

# Annual status report

## East Coast Bêche-de-mer Fishery

April 2007



The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis.

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## Introduction

The Queensland East Coast Bêche-de-mer<sup>1</sup> Fishery (ECBDMF) is one of the oldest fisheries in the state, with commercial harvesting beginning in the early 1800s. Fishers can harvest all species of sea cucumber found in Queensland waters. However, the fishery has a history of focusing effort on the most commercially valuable species, such as black teatfish<sup>2</sup>, sandfish and white teatfish. Product harvested in the ECBDMF is entirely exported, predominantly to China and other Asian nations for consumption and use in traditional Chinese medicines.

Through industry innovation and initiatives, the ECBDMF has grown to become one of the limited number of sustainably managed sea cucumber fisheries in the world.

This report covers the financial year of July 2005 – June 2006.

## Description of the fishery

### Fishery profile 2005–06

**Commercial harvest:** Approximately 308 t

**Recreational harvest:** No estimate but considered negligible

**Indigenous harvest:** No estimate but considered negligible

**Charter harvest:** Nil

**Commercial Gross Value of Production (GVP):** Approximately \$5 million

**Number of licences:** 18 licences held by 3 operators

**Commercial boats accessing the fishery:** Seven

**Fishery season:** Sea cucumber may be caught all year round

## Fishing methods

Commercial sea cucumber fishers are permitted to harvest by hand, using free-diving methods or with the aid of hookah apparatus or Self-Contained Underwater Breathing Apparatus (SCUBA). Recreational fishers are permitted only to harvest by hand, without the aid of hookah apparatus or SCUBA.

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<sup>1</sup> Bêche-de-mer (or trepang) is the term referring to the commercial product produced by processing (gutting, boiling and drying) the body of sea cucumbers or holothurians.

<sup>2</sup> The commercial Total Allowable Catch (TAC) for black teatfish remains at 0 t while there is a lack of evidence supporting that the sustainable harvest of this species can recommence. The commercial TAC was set in October 1999 following concerns over the sustainability of the black teatfish stocks. A performance measure is being developed for the ECBDMF that provides the criteria for a recovery strategy for commercial sea cucumber species considered to be below sustainable levels.

## Fishing area

Commercial fishing under the B1 fishery symbol is authorised from Tin Can Bay (26°S) to Cape York (10°41'S) (Figure 1). Historically, effort has been focused on reef areas north of Townsville (19°30'S). Harvesting occurs to depths of about 30 m (safe working depth for occupational diving), leaving much of the deeper Great Barrier Reef (GBR) lagoon free of commercial harvesting. The ECBDMF is adjacent to the Commonwealth managed Torres Strait bêche-de-mer and Coral Sea fisheries.

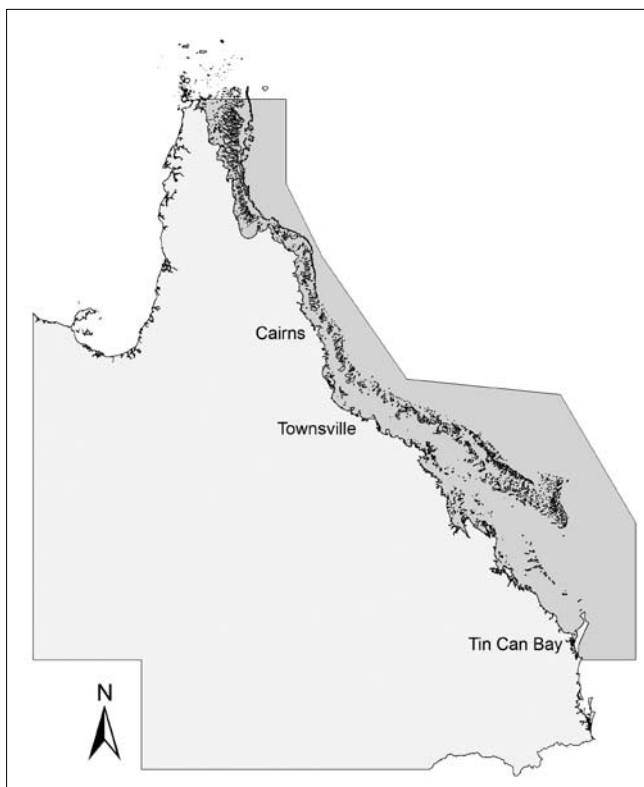


Figure 1: Map of fishery area.

## Main management methods used

A series of input and output controls are used to manage the ECBDMF, including:

- Commercial total allowable catch (TAC) of 380 tonnes (t) gutted wet weight—in 2005–06, the commercial TAC comprised 0 t of black teat fish, 89 t of white teat fish (divided into 57 t north of 19°S (Zone 1) and 32 t south of 19°S (Zone 2)) and 291 t of other species.
- Limited entry—18 transferable licences.
- Species-specific minimum size limits<sup>3</sup>—sandfish: 20 cm; white teatfish: 40 cm; black teatfish: 30 cm; prickly redfish: 50 cm; blackfish: 20 cm; deepwater redfish: 20 cm; surf redfish: 25 cm; lolly fish: 20 cm; green fish: 20 cm; curryfish: 35 cm; elephant trunkfish: 40 cm; brown sandfish: 25 cm; leopard fish: 35 cm; amberfish: 50 cm; all other species: 15 cm.
- Gear limitations—hand harvest only with a maximum of four divers in the water fishing at any one time. Boat and dory limits also apply.
- Area closures—Great Barrier Reef Marine Park implemented by Great Barrier Reef Marine Park Authority (GBRMPA) and Queensland State Marine Parks (GBR Coast Marine Park, Great Sandy Marine Park and Moreton Bay Marine Park).<sup>4</sup>
- Rotational zoning scheme (RZS)—the fishery is divided into 154 zones of approximately 100 to 150 square nautical miles (nm) that can be fished for a maximum of 15 days in any one year. Each area is only allocated for fishing one in every three years.<sup>5</sup>
- Recreational bag limit—no more than five in total (all species combined—other than black teatfish).<sup>6</sup>

<sup>3</sup> Minimum size limits are at least 15% greater than the current best estimates of size at first maturity for each species.

<sup>4</sup> Approximately 37% of commercially diveable sea cucumber habitat in the GBRMP is closed to fishing. See: Roelofs, A, 2004, *Ecological assessment of Queensland's East Coast Bêche-de-mer Fishery. A report to the Australian Government Department of Environment and Heritage on the ecologically sustainable management of a highly selective dive fishery*, Department of Primary Industries and Fisheries, Brisbane, Australia.

<sup>5</sup> As per the Memorandum of Understanding (MOU) between sea cucumber industry operators.

<sup>6</sup> The recreational take of black teatfish is prohibited.

## Approximate allocation between sectors

The ECBDMF is predominantly a commercial fishery.

The recreational take of sea cucumber is currently limited to an in-possession limit of five specimens (excluding black teatfish) from Queensland waters north of 20°S latitude and east of 143°E longitude. Recreational take of sea cucumber to the south and west of this defined area is prohibited. There is no information available for recreational fishing levels of sea cucumber in Queensland. However, it is assumed to be negligible. No catches of sea cucumber have been reported through charter logbooks. There is also no estimate of the harvest of sea cucumber by Indigenous fishers for cultural purposes within the area of the fishery.

The take of sea cucumber by the recreational, charter and Indigenous sectors is considered to be negligible and will not be reported on further within this status report.

## Fishery accreditation under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

The ECBDMF was granted a three-year Wildlife Trade Operation (WTO) approval under Part 13A of the EPBC Act on 22 December 2004. This accreditation acknowledges that the fishery is being managed in an ecologically sustainable manner and allows the export of sea cucumber caught on the east coast of Queensland. The approval expires on 21 December 2007.

## Catch statistics

### Commercial

The 2005–06, financial year is the second year of operation in this fishery following the introduction of the RZS. The total fishery harvest (kg) for the 2005–06 financial year was approximately 3% less than in 2004–05 (Figure 2). Blackfish<sup>7</sup> (including burrowing blackfish) made up the majority of this total (approximately 50%), followed by white teatfish (approximately 23%) and sandfish (approximately 21%) (Figure 3).

Blackfish (including burrowing blackfish) dominated (approximately 90%) the total number of individual sea cucumbers collected (Figure 4). This is indicative of the smaller size limits in place for the blackfish, and the increase in harvest as a result of market development.

In 2005–06, the total catch of blackfish (including burrowing blackfish) decreased by approximately 4% from the 2004–05 quota year (Figure 5). The annual catch rate (CPUE)<sup>8</sup> also decreased from around 65 pieces per hour to 40 pieces per hour. The Department of Primary Industries and Fisheries (DPI&F) and the industry are monitoring the harvest of burrowing blackfish through the introduction of improved reporting for the species in logbooks and buyers returns. A review of the burrowing blackfish resource was triggered by the increased catch reported in the logbooks since the 2002–03 quota year (see also Research and monitoring section).

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<sup>7</sup> Most of the blackfish harvest was comprised of burrowing blackfish (*Actinopyga spinea*); this species has been the focus of the sea cucumber industry in recent years.

<sup>8</sup> The cost per unit effort (CPUE) is calculated based on actual hours fished for the target species (blackfish and/or white teatfish) as reported in the effort section of the BDo2 Version 02 logbook implemented in July 2000.

Catches of white teatfish were less in the 2005 quota year (approximately 11%) following the implementation of the commercial TAC for southern and northern quota zones under the RZS in 2004 (Figure 6). Most of the decrease was in the southern white teatfish zone. The southern zone quota was an industry-led initiative designed to encourage fishing effort for white teatfish away from the traditionally harvested northern areas. The exploratory nature of white teatfish fishing effort in the southern zone yielded low catch rates. In the 2004 quota year the target commercial TAC for the southern zone quota (Zone 2) was 69 782 kg, with only about 30% of the quota being harvested, although the full quota for the northern zone was caught.

Fishers also discovered a lack of suitable white teatfish habitat south of 19°S and economically viable stocks were not found in 2004. In the 2005 quota year the southern zone quota was further reduced to 32 002 kg, resulting in around 43% of the quota being harvested. The quota for the northern section was not met, with around 3.5% of the quota remaining. The annual CPUE for white teatfish was higher in 2005, indicating good stock levels where the species was harvested.

Catches of prickly redfish in 2005 decreased by approximately 18% from the previous quota year (Figure 7). Prickly redfish are not presently targeted by the fishery.<sup>9</sup>

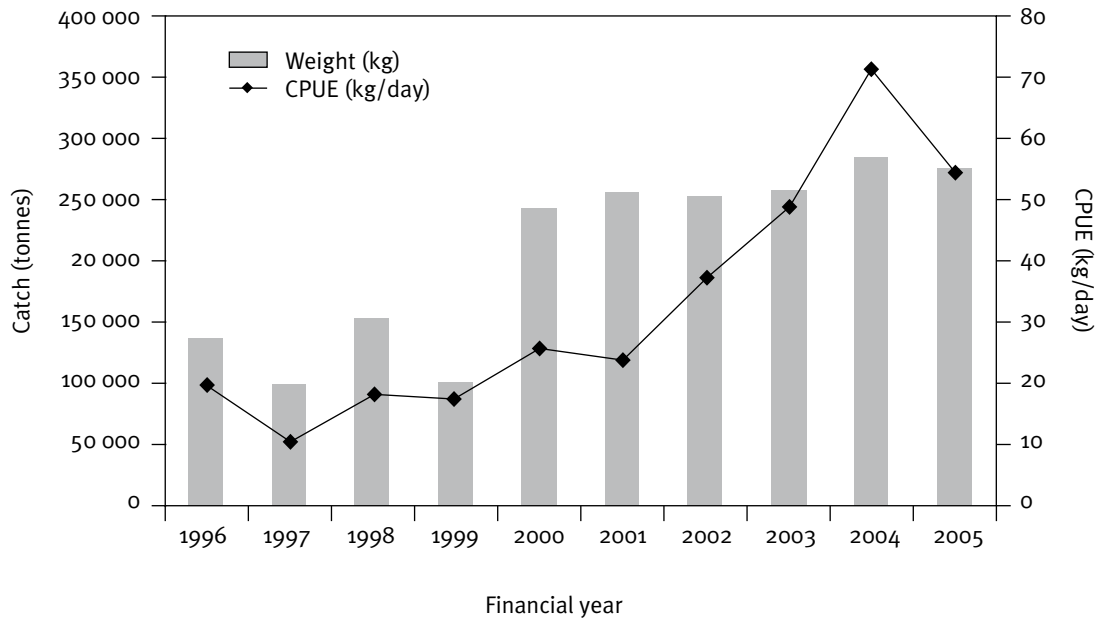


Figure 2: Total catch in kilograms (kg) for the East Coast Bêche-de-mer Fishery from 1996–97 to 2005–06 financial years.

\*Note—data from 1996–2000 obtained from logbook estimated weights (kg). Data from 2001–06 obtained from actual weighed product (kg) reported in buyers reports.

<sup>9</sup> As prickly redfish are only incidentally harvested, CPUE (kg/hour) figures are not appropriate abundance indicators and have not been included.

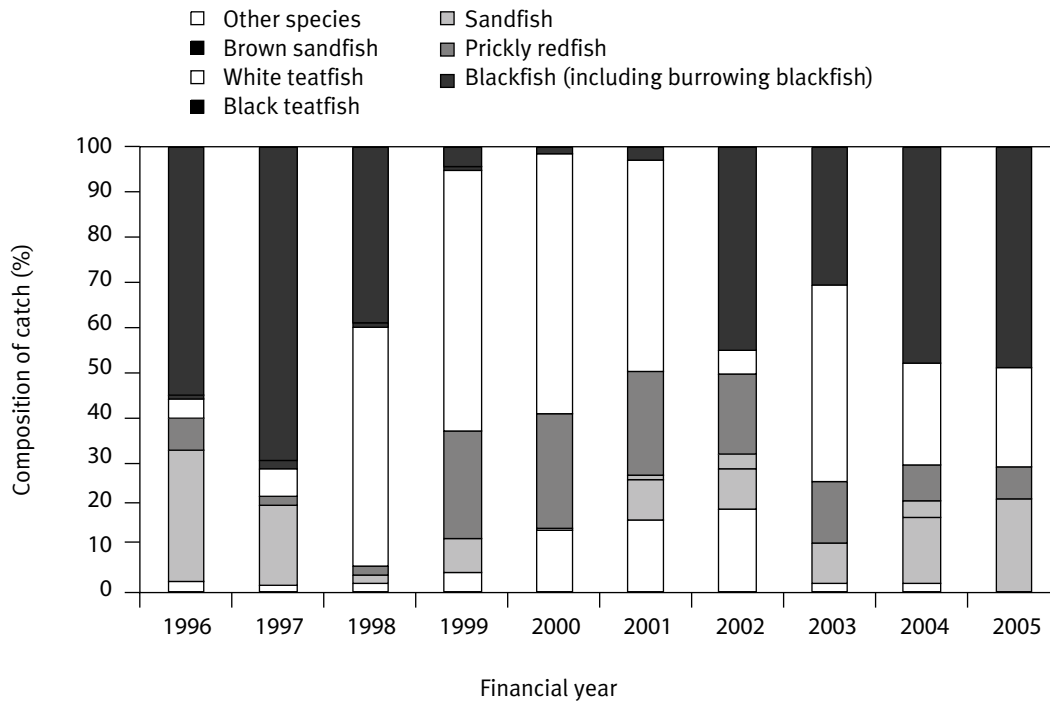


Figure 3: Species composition of total catch in kilograms (kg) for the Queensland East Coast Bêche-de-mer Fishery for the 1995–96 to 2005–06 financial years.

\*Note—data from 1996–2000 obtained from logbook estimated weights (kg). Data from 2001–06 obtained from actual weighed product (kg) reported in buyers reports.

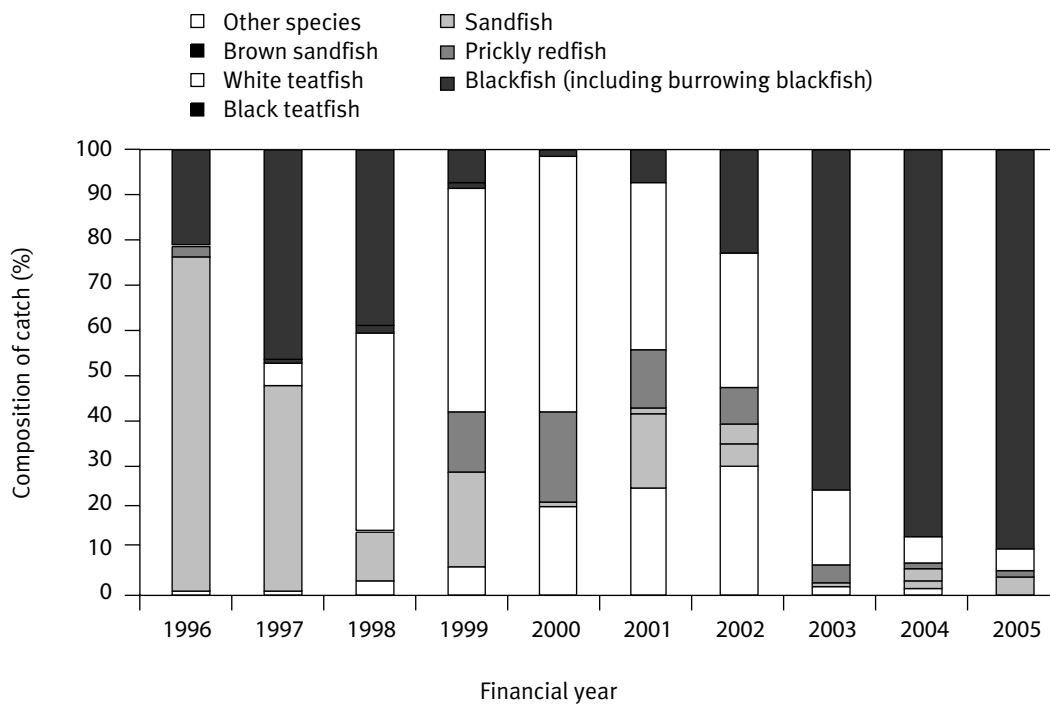


Figure 4: Species composition of total logbook reported numbers caught in the Queensland East Coast Bêche-de-mer Fishery for the 1995–96 to 2005–06 financial years.

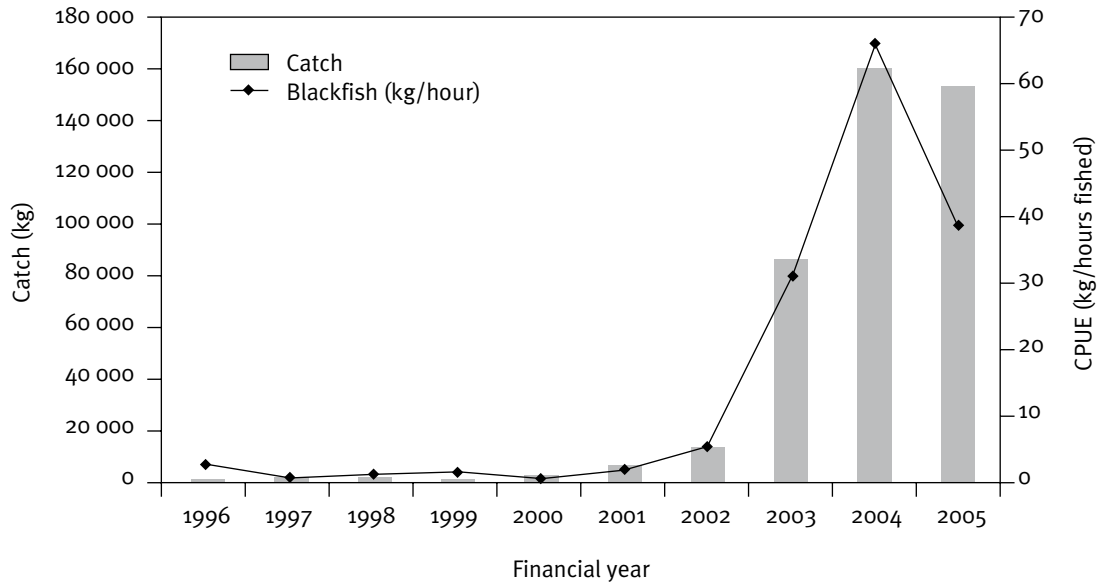


Figure 5: Total catch (kg) and CPUE (kg/hour) of blackfish (including burrowing blackfish) in the Queensland East Coast Bêche-de-mer Fishery for the financial years 1996–97 to 2005–06.

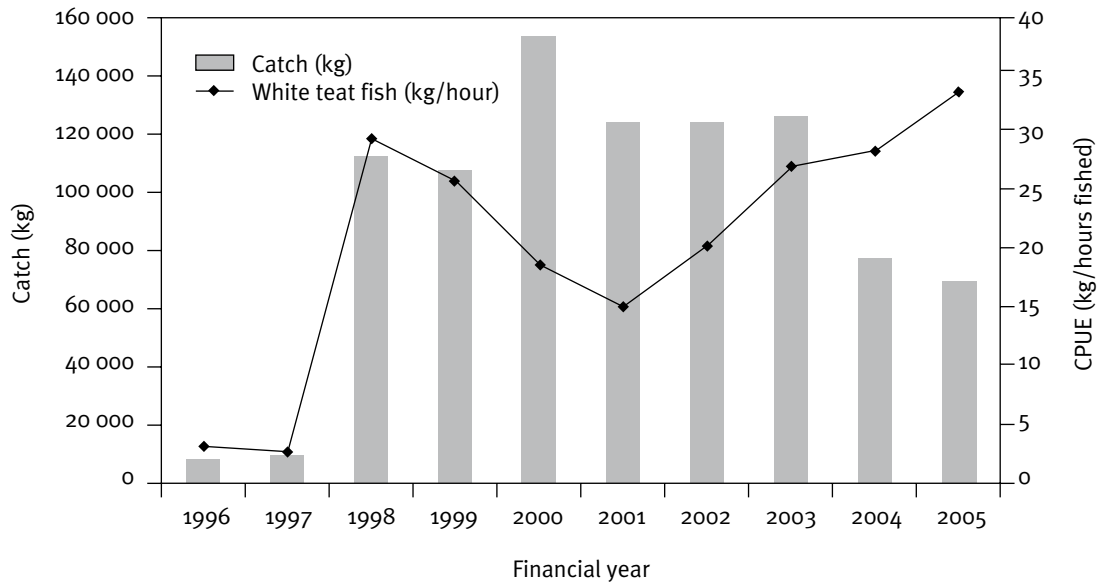


Figure 6: Total catch (kg) and CPUE (kg/hour) of white teat fish in the Queensland East Coast Bêche-de-mer Fishery for the financial years 1996–97 to 2005–06.

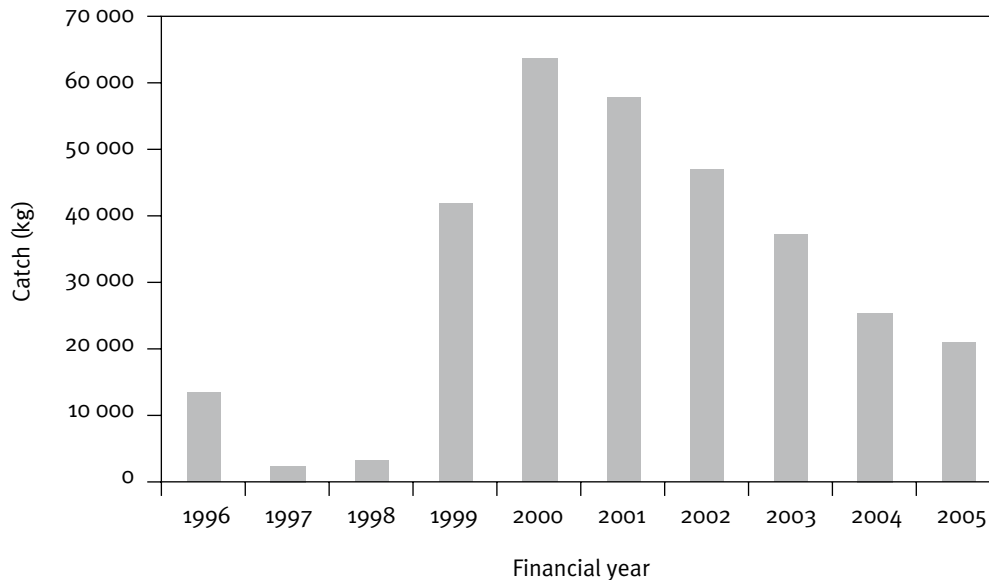


Figure 7: Total catch (kg) of prickly redfish in the Queensland East Coast Bêche-de-mer Fishery for the financial years 1996–97 to 2005–06.

### Spatial issues/trends

Catches for white teatfish were less following the introduction of the RZS in 2004 and the commercial TAC for northern/southern white teatfish zones, but this is not presently of concern. The separation of white teatfish quota into northern and southern zones in 2004 and quota changes in 2005 are largely responsible for the reduction in total catch. Since the zonal changes, the southern zone has since proven to be less productive for white teatfish than industry anticipated. At industry request, a further reduction in southern zone white teatfish quota of 38 t was made in 2005–06 and this amount reallocated to other sea cucumber species.

The RZS successfully spread fishing effort throughout the fishery in the 2005–06 quota year. It remains difficult to interpret trends and temporal patterns in the fishery, given the recent change and the forced behaviour of the fishers. DPI&F are investigating the use of finer-scale spatial information to ensure that the status and performance of the fishery can be adequately reviewed (e.g. assessing the effectiveness of the RZS fishing strategy at minimising local-scale depletions).

### Socio-economic characteristics and trends

The prices for sea cucumber products were slightly higher in the 2005–06 financial year with burrowing blackfish at approximately \$12/kg, sandfish at \$16/kg and white teatfish at \$20/kg, even with the stronger Australian dollar. The market for Australian sea cucumber product is changing from a dry product to a frozen ready-to-eat product. This is due to extensive research and development in processing and marketing undertaken by the industry, with frozen product seen to provide greater value adding. This trend is expected to continue at the expense of the traditional dried product. The demand for sea cucumber remains strong in the Chinese (including Hong Kong) market.

## Fishery performance

### Appraisal of fishery in regard to sustainability

Commercial logbook data suggests that the harvest of sea cucumber is sustainable at current levels. Significant changes to the way the sea cucumber resources are harvested in the fishery following the introduction of the RZS have greatly reduced the likelihood of localised and serial depletions occurring. The range of input and output controls currently implemented (commercial TAC, size limits, closures) are precautionary approaches to management that have the capacity to protect the fishery from increases in effort. The fishery is regarded as being managed in a precautionary and sustainable manner.

### Progress in implementing Department of the Environment and Water Resources (DEW) recommendations

Recommendation	Progress
<p>Department of Primary Industries and Fisheries to inform the Department of the Environment and Water Resources of any intended amendments to the management arrangements that may affect sustainability of the target species or negatively impact on the ecosystem.</p>	<p><i>Ongoing</i></p> <p>DEW were advised of the proposed reallocations of quota between the quota categories (i.e. southern zone white teatfish and other species) in late 2005.</p> <p>During the reporting period, DPI&amp;F and DEW consulted over additional changes to quota arrangements. Negotiations extended into the 2006 reporting year and changes are yet to be implemented.</p>
<p>From 2005, the Queensland Department of Primary Industries and Fisheries to report publicly on the status of the fishery on an annual basis, including explicit reporting against each performance measure once developed.</p>	<p><i>Ongoing</i></p> <p>This annual status report is the second to be completed for the ECBDMF.</p>
<p>The Queensland Department of Primary Industries and Fisheries to conduct a risk assessment to ensure compliance resources are targeted to the areas of greatest risk within 2 years.</p>	<p><i>Completed</i></p> <p>A compliance risk assessment was completed in 2005. Detailed strategies addressing the identified risks have been developed and are being implemented through the Queensland Boating and Fisheries Patrol operational plans.</p>
<p>The Queensland Department of Primary Industries &amp; Fisheries to develop and implement a robust system to validate commercial logbook reporting of catch and effort in the fishery within two years.</p>	<p><i>Ongoing</i></p> <p>The logbook validation process for this fishery has been developed, with the data validation tasks completed for the 2005–06 quota year.</p>

<p>The Queensland Department of Primary Industries and Fisheries to cooperate with other jurisdictions in efforts to undertake research on key gaps in bêche-de-mer biology and ecology.</p>	<p><i>Ongoing</i></p> <p>DPI&amp;F has highlighted interest in collaborative sea cucumber research at the Australian Fisheries Managers Forum and continues to identify it as a priority for research through Queensland Fishing Industry Research Advisory Committee (QFIRAC).</p>
<p>The Queensland Department of Primary Industries &amp; Fisheries to continue to refine analysis of fishery dependent data to ensure that the status and performance of the fishery can be adequately reviewed.</p>	<p><i>Ongoing</i></p> <p>DPI&amp;F implemented a new commercial fishery logbook (BD03 Version 03) in 2006 to improve the collection of species specific fishery dependent data.</p>
<p>The Queensland Department of Primary Industries &amp; Fisheries to develop and implement a robust method of monitoring and stock status for key target species.</p>	<p><i>Ongoing</i></p> <p>DPI&amp;F are progressively improving the methods for monitoring stock status in the ECDFM. This process is reliant on high quality fishery dependent data sourced through the commercial logbooks.</p> <p>The new commercial fishery logbook (BD03 Version 03) introduced in 2006 is designed to improve the collection of species specific fishery dependent data and will be used in monitoring stock status for target species.</p> <p>Results of the logbook validation exercise in 2006 identified key areas for improvement in the data collection systems which have been addressed through the new quota reporting system and logbook. DPI&amp;F are also considering ways to address the other key recommendations which will further improve future logbook validation.</p>
<p>The Queensland Department of Primary Industries &amp; Fisheries to obtain estimate of sustainable harvest levels for key target species in the fishery within three years.</p>	<p><i>Ongoing</i></p> <p>Industry has conducted biomass assessments for burrowing blackfish in two key areas. Results of the surveys will be considered when developing sustainable harvest levels for this species. The assessments are expected to be finalised and considered by Harvest MAC in 2007.</p>

<p>The Queensland Department of Primary Industries &amp; Fisheries to develop fishery specific objectives linked to performance indicators and performance measure for all bêche-de-mer species and for all fishery impacts on the ecosystem within two years. Within three months of becoming aware that a performance measure has not been met, the Department of Primary Industries &amp; Fisheries to finalise a clear timetable for the implementation of appropriate management responses.</p>	<p><i>In progress</i></p> <p>A draft Performance Measurement System (PMS) for the ECBDMF was developed in consultation with stakeholders in June 2006. The draft PMS was endorsed by Harvest MAC and will be finalised in the first half of 2007.</p>
<p>The Queensland Department of Primary Industries &amp; Fisheries to implement within one year, measures to minimise localised depletion and serial depletion in the fishery.</p>	<p><i>Completed</i></p> <p>The RZS was implemented in 2004 through an industry Memorandum of Understanding (MOU).</p>
<p>The Queensland Department of Primary Industries &amp; Fisheries to develop and implement a precautionary recovery strategy for overfished species, that specifies reference points linked to management actions, within two years.</p>	<p><i>In progress</i></p> <p>A performance measure addressing this matter that defines elements of a recovery strategy has been developed as part of the PMS for the ECBDMF. The draft PMS was endorsed by Harvest MAC and is awaiting final approval by the DPI&amp;F Chief Executive.</p>

## Management performance

DPI&F held a workshop in June 2006 to develop performance measures for the fishery in consultation with stakeholders for the ECBDMF. The draft PMS was endorsed by the Harvest Management Advisory Committee (Harvest MAC) and is expected to be finalised in early 2007 and will be applied to the fishery during 2007.

## Resource concerns

The commercial harvest of black teatfish was stopped in 1999 following concerns over sustainability of the stock. Benzie and Uthicke<sup>10</sup> suggested that there had been little to no recovery by 2001 after conducting surveys to assess the recovery of overfished black teatfish stocks on the Great Barrier Reef. The commercial TAC will remain at 0 t while there is no conclusive evidence that the resource has recovered to a sustainable level.

A performance measure has been developed that aims to recover stocks of sea cucumber species, considered to be below sustainable levels, to a level where a sustainable harvest may be determined. The measure requires that a fishery-independent assessment be conducted to determine the level of available biomass for each species that is considered to be below sustainable levels. The level will be used to determine whether the fishery for a species can re-open. Any survey designed to provide species specific available biomass levels will require significant industry support or funding through external agencies.

<sup>10</sup> Benzie, JAH and Uthicke, S 2003, *Stock size of beche-de-mer, recruitment patterns and gene flow in black teatfish, and recovery of over-fished black teatfish stocks on the Great Barrier Reef*, The Australian Institute of Marine Science, Townsville, 86pp.

# Ecosystem

## Non-retained species/bycatch

Harvest of sea cucumber in the ECBDMF is by hand collection, a highly selective method of fishing that only collects individuals specifically chosen for harvest. Bycatch is restricted to releasing undersize specimens of the target species immediately at the collection site.

The post-release mortality of discarded sea cucumbers has not been assessed, but is expected to be low. Minimum size limits and the preference of operators to collect the most marketable-sized animals suggest that minimal discarding would occur.

## Interactions with protected species

With the introduction of the BDO3 Version 03 logbook in 2006, commercial operators also received a SOCI 01 logbook in order to bring the fishery in line with all other Queensland fisheries with respect to Species of Conservation Interest (SOCi) reporting. Highly selective fishing methods limit the potential for the interaction of ECBDMF operators with endangered, threatened or protected species. No interactions with protected species have been reported in the ECBDMF by fishers.

## Fishery impacts on the ecosystem

Hand collection methods employed in the ECBDMF have virtually no detrimental effect on the environment.

Limited available research suggests that sea cucumbers are an important component in the natural nutrient recycling pathways of benthic environments.<sup>11</sup> Preliminary findings of a joint project being undertaken by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Institute for Biodiversity Research (Germany) have found that the removal of *Holothuria scabra* (sandfish) in Moreton Bay may have an effect on the ecology of shallow water, subtropical seagrass ecosystems; these results are preliminary and require ongoing repeated experiments before drawing any conclusions regarding the impact of harvesting sea cucumber species on seagrass and coral reef associated ecosystems.<sup>12</sup>

## Other ecosystem impacts

The ECBDMF operates within the boundaries of the Great Barrier Reef Marine Park which is managed by the GBRMPA. Water quality, marine fauna and flora, and the physical environment is closely monitored by the GBRMPA through its involvement in a suite of local, state and Commonwealth community and scientific monitoring programs. A comprehensive list of current programs can be viewed at [www.reeffutures.org](http://www.reeffutures.org)

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<sup>11</sup> Young, B and Ryan, S 2004, *Ecological assessment of the developmental Moreton Bay bêche-de-mer fishery; a report to the Australian Government Department of the Environment and Heritage on the ecologically sustainable management of a highly selective dive fishery*, Department of Primary Industries and Fisheries, Brisbane, Australia.

<sup>12</sup> Wolkenhauer, S-M, Uthicke, S, Skewes, T and Pitcher, R 2005, *Sea cucumber removal and its consequence for seagrass growth: a case study on commercially important sandfish *Holothuria scabra* in shallow seagrass beds of Moreton Bay, Queensland*, Australian Marine Science Bulletin, 168: 36.

## Research and monitoring

### Recent research and implications

A joint research project between CSIRO Marine and Atmospheric Research (CMAR) and the German Institute for Biodiversity Research is currently being undertaken as part of a PhD project: Impacts of Removal—A Case Study on the Ecological Role of the Commercially Important Sea Cucumber *Holothuria scabra* in Moreton Bay. This research will provide useful information on the biology and ecosystem functions of holothurians associated with inshore subtropical seagrass communities, and will improve our general understanding of environmental impacts associated with the removal of holothurians from associated food webs.

### Monitoring programs and results

The ECBDMF is monitored using catch and effort data collected through the DPI&F compulsory logbook program. The results of this program are outlined in the Catch statistics section.

Two resource assessments of burrowing blackfish have been conducted by the industry and both surveys suggest that this species can occur in very high densities over specific habitats.<sup>13</sup> More research is required on the basic biology of this species if high harvest levels are to be maintained.

The ECBDMF catch and effort logbook data for the last three financial years was validated in 2006 using the buyer's reports and Vessel Monitoring System (VMS) location data. The results demonstrated a high level of accuracy by fishers for both catch and effort reporting.

DPI&F and GBRMPA are monitoring fishers compliance with the RZS through the location data collected from the VMS fitted to each mother boat in the fleet. Preliminary data suggests that RZS guidelines are adhered to in the majority of fishing trips.

### Collaborative research

The ECBDMF operates in waters adjacent to the Coral Sea and the Torres Strait fisheries, both under management by the Australian Fisheries Management Authority (AFMA).<sup>14</sup> There are currently no collaborative research projects being undertaken in these fisheries. An annual biomass assessment is conducted by CSIRO in the Torres Strait and results may be useful in enhancing our knowledge of stock dynamics for the same species in the ECBDMF. Regular dialogue occurs between all management and research agencies to discuss issues common to all sea cucumber fisheries.

## Fishery management

### Compliance report

Compliance and enforcement in the Queensland East Coast Bêche-de-mer Fishery are the responsibility of the DPI&F Queensland Boating and Fisheries Patrol (QBFP). In the 2005–06 financial year, 12 inspections were conducted on commercial vessels operating in the ECBDMF, with no offences detected.

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<sup>13</sup> G Leeworthy (Queensland Sea Cucumber Association), Harvest MAC presentation, 1–2 June 2005.

<sup>14</sup> The Torres Strait fisheries are jointly managed by DPI&F and AFMA.

A compliance risk assessment was conducted for the ECBDMF in June 2005 to determine compliance priorities and allow the most effective use of QBFP resources. The risk assessment identified exceeding the annual quota; failing to comply with the VMS and manual reporting conditions; and failing to provide buyers returns within the required period, as the highest priorities for enforcement and compliance in the fishery. There were also a number of activities rated as having a moderate risk, which are also being addressed.

## **Changes to management arrangements in the reporting year**

After the commercial TAC for white teatfish was not met in the southern zone of the fishery in 2004–05, industry discovered that with limited areas available under the RZS the southern TAC was not achievable. White teatfish are not present in sufficient numbers in the southern zone and the amount of fishable white teatfish habitat was much lower than first anticipated. As a result, the risk of localised depletions may be higher in zones open to white teatfish harvest. Industry representatives at the Harvest MAC meeting in early 2005 proposed that the quota for the southern zone white teatfish be reduced from 70 t to 32 t, which was implemented for the 2005–06 quota year. The difference in the quota remaining after the southern zone white teatfish reduction was reallocated to the quota for ‘other species’.

## **Consultation, communication and education**

Promotion of regulations applying to both commercial, recreational and Indigenous fishers is an ongoing role of DPI&F. This is achieved through:

- recreational fishing brochures containing size and possession limit information
- distribution of the *Fish* newsletter
- distribution of the *FishFlash* e-newsletter.

Consultation also occurs through Harvest MAC, with meetings generally held twice a year. Harvest MAC provides an opportunity for stakeholders to review and advise DPI&F on management measures for the ECBDMF.

A Bêche-de-mer Working Group and a Harvest Scientific Advisory Group (SAG) also review issues relating to the fishery. The Working Group and Harvest SAG provide advice to Harvest MAC members on management actions required to ensure the fishery continues to operate within sustainable levels.

## **Complementary management**

The ECBDM fishery is managed by DPI&F in consultation with GBRMPA (permits are issued by GBRMPA for this fishery).

### **Information compiled by**

Bonnie Holmes

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### **Image**

Sandfish (*Holothuria scabra*)

