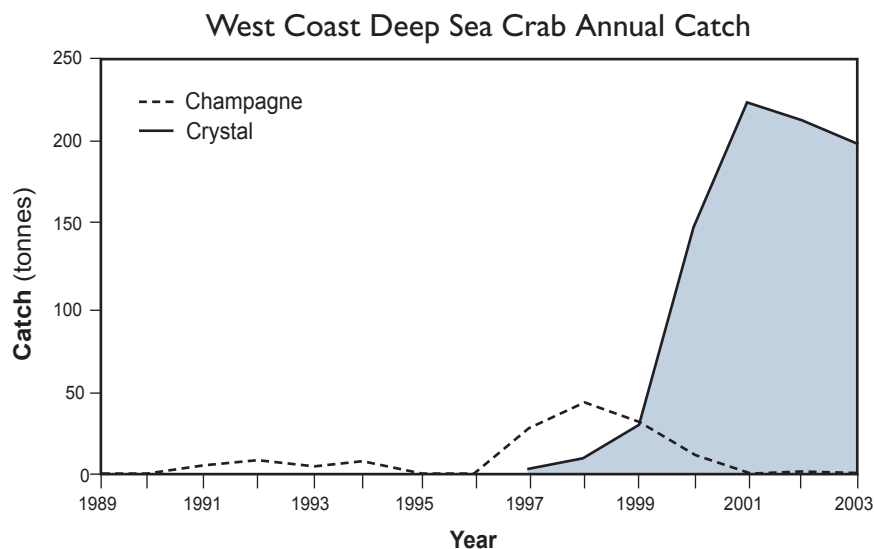
The effort in this interim managed fishery during 2003 was restricted to five full-time and two part-time fishers spread throughout the range of the fishery. At this stage, not all these licences are being utilised and it is not yet possible to determine what the acceptable catch should be.

Future access arrangements under the management plan are designed to limit the level of exploitation, but still obtain a sufficient spread of fishing effort across the five zones of the fishery for stock assessment purposes.

New management initiatives (2003/04)

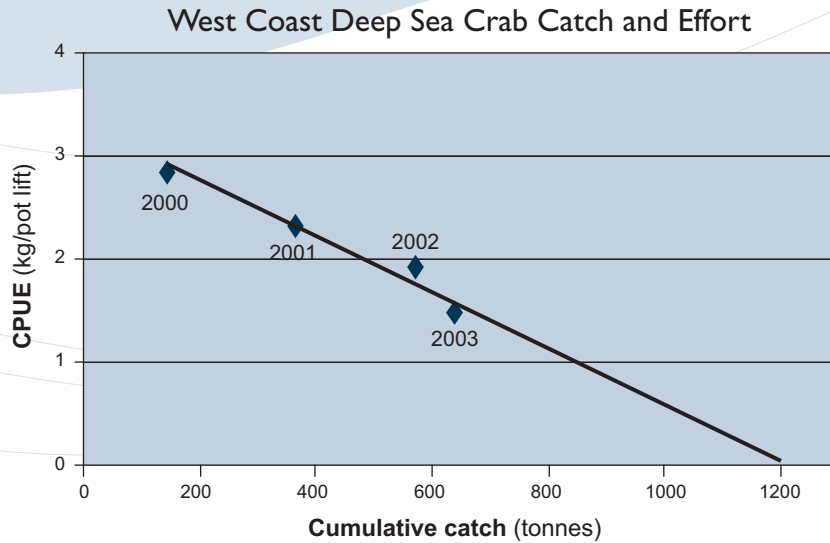
The Australian Government Department of Environment and Heritage is currently considering an application to certify the West Coast Deep Sea Crab (Interim) Managed Fishery as environmentally sustainable under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999*.

The interim management plan is due to expire in December 2004 and it is expected that the fishery will move to a formal management plan at that time. Discussions with stakeholders are currently taking place as to whether future management will be by way of input or output controls. It is realised that the fishery will not be able to sustain current landings and this is being addressed in the new management plan.



WEST COAST DEEP SEA CRAB FIGURE I

Annual catches of crystal and champagne crabs from 1989 to 2002. Annual giant crab catches have always been small, and they have therefore been excluded.



WEST COAST DEEP SEA CRAB FIGURE 2

CPUE for 2000–2003 for crystal crabs, plotted against the cumulative annual catch.

West Coast Estuarine Fisheries Status Report

Prepared by K. Smith and G. Nowara, with management input by K. Saville

FISHERY DESCRIPTION

The West Coast Estuarine Managed Fishery (WCEF), which operates in the Swan/Canning and Peel/Harvey Estuaries, is a multi-species fishery targeting many finfish species. The Hardy Inlet fishery, while not included in the WCEF management plan implemented during 2003, is also reported here as it shares the characteristics of the west coast estuaries.

The main fishing methods used are gillnets and haul nets, though crab pots are also used in the Peel/Harvey Estuary.

Governing legislation/fishing authority

Swan/Canning and Peel/Harvey Estuaries

West Coast Estuarine Fishery (Interim) Management Plan 2003

Hardy Inlet

Closed Waters and Permitted Gear Orders under Section 43 of the *Fish Resources Management Act 1994*
 Condition 19 on a Fishing Boat Licence
 Condition 17 on a Commercial Fishing Licence
 Directions to Licensing Officers

Consultation process

Department–industry meetings

Boundaries

Swan/Canning and Peel/Harvey Estuaries: The management plan encompasses all estuaries on the west coast between 27° S and 33°11' S. However, the plan incorporates a broad range of closures, so that in general terms (but with some exceptions) the only areas open to fishing are:

- The Swan and Canning rivers upstream of a line connecting Point Resolution to the Point Walter jetty, to:
 - (in the Swan) a line from Plain Street running 100 m off the tip of Heirisson Island to the southern bank of the river; and
 - (in the Canning) a line connecting the northern extremity of Second Avenue, Rossmoyne to the southern extremity of Sulman Avenue.

The exceptions relate to closures around Canning Bridge, waters around a number of jetties and some areas of Perth Water.

- The Peel/Harvey Estuary, with a complex series of closures that effectively limit the fishery to the main body of the estuary.

Note: The closures in both the Swan/Canning and Peel/Harvey Estuaries are complex, so the management plan, related legislation and regulations should be referred to for details.

Hardy Inlet: Areas open to fishing are all waters of Hardy Inlet and the Blackwood River upstream of a line connecting Point Irwin to the Irwin Street boat ramp to a line drawn across the river from the eastern boundary of Sussex Location 133 (approximately Great North Road).

Management arrangements

The west coast estuarine fisheries are managed primarily through input controls in the form of limited entry and gear restrictions, as well as seasonal and time closures, area closures and size limits. The main fishing methods are gillnets and haul nets, but crab pots are also used in the Peel/Harvey estuary.

Research summary

Research monitoring of fisheries and fish stocks in the west coast estuaries is primarily based on monthly CAES returns