

Annual status report 2011

River and Inshore Beam Trawl Fishery



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Fishery profile 2010

Species retained Greasyback (bay) prawns, banana prawns, school prawns and other minor species	Total number of commercial licence symbols in 2010 121 as at 25 June 2010 (51 T5; 11 T6; 6 T7; 30 T8; 23 T9)
Commercial harvest Approximately 475 tonnes (bay prawns 160 t, banana prawns 200 t, school prawns 112 t, tiger prawns 1 t, pencil and tiger squid 1 t and other species 1 t).	Commercial licence symbols accessing the fishery in 2010 86
Total harvest from all other commercial sectors Banana prawns 700 t; bay prawns 181 t and pencil squid 4 t	Fishery season All year round
Recreational harvest (2005) Squid 30 t and prawns 6 t	Fishery symbols T5, T6, T7, T8 and T9
Indigenous harvest Prawns 4 t	Monitoring undertaken Commercial CFISH logbooks, fishery independent monitoring, at-sea observing
Charter harvest N/A	At-sea observer days in 2008 Nil
Commercial Gross Value of Production (GVP) 3.2 million AUD	Accreditation under the Environment Protection and Biodiversity Conservation (EPBC) Act Expires 15 February 2012
Allocation between sectors Commercial and recreational	Logbook validation Yes—completed in 2007
Total exports Negligible	Quota managed No

Key fish resources	Stock status
Greasyback (bay) prawns	Undefined
Comments: Bay prawns are a mixture of mainly greasyback prawns, with small quantities of school prawns, tiger and king prawns.	
Banana prawns	Sustainably Fished
Comments: In most recent assessment biomass in 2004 was 50–70% of biomass prior to exploitation.	
Pencil and Tiger squid	Undefined
Comments: Squid is the main other species taken but is harvested in negligible quantities.	

Introduction

The River and Inshore Beam Trawl Fishery (RIBTF) is one of three sub-fisheries within the Queensland East Coast Trawl Fishery (ECTF).¹ Target species include greasyback (bay) prawns, banana prawns and school prawns. Minor quantities of other species are also landed. This report covers the RIBTF during the 2009 and 2010 calendar years.²

The Queensland Fisheries (East Coast Trawl) Management Plan 1999 (Qld) (the Trawl Plan) was introduced in 1999 and amended in 2000.³ During the transition period for management arrangements significant changes occurred to fishing operations; 2001 is considered to be the first typical effort year in the post-Trawl Plan period. It is also the historical limit for comparative analysis between years in this report.

Fishery description

Fishing area and methods

River and inshore beam trawling is effectively confined to an estuarine and inshore operation involving vessels under nine metres in length. These vessels are entitled to work in specified areas in rivers and creeks, towing a single five metre head-rope trawl made of mesh no smaller than 28 mm. A maximum combined net length of ten metres, with mesh size no less than 38 mm and no greater than 60 mm is specified for use on inshore fishing grounds. The only exception is Laguna Bay (near Noosa), where a small otter trawl net with a maximum head rope of eight metres may be used.

The type of fishery symbol attached to a commercial fishing licence dictates the area that can be fished. Under the Trawl Plan, the use of the beam trawl gear is permitted between Cape York and the Queensland/New South Wales (NSW) border. RIBTF operations use T5, T6, T7, T8, and T9 licence symbols (Figure 1).



Figure 1: Fishing area of the RIBTF.

Key species

Bay prawn

The term ‘bay prawn’ is a generic marketing term for a mixture of mainly greasyback prawns (*Metapenaeus bennettiae*) and a minor component of other penaeid prawn species. The biology and life cycle of other prawn species are summarised in the East Coast Otter Trawl Fishery Annual Status Report 2010. The greasyback prawn is endemic to eastern Australia south of Rockhampton, inhabiting muddy sediments of estuaries and bays at depths to 22 m.

In Queensland, peak supply occurs from October–February. They spawn throughout the year in shallow water. The eggs sink to the bottom and hatch as a nauplius larva within 24 hours. Within two weeks the larvae metamorphose into postlarvae which enter shallow nursery grounds to grow and mature. At maturity greasyback prawns are 12–15 months of age; males have a carapace length of 16 mm and body weight of four grams, while females have a carapace length of 20 mm and body weight of six grams. Males can reach 80 mm total length and females 110 mm total length.

¹ The East Coast Otter Trawl Fishery, the Moreton Bay Trawl Fishery and the River and Inshore Beam Trawl Fishery make up the East Coast Trawl Fishery.

² No report was published for the RIBTF in 2010

³ <http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/F/FisherECTMP99.pdf>

Banana prawn

The white banana prawn (*Penaeus merguensis*) has a wide distribution inhabiting tropical and subtropical waters of the west Indo-Pacific region including northern Australia from Shark Bay, Western Australia to Tweed River, northern NSW. They inhabit turbid mangrove lined estuaries and shallow coastal waters to a depth of 45 m. The body of the white banana prawn is pale yellow with reddish brown specks. Adult banana prawns are caught by trawling coastal waters 16–25 m in depth. In Queensland peak supply occurs in March and April.

Spawning peaks during the late dry season (September–November) and late wet season (March–May) in the shallow coastal zone. Eggs are shed into the water and fertilised externally. Hatching occurs after 15 hours with the emergence of the first stage (nauplius) larva. The nauplius undergoes metamorphosis into second stage (zoea) larva and then third stage (mysis) larva. All larval stages are capable of free-swimming movement that brings them closer to the coast within three weeks of hatching.

Post-larval prawns settle in mangrove creeks and within a few weeks develop into juvenile banana prawns. Banana prawns mature at about six months of age and 26–34 mm carapace length. They can live for up to 18 months and reach up to 240 mm and 200 mm total length and 69 g and 59 g body weight for females and males respectively. In addition to trawl fisheries, banana prawns support a recreational cast net fishery along most of the Queensland east coast at the end of the wet season when maturing prawns emigrate from estuaries to spawning areas offshore.

School prawn

The school prawn (*Metapenaeus macleayi*) is endemic to eastern Australian coastal waters within depths of 1–55 m from Tin Can Bay to Corner Inlet, Victoria. They inhabit estuaries as post-larvae and adolescent prawns and are abundant as adults in marine waters receiving turbid freshwater runoff from flooded estuaries. The body of the school prawn is hairless and translucent with irregular brown or green spots, antennae are brown and the telson has four pairs of spines.

Adult school prawns are caught by trawling coastal waters after heavy rainfall and are also caught by recreational cast net fishers in estuaries. Like banana prawns peak supply of school prawns in Queensland,

occurs in March and April, but flood flows during summer months may also lead to higher than normal catch rates. Spawning occurs at sea in depths of 40–55 m from February–May off the NSW coast where most of the research on this species has occurred.

Spawning probably occurs earlier along the southern Queensland coast. After hatching the planktonic nauplius larval stage develops through a series of moults over about three weeks before transitioning to the postlarval benthic stage. The postlarvae enter streams during summer and early autumn and afterwards move upstream as juvenile prawns which remain in estuaries and rivers during autumn and winter.

From October maturing sub-adult prawns begin to move downstream and emigrate to oceanic waters between November and April to spawn. Mature prawns spawn in the vicinity of the estuary from which they emigrated. School prawns live for up to 18 months. They grow very little in the cooler months but grow rapidly in spring and summer. School prawns are mature at 18–30 mm carapace length (Clarence River, NSW). Females grow to about 160 mm and males to 130 mm total length.

Main management methods

The Trawl Plan

The Trawl Plan provides the management regime for the RIBTF and is administered by Fisheries Queensland. It lists principal species that may be targeted using beam trawl fishing gear (i.e. prawns and squid) and by-product (permitted) species (e.g. blue swimmer crabs and cuttlefish) that are sometimes captured incidentally in small quantities during trawling. Permitted species may be retained subject to in-possession limits based on size, quantity, sex and other criteria depending on the species.⁴

The fishery is managed by a range of input (effort) and output (harvest) controls directed at ensuring the ecologically sustainable harvest of target and by-product species whilst minimising the impacts on bycatch and the environment. These include:

- Limited entry restrictions in the number and size of boats that can operate in the fishery.

⁴ The in possession limits on permitted trawl species are summarised in the East Coast Otter Trawl Fishery Annual Status Report 2010.

- Gear restrictions: vessel length, net head rope length and mesh restrictions apply depending on the areas of operation.
- Numerous and extensive permanent area closures apply to the fishery, particularly in waters of the Great Barrier Reef World Heritage Area and Great Sandy and Moreton Bay Marine Parks.
- Daytime and weekend closures apply to trawling in estuaries and some inshore areas (e.g. Moreton Bay) to reduce any interactions with recreational users.
- Mandatory use of bycatch reduction devices (BRDs) and turtle exclusion devices (TEDs) in areas other than a river or creek.⁵
- Logbooks and surveillance by fisheries enforcement officers (the Queensland Boating and Fishing Patrol) to monitor effort and compliance of fishing operations.
- Fishing logbook data verification and bycatch monitoring by onboard observers.⁶

Catch statistics

Commercial

Annual catch statistics for the principal species harvested by the RIBTF are reported in Table 1. Prawns make up almost all the main target catch. Landings of other principal trawl species (i.e. squid and Moreton Bay bugs) are negligible. From 2001–10, total RIBTF prawn landings averaged 434 t and ranged between 381 t and 582 t (Figure 2). The 2010 prawn harvest was the second highest recorded in the RIBTF. Total landings are heavily influenced by trends in the T₅ (Moreton Bay to Noosa) prawn harvest which in 2010 made up 74% of the total RIBTF harvest (Figure 2).

Table 1: Annual reported harvest (tonnes) of principal fished species (beam trawl) (Source: Fisheries Queensland CFISH database, 14 June 2011).

Year	Prawns	Squid	Moreton Bay Bugs
2001	369	1	0.16
2002	391	1	0.09
2003	425	1	0.38
2004	552	1	0.02
2005	388	2	0.03
2006	391	2	0.1
2007	373	1	0.28
2008	421	2	0.05
2009	431	3	0.03
2010	475	1	0.00

Prawns

Greasyback, banana and school prawns are the main species in the RIBTF prawn harvest. The beam trawl fleet is split into five fishery symbols that determine the area where the vessels can operate—T₅, T₆, T₇, T₈ and T₉ (Figure 1)⁷.

Since 2000, the highest proportion of the RIBTF fishery catch has been taken in the T₅ fishery symbol area—Brisbane River, Logan and Noosa Rivers and Laguna Bay—which since 2004 has typically produced three-quarters of the RIBTF harvest (74% in 2010, Figure 2).

In order of decreasing harvest, the remaining 26% of the 2010 harvest was taken in:

- the T₈ symbol area—rivers and creeks between Richards Point (Rodds Peninsula) and Reef Point, south of Townshend Island, Keppel Bay and Facing Island areas—accounting for 16% of the RIBTF harvest
- the T₇ symbol area—all tidal waters of rivers and creeks between the northern bank of the Burrum River and Richards Point (Rodds Peninsula)—accounting for 8% of the RIBTF harvest
- the T₉ symbol area—rivers and creeks between Reef Point, south of Townshend Island, and the northern tip of Cape York Peninsula, and the Llewellyn, Repulse, Cleveland and Sinclair Bay areas—together accounting for 1.1% of the RIBTF harvest

⁵ Other exclusions exist in the Trawl Plan for use of a TED in the 'T₉' symbol area.

⁶ By-product harvesting management arrangements are not important in this fishery because the harvest of by-product is negligible.

⁷ More detailed definitions for the fishery symbol areas are documented in the Trawl Plan.

- the T6 symbol area—rivers and creeks between Double Island Point and the northern bank of the Burrum River, Hervey Bay and the Great Sandy Strait—accounting for 0.9% of the RIBTF fishery harvest.

Overall RIBTF landings in 2009 were slightly (1%) lower compared to 2008, but increased by 9% in 2010 (Figure 2). From 2008–10 landings increased for the T5, T6 and T7 beam trawl symbols by 17%, 147% and 8% respectively, while T8 and T9 landings decreased by 20% and 42%.

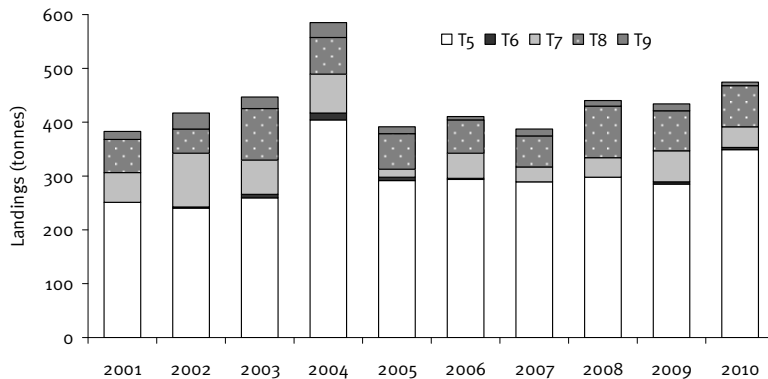


Figure 2: Annual reported landings of prawns by beam trawl fishery symbol 2001–10 (Source: Fisheries Queensland CFISH database, 14 June 2011).

Fishing effort

Since 2008, all changes in harvest levels have been within the historical range of landings for each symbol with the exception of the T9 symbol which has experienced a steady decline in landings associated with a 50% effort reduction and fewer boats fishing in 2010 compared to 2001.

Effort and boat numbers also decreased in the T5 symbol area by 23% during this period (Figure 3).

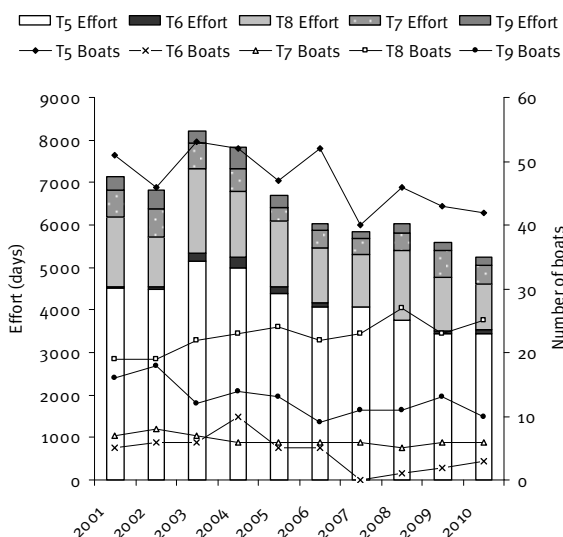


Figure 3: Annual reported effort by beam trawl fishery symbol 2001–10 (Source: Fisheries Queensland CFISH database, 14 June 2011).

Increasing infrastructure development in the lower Brisbane River has displaced some beam trawl

operations from previously productive fishing areas and is a contributor of declining effort.

Effort in the T6 area has recovered somewhat since the absence of fishing in 2007 and historically low effort in 2008 with a small number of trawlers operating in 2009–10. From 2001–10, effort in the T7 and T8 areas has been relatively stable.

Catch per unit effort (CPUE)⁸

Nominal annual CPUE varies for most of the main prawn species harvested in the RIBTF. However several long term trends have emerged. From 2001–10 the average annual CPUE for school, bay, greasyback and banana prawns increased by 54%, 69%, 44% and 87% respectively (Figure 4). Also during this period, coral prawn CPUE has decreased by 70% while endeavour prawn CPUE has fluctuated widely but has remained at relatively low levels.

These changes are difficult to interpret at a whole of fishery scale, but may be caused by a combination of factors including effort reduction in some parts of the fishery and environmental variation. For example, recent research indicates that environmental factors such as extreme stream flow events during summer have a strong influence on the CPUE of banana prawns (Tanimoto et al. 2006) and school prawns (Ives et al. 2009)—two of the main target species in the RIBTF.

⁸ For the purposes of this report, beam trawl target species effort was calculated based on the entire effort of the fleet.

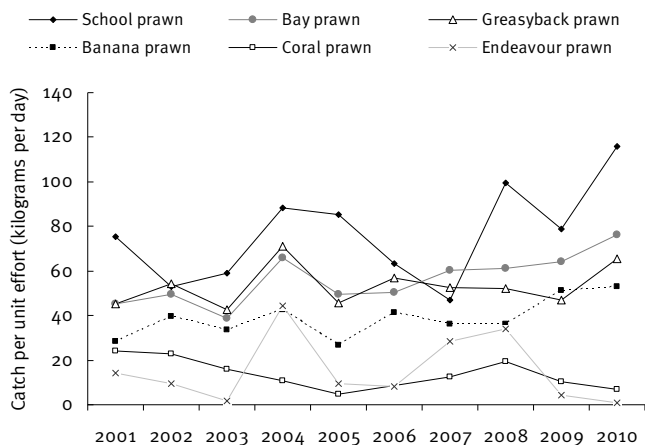


Figure 4: Average annual CPUE (kg/day) trends in prawn landings 2001–10 (beam trawl) (Source: Fisheries Queensland CFISH database, 14 June 2011).

Permitted species

The combined annual harvest of permitted (non-target by-product) species in the RIBTF is typically less than one tonne and is negligible compared with the otter trawl harvest of these species and the RIBTF prawn harvest. The 2009 and 2010 landings are at the same low level as in previous years (Table 1) reflecting consistently negligible catching rates for most permitted species in the RIBTF (Figure 5). Identification of trends is difficult when CPUE is very low. Because only a minor part of these stocks is harvested in the RIBTF, greater significance is attached to monitoring the otter trawl CPUE.

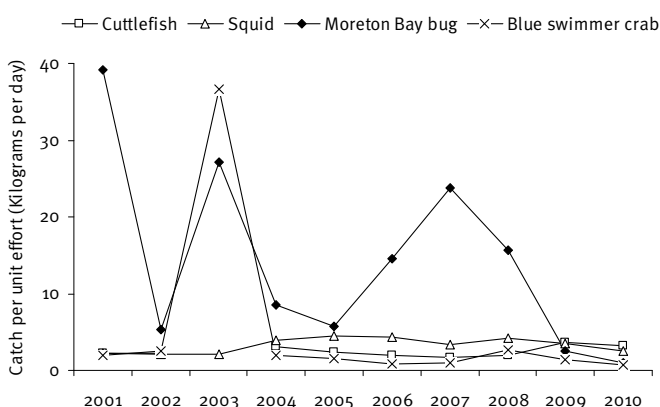


Figure 5: Average annual CPUE (kg/day) trends in minor principal species and permitted species landings 2001–10 (beam trawl) (Source: Fisheries Queensland CFISH database, 14 June 2011).

Recreational

The most recent estimates of recreational landings of species captured in the RIBTF are from the 2005 RFISH survey when 200 t of prawns, 140 t of blue swimmer crabs and 50 t of squid were harvested by recreational fishers in Queensland (McInnes 2008).

Charter

The harvest of RIBTF species taken by the charter sector is negligible.

Indigenous

The harvest of RIBTF species taken by the indigenous sector is thought to be negligible. In 2000, indigenous landings of prawns in Queensland were in the order of seven tonnes (Coleman et al. 2003).

Socio-economic trends

Gross Value of Production (GVP) was driven in 2009–10 mainly by a general increase in catch rates of the main prawn species (Figure 4), but with a decrease in fishing effort—fewer days fished although the number of boats active in the fishery has remained steady since 2008. The 2009 fishing season showed a 4% increase in the GVP of the RIBTF compared to 2008. This trend continued in 2010 which increased on the 2009 GVP by 11% (Figure 6).

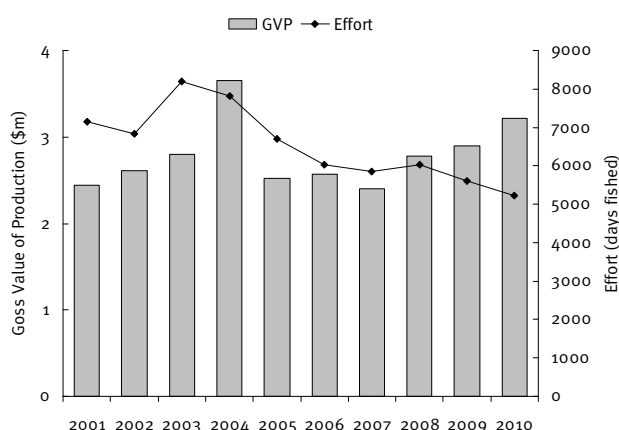


Figure 6: Annual GVP 2001–10 for the RIBTF (Source: Fisheries Queensland CFISH database 14 June 2011).

Biological and ecological information

Monitoring programs

Fishery Observers

The sampling and data collection strategy for observer monitoring in this fishery has been reported previously.⁹ Seven at-sea observer days were conducted onboard RIBTF vessels during 2009 and fourteen days were conducted in 2010. No days were allocated to observer coverage of this fishery in 2011. As noted in the 2009 Annual Status Report, results of preliminary data analysis from observations in the T5

⁹ See the *RIBTF Fishery Annual Status Report 2008*.

symbol area indicate considerable diversity among species harvested from individual rivers.

Planning is under way to undertake further data analysis differentiating the composition of retained prawn, squid and bycatch species caught in east coast stream catchments fished by the RIBTF. Catch composition similarities and differences both within, and between T5 and T9 beam trawl areas (where the majority of the observer focus has been to date), will be identified. Future allocation of observer days in the T6, T7 and T8 beam trawl areas is required to develop a full range of area-specific catch composition profiles and a baseline distribution of the main species interacting with beam trawls across the fishery.

Pre-recruit eastern king prawn survey

Eastern king prawns are only a minor component of the RIBTF harvest. In November–December 2010, Fisheries Queensland completed the fifth year of the eastern king prawn pre-recruit beam trawl survey. Progress on this project is reported elsewhere.¹⁰

Bycatch

Species caught incidentally by trawl nets are discarded either because they hold low market value, are not permitted to be retained, or are outside the legal or market size requirements (Huber 2003). A detailed bycatch monitoring strategy for the ECTF focuses on data collection by fishery observers and is assisting characterisation of the level and composition of bycatch in the RIBTF. Preliminary analysis of observer sourced data from beam trawls in the T5 symbol area (Noosa to Moreton Bay) indicate a high ratio of retained catch weight to discarded catch weight (i.e. average of 4:1) and no protected species in the bycatch.

Beam trawl bycatch differs between locations but consists mainly of small fish, crabs and other penaeid prawns. Larger vertebrate species that may enter beam trawl nets include turtles, sea snakes, sharks and rays can exit through specially designed excluder or escape devices built into the body of the net (see Interaction with Protected Species section). When rays are captured and brought on board, they are usually returned to the water alive in good condition and would be expected to survive. The main reasons for this are

that trawl shot duration is short (about 30 minutes) and that catch weights are low so crushing is not likely to occur. It is expected that the proposed observer data analysis project (see Fishery Observers section) will confirm low mortality of these species in the fishery.

Trawl Bycatch Reduction Project

As noted in the 2009 Annual Status Report, Fisheries Queensland initiated a major project in 2009 to practically and financially assist fishers acquire, install and conduct performance trials of new mandatory TEDs and BRDs prescribed in legislation.¹¹ This included:

- a square mesh codend (SMC), fisheye BRD and TED rebate scheme
- testing for new and improved BRD designs
- an extension and education program.

Many operators took advantage of the TED rebate with rebates on 1068 new compliant TEDs claimed as part of the rebate scheme. The majority of beam trawl licence holders who are required to use TEDs improved their gear via the rebate scheme.

As many as 856 highly effective fisheye BRDs (eight per licence) were supplied directly to all beam trawl fishers for trial in the fishery. Fishers have enthusiastically received the opportunity to conduct these trials and have provided constructive feedback to Fisheries Queensland. This information is being used to draft management options for future BRD requirements in the beam trawl fishery.

The extension program methodology included:

- preparation and extension of construction and use guidelines for TEDs
- use of the internet to promote sustainable fishing practices on YouTube
- provision of independent expert technical advice through working groups, fishery observer training and Queensland Boating and Fisheries Patrol training programs
- preparation of a gear library for display of devices to industry

¹⁰ See the *East Coast Otter Trawl Fishery Annual Status Report 2009*.

¹¹ See the *East Coast Otter Trawl Fishery Annual Status Report 2010* at: http://www.dpi.qld.gov.au/documents/Fisheries_SustainableFishing/ECOTF-ASR-2010.pdf

- port visits to provide a convenient location for beam trawl fishers to consult with Fisheries Queensland
- net maker engagement to encourage the flow of information from industry
- program evaluation assessing the performance of the program
- use of underwater video equipment to improve TED and BRD performance.

The program has proved a success, resulting in the Queensland East Coast Trawl Fishery gaining accreditation for export approval for product into the United States. This accreditation reflects the uptake of TEDs meeting international standards. In addition, the best performing BRDs for the fishery have been identified and are proposed as future management options for consideration as part of the Trawl Plan Review.

Interactions with protected species

In January 2003, the Species of Conservation Interest (SOCl) Logbook (SOCl01) was introduced to the fishery. Fishers have since been required to report all interactions with protected species in a separate logbook to the general logbook used for recording retained catch. Any capture of marine species protected under Queensland and Australian Government laws such as sea snakes, turtles, sea birds, dolphins, grey nurse and great white sharks, and dugongs must be recorded in the SOCl01 logbook. As at 14 June 2011 there were no recorded beam trawling interactions with SOCl during 2009 and only a small number in 2010 (15 seasnakes captured and returned to the water alive).

Fisher awareness of reporting requirements for interactions with protected species is being enhanced through education by Fisheries Queensland onboard observers. The absence of recorded interactions with SOCl in 2009 and the limited number of interactions in 2010, indicate minimal within-trawl mortality rates because the RIBTF operates largely in rivers and creeks where turtles are in low numbers, turtle excluder devices are used in the fishery and turtles and sea snakes survive the short trawl times in the RIBTF well (see Recent research and implications section).

Ecosystem impacts

The extent of impact from trawling on benthos is dependent on several factors, which includes the type of trawl gear being used, the spatial arrangement of the trawl gear, the habitat the gear is being utilised in and the frequency of use.

Studies have found that trawling has the capacity to reduce biomass and abundance of benthic organisms and lead to long-term shifts in benthic species composition (Drabsch et al. 2001). Trawling activity in the RIBTF is heavily focused on soft substrates (sand, silt and mud)—the preferred habitat for the main species harvested. Repeated trawling over the same ground in areas supporting attached sedentary species may be cause for the localised depletion of susceptible biota but these species are expected to survive in areas where trawling does not occur. The *Great Barrier Reef Marine Park Act 1975* and the *Marine Parks Act (Qld) 2004* place restrictions on the RIBTF through extensive permanent closures to beam trawling.

Sustainability Assessment

Performance Measurement System development

A Performance Measurement System (PMS) was developed in consultation with representatives from the commercial fishing sector, other fishery stakeholders, fishery managers, researchers and assessment and monitoring staff to ensure that fishery performance was measureable and consistent with management objectives.

The PMS was approved by a delegate of the Chief Executive in June 2009 and is a formal instrument for measuring sustainable performance of this fishery.¹²

Performance against fishery objectives

Beam trawl catch and effort data have been considered for the purposes of monitoring bay prawn and banana prawn CPUE in the RIBTF. CPUE indices for bay and banana prawns augment the ECOTF CPUE performance measures for these species outlined in the ECTF PMS and reported in the 2010 ECOTF Annual Status Report.

¹² Performance Measurement System East Coast Trawl Fishery [Online] available at: http://www.dpi.qld.gov.au/documents/Fisheries_SustainableFishing/East-Coast-Trawl-PMS-June2009.pdf

In previous ECOTF Annual Status Reports, increased fishing power estimates adjusting for vessel gear and technology specifics and regional data have been used to analyse monthly CPUE for species harvested mainly in the ECOTF (O'Neill and Leigh 2006). Similar estimates are not available for species harvested substantially in the RIBTF (i.e. banana prawns and bay prawns). This would be required to monitor standardised CPUE of these species (Department of Primary Industries and Fisheries 2006). Until an annual fishing power estimate time series for banana prawns and bay prawns is developed similar to those developed to monitor standardised CPUE of other

principal prawn species, fishery performance is being assessed using un-standardised CPUE. RIBTF and ECOTF specific criteria for monitoring un-standardised banana and bay prawn CPUE have been included in the ECOTF PMS and results of an analysis of fishery performance in this respect are included in this report.

Performance measurement

A summary of the results of analysis of fishery performance with respect to the performance measures set out in the PMS is included in Table 2.

Table 2: Performance measures and outcomes for the River and Inshore (Beam) Trawl Fishery in 2009 and 2010.

Performance Measure	Performance
<i>Principal species</i>	
<p>In stock assessment years banana prawns:</p> <p>1. & 2. The target reference point (TRP) is 1.2* the median Biomass at Maximum Sustainable Yield—stock biomass should be maintained at the TRP.</p> <p>The limit reference point (LRP) is the median Biomass at Maximum Sustainable Yield as determined by periodic stock assessments—stock biomass should be at or above the LRP.</p> <p>3. In years where banana prawns do not receive a stock assessment:</p> <p>The standardised CPUE is within one standard deviation less than the 2001–06 average standardised CPUE for the months specified in the Trawl Plan—CPUE should be within one standard deviation of the 2001–06 average.</p> <p>4. In years where bay prawns do not receive a stock assessment:</p> <p>The nominal CPUE is greater than two standard deviations below the 2001–06 average standardised CPUE for the months specified in the Trawl Plan—CPUE should be within two standard deviations of the 2001–06 average.</p>	<p>1. & 2. <i>Not measured</i>—no stock assessment for this species was finalised in 2008.</p> <p>3. <i>Not triggered</i> during 2009 & 2010 in the T5 area—CPUE was not less than one standard deviation greater than the 2001–06 average. <i>Not triggered</i> during 2009 & 2010 in the T6 area—CPUE was not less than the 2001–06 average during the March to May reference period (no fishing occurred from June to December in 2009 and in February, March; and from September to December in 2010). <i>Not triggered</i> during 2009 & 2010 in the T7 area—CPUE was not greater than one standard deviation less than the 2001–06 average. <i>Triggered</i>—In March 2009 and in December 2010 in the T8 area, CPUE was greater than one standard deviation (i.e. -2.04 and -6.82 standard deviations) less than the 2001–06 average. ¹³ <i>Triggered</i>—In March and April 2010 in the T9 area, CPUE was greater than one standard deviation (i.e. -1.31 and -1.30 standard deviations) less than the 2001–06 average.</p> <p>4. <i>Not triggered</i>—CPUE was not greater than one standard deviation (i.e. -0.64 of a standard deviation) less than the 2001–06 average during the January to February and November to December reference periods in 2009 and 2010.</p>

¹³ Record flooding in Central Queensland streams was associated with the extreme La Nina event of the 2010–11 austral summer (National Climate Centre, 2011). Curtailing T8 area fishing in December 2010. Dispersion by flood waters is likely to have been a factor in reducing banana prawn densities and access by T8 fishers. Only two boats fished a total of seven days in December 2010 compared to six boats fishing 59 days in 2009.

<i>Permitted species</i>	
Harvest of the species in the reporting year is 10% greater than the highest, or 10% less than the lowest annual harvest from 2001–06.	<ul style="list-style-type: none"> • Squid – <i>Not triggered</i>—2009 and 2010 harvest within the range of 10% greater than the highest annual harvest to 10% less than the lowest annual harvest from 2001–06. • Moreton Bay bugs – <i>Not triggered</i>—2009 harvest within the range of 10% greater than the highest annual harvest to 10% less than the lowest annual harvest from 2001–06. <i>Triggered</i>—2010 harvest more than 10% less than the lowest annual harvest from 2001–06. • Cuttlefish – <i>Triggered</i>—2009 harvest more than 10% greater than the highest annual harvest from 2001–06. <i>Not triggered</i>—2010 harvest within the range of 10% greater than the highest annual harvest to 10% less than the lowest annual harvest from 2001–06. • Blue swimmer crab – <i>Not triggered</i>—2009 harvest within the range of 10% greater than the highest annual harvest to 10% less than the lowest annual harvest from 2001–06. <i>Triggered</i>—2010 harvest greater than 10% less than the lowest annual harvest from 2001–06. • <i>Not measured</i>—no recorded catch of three spot crab, mantis shrimp and octopus in 2009 or 2010. • <i>Not measured</i>—red champagne lobster and slipper lobster are permitted trawl species that are not taken in the RIBTF.
<i>Bycatch (including protected species)</i>	
<ol style="list-style-type: none"> 1. More than 5% of boats in the fishery have non-compliant Turtle Excluder Devices (TEDs) and /or 2. More than 5% of boats in the fishery have non-compliant Bycatch Reduction Devices (BRDs). 	<ol style="list-style-type: none"> 1. <i>Not triggered</i>—No boats in the River and Inshore Beam Trawl fleet were prosecuted for contravening a condition of an authority regarding TED use in either 2009 or 2010. 2. <i>Not triggered</i>—No boats in the River and Inshore Beam Trawl fleet were prosecuted for contravening a condition of an authority regarding BRD use in either 2009 or 2010.

Current sustainability status and concerns

In 2004 and 2007, the RIBTF fleet was subject to closures through GBRMP and State Marine Park rezoning and more recently due to port development, construction of instream infrastructure and increasing river traffic (Marsh et al. in prep.). A decreasing trend in effort is related to the fishery adjusting to these changes, but at the same time there has been an increasing overall trend in the RIBTF harvest (Figure 2). Although there was a pause in effort decline in 2008, this was only temporary and the long term decline in RIBTF effort has continued in 2009 and 2010 (Figure 3).

Prawn landings were maintained at the 2008 level in 2009 then increased in 2010 (Figure 2) despite lower numbers of boats fishing and fewer of days fished compared to 2008 (Figure 3). An increase in the overall harvest and decreasing effort have coincided over recent years with increasing CPUE of the major target prawn species (Figure 4). As in previous years, landings of other species (e.g. squid, cuttlefish and blue swimmer crabs) were negligible compared to landings of the same species in the ECOTF,¹⁴ and the Blue

¹⁴ See the *East Coast Otter Trawl Fishery Annual Status Report 2009*.

Swimmer Crab Fishery.¹⁵ Although widely used as an indicator of relative abundance of fished species, when used to monitor minor principal species and permitted species in the RIBTF (Figure 5), CPUE for is not considered reliable. Fisheries Queensland places greater confidence in the use of CPUE from these other fisheries which target and harvest RIBTF minor principal species and permitted species in much larger quantities.

While in 2009–10, there was no stock assessment conducted for the main target species taken in the RIBTF, the 2009-10 and 2010-11 Stock Status Reports indicate that banana prawn stocks are sustainably fished (DEEDI, 2010; DEEDI, in press). The 2010–11 report also indicates that there is currently insufficient information to determine the status of greasyback (bay) prawn and school prawn stocks in Queensland. However, based on biological and fishery impact related information, the 2010–11 ecological risk assessment of the East Coast Trawl Fishery (DEEDI, unpublished) determined that at 2009 effort levels, the risk of bay prawns and school prawns being overfished in Queensland would be low.¹⁶

In terms of relative risk among fisheries, the RIBTF poses least risk to the main species harvested in both the RIBTF and other Queensland fisheries. The RIBTF harvested an estimated 23% of the banana prawn harvest, 47% of the bay prawn harvest and 20% and 68% of the school prawn harvest in 2009–10 (Table 2). Compared to the ECOTF and the Blue Swimmer Crab Fishery, the RIBTF takes negligible quantities and has a minor effect on the stocks of these species.

Results of the Performance Measure analysis (Table 2) indicate that a review of the status of banana prawn harvest was triggered in March 2009 and December 2010 in the T8 area and in March and April in 2010 in the T9 area when CPUE was greater than one standard deviation (i.e. 2.04, 6.82, 1.31 and 1.30—standard deviations) less than the 2001–06 average.

Table 2: Annual reported harvest (tonnes) of the main beam trawl species taken in Queensland commercial fisheries (Source: Fisheries Queensland CFISH database, 14 June 2011).

Species	2009 (t)	2010 (t)
Banana prawn	912(23)	882 (23)
Bay prawn	310 (47)	342 (47)
School prawn	302 (20)	164 (68)
Squid	74 (3)	89(1)
Cuttlefish	29 (2)	28 (1)
Blue swimmer crab	779 (0.01)	513 (0.01)

* Number in brackets is percentage of the total Queensland commercial harvest taken in the RIBTF

In contrast to lower CPUE attributed to lack of rainfall as suggested in the 2009 Annual Status Report, intense rainfall and flooding may have a similar depressing effect on CPUE by dispersing and flushing banana prawns out of estuaries where they are no longer accessible to the RIBTF. The rapid weakening a El Nino weather pattern in mid-2010 and onset of an intense La Nina event late in 2010 contributed to Queensland having its wettest year on record with many parts of coastal Queensland receiving their highest annual rainfall totals.¹⁷ This atypical weather pattern and the wetter than normal preceding summer may have been influential in this regard.

As for the ECOTF in 2009, the fishery performance with respect to CPUE for bay prawns was acceptable and there were no RIBTF sustainability concerns for bay prawns in 2009 and 2010. There too were few sustainability concerns for permitted by-product species harvested in the RIBTF, all of which are taken in minor quantities (Table 2). Permitted by-product species to trigger a review of sustainability status were cuttlefish in 2009, and blue swimmer crab and Moreton Bay bug in 2010.

Only 32 kg of blue swimmer crabs and one kilogram of Moreton Bay bugs were taken in the RIBTF in 2010, compared to Queensland commercial landings

¹⁵ See the Blue Swimmer Crab Fishery Annual Status Report 2009 and 2010.

¹⁶ A detailed study of bay prawn stock status is under way.

¹⁷ See Queensland in 2010: The wettest year of record at: <http://www.bom.gov.au/climate/current/annual/qld/summary.shtml#recordsRainTtlHigh>

estimates of 513 t and 436 t for these species (DEEDI, unpublished data). It is highly unlikely that the very low catch of permitted by-product species in the RIBTF is a significant contributor to assessment of their stock status. It is far more likely that catch trends in the ECOTF and the Blue Swimmer Crab Fishery are more representative of the status of these species.¹⁸

The continuation of the Fisheries Observer Program (FOP), Commercial Fishing Information System (CFISH) Logbook and the Biological Monitoring Program continues to supplement data and information available to fishery managers to ensure that RIBTF harvesting is sustainable and that the RIBTF continues to be managed in a sustainable manner.

Research

Recent research and implications

As reported in the *River and Inshore (Beam Trawl) Fishery Annual Status Report 2009*, collaboration with CSIRO Marine Research on *FRDC Project 2005/053: 'Reducing the impact of trawl fisheries on protected sea snakes'*, applied innovative methods in assessing trawl-related risk to the sustainability of east coast sea snake populations. Results of the risk assessment indicate that while the RIBTF interacts frequently with sea snakes, the risk to them is low. Factors that mitigate risk to sea snakes captured in the RIBTF include low catch weights that prevent crushing injury, short shot duration (usually about 30 minutes) within the breath-holding capacity of sea snakes, and the shallow depths where they are captured minimises the possibility of barotrauma.

Fishery management

Compliance report

Compliance and enforcement in the RIBTF are the responsibility of the Queensland Boating and Fisheries Patrol (QBFP). The Compliance Activity System is a key compliance monitoring tool that records detailed information on activities performed by QBFP.

The system records:

- breach reports issued (including offences and court outcomes)

- unattended breach reports
- fisheries infringement notices (FINS) issued
- all field activities (from new field occurrence logs)
- complaints made via the Fishwatch hotline (including follow up actions).

All offences and field activities are recorded to six nautical mile grids. This allows enforcement activities and offences to be located spatially and to guide reviews of compliance strategies. During 2009, a total of 31 units were inspected in the RIBTF. Of these, 29 were commercial vessel inspections. The remaining inspections were of marketer premises. No offences were detected during 2009.

During 2010, 33 units, including 28 commercial fishing vessels, were inspected in the RIBTF. The majority of the remaining inspections were of marketer premises. A total of 2 offences were detected during the course of these inspections resulting in Fisheries Infringement Notices (FINS) being issued for offences that: contravene a condition of an authority involving use of fishing apparatus in taking non permitted fish; and fail to provide logbook information as required to the Chief Executive in stated way or by stated time.

These data indicate that a high compliance rate for units inspected (100% in 2009 and 94% in 2010).

Compliance Risk Assessment

A compliance risk assessment (CRA) was completed for Queensland's East Coast Trawl Fisheries in 2005 and again in 2008–09. As with the first CRA, the most recent risk assessment identified compliance with legislative provisions for TEDs, BRDs and closed water provisions as posing higher risks in terms of impact on the fishery ecosystem. Accordingly these are among the highest priorities for enforcement in the RIBTF. A number of fishery activities are also rated as moderate risks to harvested stocks (e.g. use of permitted apparatus and retention of permitted species). These have a lower priority in the RIBTF than in the ECOTF, but are being addressed by QBFP to ensure fisher non-compliance is not increasing in these respects.

Detailed strategies to address the risks identified in the CRA have been developed through QBFP strategic and operational planning processes. The next CRA for the RIBTF is proposed to take place following completion of the current Trawl Plan Review and

¹⁸ See the *East Coast Otter Trawl Fishery Annual Status Report 2010* and the *Blue Swimmer Crab Fishery Annual Status Report 2011* for details.

subsequent introduction of new management arrangements for the fishery.

Changes to management arrangements in the reporting year

During 2009–10 there were no management changes that affected the RIBTF. In 2011, several fishers were provided with financial incentives for surrendering their fishing entitlements impacted by riverine development. The Brisbane River Beam Trawl Strategy, drafted by Fisheries Queensland in consultation with licence holders and development authorities, outlines a process for offsetting the cost of foreshore and in-stream development to beam trawl fishers.

The purpose of funds made available from the mitigation of proposed developments is to provide the maximum long term benefit to RIBTF licences holders who are adversely affected by increased foreshore and in-stream development in the Brisbane River.

Discussions between Queensland Fisheries and representatives of the RIBTF identified as the best option, utilisation of funds for removal of low effort T5 symbols from the fishery. Subsequently 25% of T5 symbols have been permanently removed from the fishery with a corresponding reduction in fishing capacity within the T5 area (Marsh et al. in prep.).

Other management changes proposed for the RIBTF are under consideration and will be reported subsequent to release of proposals from the Trawl Plan Review currently under way.

Communication and education

Promotion of regulations applying to both commercial and recreational fishers, including those relating to the RIBTF, is an ongoing role for Fisheries Queensland. Consultation with stakeholders in the fishery mainly occurs through Trawl Advisory Group (TAG), meetings generally held twice a year while the Trawl Plan Review is underway. The TAG provides advice to Fisheries Queensland on review of management arrangements for the trawl fisheries.

Complementary management

Fisheries Queensland is committed to ongoing consultation with other jurisdictions to ensure sustainable management of shared fish stocks across their native range. Fisheries Queensland meets annually on fisheries matters with NSW Fisheries and participates in stock status forums where inter-

jurisdictional management of shared stocks are discussed and harmonised.

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Front cover image

Beam trawl catch

