

**Submission to the Department of the Environment, Heritage, Water and the Arts on  
behalf the NSW fishing industry seeking ongoing export approval for the  
NSW Estuary General Fishery - February 2008**

**1. Introduction**

This submission provides a summary report of the Estuary General Fishery (EGF) since the initial assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 2003. Information provided is based on the headings contained within Appendix B of the *Guidelines for the Ecologically Sustainable Development of Fisheries – 2<sup>nd</sup> Edition*. The purpose of the submission is to seek extended export approval for the NSW Estuary General Fishery (EGF).

Consistent with the requirements of the Commonwealth guidelines, this submission references sections of related documents including the Environmental Impact Statement (EIS)<sup>1</sup>, the approved Fishery Management Strategy (FMS)<sup>1</sup>, and the Fishery Management Strategies Performance Report 2004<sup>1</sup>. Where applicable, fishery and catch information has been updated with the most recent available data and included in the submission.

The EIS for the EGF<sup>1</sup>, published in November 2001, provides an overview of the existing operation of the fishery at that time, including an assessment of the risks associated with the operation of the fishery, and the measures proposed to address the risks. Table 1 presents a summary of the NSW EGF at February 2008.

The EGF was granted a five year exemption from the export regulations of the EPBC Act in 2003. The exemption expires on 25 April 2008. During this time a number of improvements have been made to the sustainable management of the fishery including:

*Share Management Regime*

The conversion of five major commercial fisheries, including the EGF, to category 1 share management was completed on 5 February 2007. Share Management Plans have been adopted for each of the five commercial fisheries. The Supporting Plan, encompassing rules that apply to multiple commercial fisheries, and a range of changes have been made to the *Fisheries Management Act 1994* and *Fisheries Management (General) Regulation 2002* to complement the introduction of share management. Major benefits of share management include provision of a secure fishing access right for fishing businesses that hold shares and endorsements in a share management fishery, thus providing a greater incentive for shareholders to sustain for the resource and maintain the value of the entitlements, and, from a business efficiency perspective, greater flexibility for fishing business owners to adjust the structure of their fishing businesses.

The *Fisheries Management (Supporting Plan) Regulation 2006* and the *Fisheries Management (Estuary General Share Management Plan) Regulation 2006* are available at [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au)

*Estuary General Fishery Management Strategy*

NSW DPI and Industry have worked cooperatively to implement many actions contained in the EG FMS aimed at addressing issues identified in the EIS. The changes include many direct actions such as modifying the use of fishing gear to reduce environmental impacts (e.g. reducing the length of hauling nets and improving the selectivity of mesh nets and prohibiting the use of hauling nets over beds of *Posidonia* seagrass), limiting the species permitted to be landed and times and areas permitted to be fished. Many indirect actions, such as new reporting provisions and production of a colour guide to assist with identification and recording of threatened and protected species interactions; and the development of codes of conduct, have also been fully implemented.

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<sup>1</sup> Available at [www.fisheries.nsw.gov.au/commercial/management-strategies](http://www.fisheries.nsw.gov.au/commercial/management-strategies)

**Table 1: Summary of the NSW Estuary General Fishery**

<b>Area</b>	Specific estuaries within NSW (estuaries are also subject to closures to certain methods at some or all times).
<b>Gear</b>	Traps (fish, crab and eel) Meshing nets Fish hauling nets Prawn nets (hauling, seine, running, set pocket, hand hauled and push or scissor) Handgathering Handlining
<b>Management Controls</b>	Predominantly managed by input controls
<b>Fishing Units</b>	628 fishing businesses (as at January 2008)
<b>Target Species</b>	Yellowfin bream      Mud crab River eels            Dusky flathead Luderick              Sea mullet Pipi                    Eastern king prawn School prawn        Sand whiting
<b>Catch</b>	2005/06 - 3,839 tonnes
<b>Stock Status</b>	Overfished            1 (Mulloway) Growth Overfished    2 (Eastern king prawn and school prawn) Fully Fished            6 Moderately Fished    3 Uncertain              1 Undefined              6
<b>Value</b>	2005/06 - Approx \$19.1 million (based on SFM prices)
<b>Export</b>	Eels and mullet roe exported predominantly to Asia
<b>By-catch Species</b>	Minimal
<b>Endangered / Threatened / Protected Species Interactions</b>	Report of one interaction since mandatory reporting of threatened species interactions was implemented for the EGF in 2005.  An observer study in the Estuary General sea garfish haul net fishery in NSW reported no record of deleterious interactions with threatened species.
<b>Indigenous Component</b>	Unknown
<b>Recreational Component</b>	Managed through bag and size limits and gear controls.  A national survey of recreational and indigenous fishing was conducted in Australia during 2000-01 <sup>2</sup> .  The prominent species in the recreational finfish harvest that are also targeted in the EGF are whiting, flathead, bream, mullet and garfish. Refer to Appendix 6 of this submission for species specific recreational harvest information.

<sup>2</sup> Henry, G.W. and Lyle, J.M. (2003). The national recreational and indigenous fishing survey. Final report to the Fisheries Research and Development Corporation, Project 99/158. NSW Fisheries Final Report Series No. 40, 188pp

## 2. Description of the fishery

### Species

Primary, Key Secondary and Secondary Species:

The Fisheries Management (Estuary General Share Management Plan) Regulation 2006 prescribes the species (permitted species) that may be taken by the EGF (Table 2).

**Table 2: Species of fish permitted to be taken in the EGF**

Common name	Scientific name	Designation
Yellowfin bream	<i>Acanthopagrus australis</i>	Primary species
Mud crab	<i>Scylla serrata</i>	Primary species
Longfin river eel	<i>Anguilla reinhardtii</i>	Primary species
Shortfin river eel	<i>Anguilla australis</i>	Primary species
Dusky flathead	<i>Platycephalus fuscus</i>	Primary species
Luderick	<i>Girella tricuspidata</i>	Primary species
Sea mullet	<i>Mugil cephalus</i>	Primary species
Pipi	<i>Donax deltoides</i>	Primary species
Eastern king prawn	<i>Melicertus plebejus</i>	Primary species
School prawn	<i>Metapenaeus macleayi</i>	Primary species
Sand whiting	<i>Sillago ciliata</i>	Primary species
Beachworm spp.	various (Class: <i>Polychaeta</i> )	Key secondary species
Cockle spp.	various (Family: <i>Arcidae/Veneridae</i> )	Key secondary species
Blue swimmer crab	<i>Portunus pelagicus</i>	Key secondary species
River garfish	<i>Hyporhamphus regularis</i>	Key secondary species
Flat-tail mullet	<i>Liza argentea</i>	Key secondary species
Mulloway	<i>Argyrosomus japonicus</i>	Key secondary species
Greasyback prawn	<i>Metapenaeus bennettiae</i>	Key secondary species
Silver biddy	<i>Gerres subfasciatus</i>	Key secondary species
Trumpeter whiting	<i>Sillago maculata</i>	Key secondary species
Anchovy	<i>Engraulis australis</i>	Secondary species
Australian bonito	<i>Sarda australis</i>	Secondary species
Australian salmon	<i>Arripis trutta</i>	Secondary species
Blue mackerel	<i>Scomber australasicus</i>	Secondary species
Black bream	<i>Acanthopagrus butcheri</i>	Secondary species
Catfish spp.	various (Family: <i>Ariidae/Plotosidae</i> )	Secondary species
Sand crab spp.	various (Family: <i>Portunidae</i> )	Secondary species
Cuttlefish spp.	various (Family: <i>Sepiidae</i> )	Secondary species
Pike eel	<i>Muraenesox bagio</i>	Secondary species
Short-finned conger eel	<i>Conger wilsoni</i>	Secondary species
Southern conger eel	<i>Conger verreauxi</i>	Secondary species
Emperor	<i>Lethrinus</i> spp.	Secondary species
Sand/Blue spotted flathead	<i>Platycephalus caeruleopunctatus</i>	Secondary species
Flounder spp.	various (Family: <i>Pleuronectidae/Bothidae</i> )	Secondary species
Eastern sea garfish	<i>Hyporhamphus australis</i>	Secondary species
Shortbill garfish	<i>Arrhamphus sclerolepis</i>	Secondary species
Gurnard spp.	various (Family: <i>Triglidae</i> )	Secondary species
Hairtail	<i>Trichiurus lepturus</i>	Secondary species
Hardyhead spp.	various (Family: <i>Atherinidae</i> )	Secondary species

Common name	Scientific name	Designation
John dory	<i>Zeus faber</i>	Secondary species
Leatherjacket spp.	various (Family: <i>Monacanthidae</i> )	Secondary species
Longtom spp.	various (Family: <i>Belonidae</i> )	Secondary species
Mackerel tuna	<i>Euthynnus affinis</i>	Secondary species
Mangrove jack	<i>Lutjanus argentimaculatus</i>	Secondary species
Mantis shrimp spp.	various (Family: <i>Squillaidae</i> )	Secondary species
Pink-eye mullet	<i>Myxus petardi</i>	Secondary species
Red mullet	<i>Upeneichthys lineatus</i>	Secondary species
Sand mullet	<i>Myxus elongates</i>	Secondary species
Mussel spp.	various (Family: <i>Mytilidae</i> )	Secondary species
Nipper spp.	<i>Callinassa</i> spp.	Secondary species
Octopus spp.	various (Family: <i>Octopodidae</i> )	Secondary species
Old maid	<i>Scatophagus multifasciatus</i>	Secondary species
Pike spp.	<i>Sphyaena</i> spp.	Secondary species
Pilchard	<i>Sardinops neopilchardus</i>	Secondary species
Tiger prawn	<i>Penaeus esculentus</i>	Secondary species
Red morwong	<i>Cheilodactylus fuscus</i>	Secondary species
Saucer scallop	<i>Amusium</i> spp.	Secondary species
Scallop	<i>Pecten fumatus</i>	Secondary species
Shell spp.	various (Class: <i>Gastropoda/Pelecypoda</i> )	Secondary species
Snapper	<i>Pagrus auratus</i>	Secondary species
Sole spp.	various (Family: <i>Soleidae</i> )	Secondary species
Squid spp.	various (Class: <i>Cephalopoda</i> )	Secondary species
Stingray/stingaree spp.	various (Family: <i>Dasyatidae/Urolophidae</i> )	Secondary species
Striped grunter spp.	<i>Pelates</i> spp.	Secondary species
Sweep	<i>Scorpius lineolata</i>	Secondary species
Tailor	<i>Pomatomus saltatrix</i>	Secondary species
Tarwhine	<i>Rhabdosargus sarba</i>	Secondary species
Black trevally	<i>Siganus nebulosus</i>	Secondary species
Golden trevally	<i>Gnathanodon speciosus</i>	Secondary species
Silver trevally	<i>Pseudocaranx dentex</i>	Secondary species
Whaler shark spp.	<i>Carcharhinus</i> spp.	Secondary species
Whitebait spp.	various (Family: <i>Clupeidae/Galaxiidae</i> )	Secondary species
School whiting	<i>Sillago bassensis</i>	Secondary species
Yellowtail scad	<i>Trachurus novaezelandiae</i>	Secondary species
Yellowtail kingfish	<i>Seriola lalandi</i>	Secondary species

Section 3c(iv) (Protected Fish) (pp 18 – 19) of the EG FMS lists fish that are protected from fishing by all sectors and from commercial fishing only.

#### Management arrangements

The EGF is managed under the *Fisheries Management Act 1994* and regulations made under this Act (refer to 'Governing legislation' below). The EGF is predominantly managed by input controls including:

#### *Limited entry:*

The EGF was recently converted to a category 1 share management fishery (refer to Section 2 of this submission). Access to the fishery is limited to shareholders in the fishery and/or

their nominated fisher who hold shares above any minimum shareholding level established in the *Fisheries Management (Estuary General Share Management Plan) Regulation 2006*. Previously, access to the fishery has been limited to eligible fishers since the restricted fishery regime commenced for the fishery on 1 March 1997.

*Controls on fishing gear and boats:*

- Refer to 'Fishing methods / gear types' below.
- Boat capacity restrictions are regulated in the *Fisheries Management (Estuary General Share Management Plan) Regulation 2006*

*Time and area closures:*

Refer to Appendix 1 of this submission 'Closures authorised under Section 8 and Section 11 of the *Fisheries Management Act 1994* relevant to the EGF'.

*Other licensing arrangements:*

Refer to Section 3 (Fishery Description) (pp 9 – 31), Section 4 (Management Controls and Administration) (pp 32 – 42) and Section 8 (Goals, Objectives and Management Responses) (pp 56 – 96) of the EG FMS.

Changes made to the management arrangements since the EG FMS was published are outlined in Section 2 of this submission.

Fishing methods / gear types

See Section 3d (Gear used in the fishery) (pp 23 – 28) of the EG FMS and B3 (Methods of Harvesting) (pp B25 – B35) of the EIS for a full description of fishing methods and gear types.

Appendix 2 of this submission provides specific gear dimensions that apply to the EGF including any modifications to gear implemented as a requirement of the EG FMS.

Fishing area

Estuarine waters are defined under the *Fisheries Management Act 1994* as waters other than ocean waters that are ordinarily subject to tidal influence. Where an estuary meets ocean waters, estuarine waters are those that are west of, or upstream of, a line drawn across the entrance between the eastern most high water mark of the two banks to a line identified as the tidal limit. See Section 3b(iv) (Area) (pp 12 - 13) of the EG FMS and B2 (Existing Operational Areas) (pp B22 – B24) of the EIS. The regions in the EGF are shown in Figure 1 (pg 38) of the EG FMS.

The EGF also includes the gathering by hand of fish such as beachworms and pipis from ocean beaches, except where closures apply.

Not all NSW estuarine waters and ocean beaches are open to the EGF. Clause 4 of the *Fisheries Management (Estuary General Share Management Plan) Regulation 2006* outlines waters in which EGF is permitted to operate (Table 3), noting that additional time and area closures may exist within these waters (see Appendix 1). The number of estuaries in which the EGF operates has been reduced substantially with the introduction of Recreational Fishing Havens and declaration of marine parks in NSW.

The *Fisheries Management (Supporting Plan) Regulation 2006* outlines waters closed permanently to all commercial fishing or class of commercial fishing. Appendix 1 of this submission lists those closures authorised under section 8 and section 11 of the *Fisheries Management Act 1994* that are specific to the EGF. Further details of fishing closures can be found on the NSW DPI website at [www.dpi.nsw.gov.au/fisheries/closures](http://www.dpi.nsw.gov.au/fisheries/closures)

Two new marine parks have been declared in NSW waters since the EGF was assessed in 2003, the Port Stephens-Great Lakes Marine Park and the Batemans Marine Park. Further details regarding zoning plans and commercial fishing restrictions in these marine parks can be found on the Marine Parks Authority website [www.mpa.nsw.gov.au](http://www.mpa.nsw.gov.au)

**Table 3: Estuaries open to the EGF (under the *Fisheries Management (Estuary Share Management Plan) Regulation 2006*)**

Region	Estuarine waters within region	
Upper North Coast—Region 1	Tweed River Cudgen Lake Cudgera Creek Mooball Creek	Brunswick River Richmond River Evans River Jerusalem Creek
Clarence—Region 2	Clarence River Sandon River	
North Coast—Region 3	Wooli Wooli River Station Creek Corindi River Ararwarra Creek Darkum Creek Woolgoolga Lake Hearns Lake Moonee Creek Coffs Harbour Creek Boambee Creek Bonville Creek	Dalhousie Creek Oyster Creek Nambucca River Macleay River South West Rocks Creek Saltwater Creek Korogoro Creek Killick Creek Lake Innes Lake Cathie Camden Haven River
Central—Region 4	Manning River Khappinghat Creek Wallis Lake Smiths Lake Myall Lakes Myall River	Lake Boolambayte Port Stephens Karuah River Hunter River Tuggerah Lakes
Metropolitan—Region 5	Hawkesbury River Pittwater	Port Hacking
Upper South Coast—Region 6	Towradgi Creek Lake Illawarra Minnamurra River Spring Creek Werri Lagoon Crooked River	Shoalhaven River Lake Wollumboola Jervis Bay Swan Lake Berrara Creek Nerrindilah Creek
Lower South Coast—Region 7	Termeil Lake Willinga Lake Durras Lake Batemans Bay Candlagan Creek Moruya River Congo Creek Meringo River Coila Lake Lake Brou Kianga Lake Wagonga Inlet Nangudga Lake Corunna Lake	Tilba Tilba Lake Wallaga Lake Barragoot Lake Cuttagee Lake Murrrah Lake Bunga Lagoon Wapengo Lake Middle Lake (Bega) Wallagoot Lake Bournda Lagoon Merimbula Lake Pambula Lake Curalo Lake

### Number of fishers

As at January 2008 there were 628 fishing business owners in the EGF, with 548 fishers endorsed to operate in the EGF.

Access to the fishery is limited to shareholders in the fishery and/or their nominated fisher who hold a fishing licence with the appropriate endorsements. There are 63 types of endorsement available in the fishery, as follows:

#### *Handline and hauling crew endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A handline and hauling crew endorsement authorises the holder to take fish from specified estuarine waters using a handline or by assisting another commercial fisher who holds a category one or category two hauling endorsement (using hauling methods only).

#### *Meshing endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A meshing endorsement authorises the holder to take fish from specified estuarine waters using any of the following nets:

- (a) meshing net,
- (b) flathead net.

#### *Prawning endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A prawning endorsement authorises the holder to take prawns from specified estuarine using any of the following nets:

- (a) prawn net (hauling),
- (b) prawn net (set pocket),
- (c) prawn running net,
- (d) seine net (prawns),
- (e) hand-hauled prawn net,
- (f) push or scissors net (prawns),
- (g) dip or scoop net (prawns).

#### *Trapping endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A trapping endorsement authorises the holder to take fish (other than eels and mud crabs) from specified estuarine waters using any of the following nets and traps:

- (a) fish trap,
- (b) hoop or lift net.

Note. This endorsement extends to the taking of blue swimmer crabs from estuarine waters using the trap or net referred to above.

#### *Eel trapping endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

An eel trapping endorsement authorises the holder to use an eel trap to take eels from specified estuarine waters.

#### *Mud crab trapping endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A mud crab trapping endorsement authorises the holder to use a crab trap or a hoop or lift net (or both) to take mud crabs from specified estuarine waters.

#### *Hand gathering endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A hand gathering endorsement authorises the holder to take beachworm, pipi, cockle, cuttlefish, mussel and nippers from estuarine waters and ocean beaches, within a region of the fishery specified in the endorsement, by the method of hand picking.

### *Category one hauling endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A category one hauling endorsement authorises the holder to take fish from specified estuarine waters using any of the following nets:

- (a) hauling net (general purpose),
- (b) trumpeter whiting net (hauling),
- (c) pilchard, anchovy and bait net (hauling),
- (d) garfish net (hauling),
- (e) garfish net (bullringing),
- (f) bait net.

### *Category two hauling endorsement - Regions 1, 2, 3, 4, 5, 6 and 7*

A category two hauling endorsement authorises the holder to take fish from specified estuarine waters using any of the following nets:

- (a) garfish net (hauling),
- (b) garfish net (bullringing),
- (c) bait net.

The number of shareholders and endorsed fishers in each sector of the EGF is shown in Table 4.

**Table 4: No. of shareholders and endorsed fishers ( ) in each sector of the EGF (Jan 08)**

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
Handlining and Hauling Crew	40 (39)	135 (127)	65 (62)	197 (191)	55 (52)	52 (49)	41 (40)
Meshing	37 (36)	108 (103)	54 (52)	169 (163)	44 (42)	47 (46)	34 (33)
Prawning	22 (22)	101 (97)	31 (31)	156 (153)	7 (7)	39 (38)	34 (32)
Trapping	4 (4)	20 (19)	30 (30)	84 (83)	22 (21)	4 (4)	6 (6)
Eel Trapping	6 (6)	41 (40)	29 (29)	53 (52)	11 (11)	19 (18)	17 (16)
Mud Crab Trapping	19 (19)	50 (48)	46 (46)	86 (84)	12 (12)	4 (4)	4 (4)
Hand Gathering	17 (16)	3 (3)	29 (26)	35 (35)	1 (1)	13 (13)	5 (5)
Category 1 Hauling	8 (8)	26 (25)	10 (9)	51 (51)	14 (14)	16 (16)	13 (13)
Category 2 Hauling	9 (8)	26 (24)	19 (19)	51 (47)	10 (10)	16 (15)	9 (9)

### Allocation between sectors

- See Section 3e (Interactions with other designated fisheries) (pp 28 – 31) of the EG FMS, Section 6b (Fishery interactions) (pp B59 – B63) and Section 6e (Stakeholders) (B69 – B72) of the EIS
- See Appendix 5 of this submission for landings of EGF primary and key secondary species by other NSW commercial fisheries.

- Where available, estimated catches from the National Recreational and Indigenous Fishing Survey<sup>3</sup> for EGF primary and key secondary species are provided in Appendix 5.

#### Governing legislation

Relevant current legal instruments include:

- *Fisheries Management Act 1994*
- *Fisheries Management (General) Regulation 2002*
- *Fisheries Management (Supporting Plan) Regulation 2006*
- *Fisheries Management (Estuary General Share Management Plan) 2006.*

#### Status of export approval under the EPBC Act

The EGF was granted a five year exemption from the export regulations of the EPBC Act in 2003. This exemption expires on 25 April 2008.

### **3. Management**

#### Changes to management arrangements

The arrangements have progressed since the EGF was first assessed under the EPBC Act with the commencement of category 1 share management arrangements. This involved the implementation of the Estuary General Share Management Plan, the Supporting Plan encompassing rules that apply to multiple commercial fisheries, and a range of changes to the *Fisheries Management Act 1994* and *Fisheries Management (General) Regulation 2002* to complement the introduction of share management. The Share Management Plan and associated regulatory amendments took effect on 5 February 2007 and were explained in a document sent to DEWHA at the time titled '*Information Paper: New commercial fishery licensing and management arrangements commencing on 5 February 2007*<sup>4</sup>.

Access to the fishery is limited to shareholders in the fishery and/or their nominated fisher who hold a fishing licence with the appropriate endorsements. The Estuary General Hauling Share Management Plan stipulates the minimum number of shares that a shareholder must hold to be eligible for an endorsement in the EGF.

For relevant licensing arrangements, see Section 4 (Management Controls and Administration) (pp 32 – 42) of the EG FMS noting that significant reforms to the commercial fisheries licensing arrangements occurred in February 2007 as described in the publicly available Information Paper issued at that time.

#### Implementation of management actions in the Fishery Management Strategy (FMS)

The report: *Fishery Management Strategies Performance Report 2004*<sup>5</sup> presents information on the implementation of the management actions outlined in the EG FMS up to June 2004.

Refer to Appendix 3 of this submission for a progress statement on the implementation of management actions in the EG FMS for the period June 2004 to June 2007.

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<sup>3</sup> Henry, G.W. and Lyle, J.M. (2003). The national recreational and indigenous fishing survey. Final report to the Fisheries Research and Development Corporation, Project 99/158. NSW Fisheries Final Report Series No. 40, 188pp.

<sup>4</sup> Available at [www.fisheries.nsw.gov.au/\\_data/assets/pdf\\_file/0015/106512/information-paper.pdf](http://www.fisheries.nsw.gov.au/_data/assets/pdf_file/0015/106512/information-paper.pdf)

<sup>5</sup> Available at [www.fisheries.nsw.gov.au/commercial/management-strategies](http://www.fisheries.nsw.gov.au/commercial/management-strategies)

## Performance of the fishery against objectives, performance indicators and trigger points

The report: *Fishery Management Strategies Performance Report 2004*<sup>5</sup> summarises the performance of the EGF in NSW based on data for the 2002/03 financial year.

Refer to Appendix 4 of this submission for a statement of the performance of the EGF against its performance indicators and trigger points contained in the EG FMS based on data for the period 2003/04, 2004/05 and 2005/06.

### Compliance Risks

- See Section 5 (Compliance) (pp 43 - 44) of the EG FMS.
- Illegal harvesting and black marketing in NSW was assessed in 'Report on Illegal Fishing for Commercial Gain or Profit in NSW'<sup>6</sup>. The report found, among other things, crab theft and the theft of crab pots a significant problem in the estuaries of central and northern NSW, black marketing of prawns and eels was also identified as a significant problem. Under-reporting of catch figures by commercial fishers was also raised as an issue. The NSW Government is progressively developing and implementing actions in response to this report.
- Compliance services relating to the EGF are provided to achieve a high level of compliance in the fishery. As part of the process of developing and implementing compliance operational plans relating to the EGF, Annual District Compliance Plans were developed by identifying compliance issues in a fisheries district level (drawing from the FMS) and set out how the resources allocated and used in a strategic manner, based on localised and state-wide fisheries compliance risks. High levels of compliance are pursued strategically by maximising voluntary compliance in the fishery and creating effective deterrence against illegal activity.
- As part of monitoring compliance operational plans relating to fisheries in NSW, Annual District Compliance Planning models (including the overarching State-wide Compliance Plan) are currently under review and redevelopment. The aim of the review is to align the plans with the Australian National Fisheries Compliance Strategy (AFNCS) which, through the direction of the National Fisheries Compliance Committee (NFCC), seeks to provide guidance to all Australian fisheries jurisdictions in achieving the objectives of the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.
- As part of this process of continuous improvement, NSW DPI (Fisheries Compliance Unit) is currently developing refined compliance risk identification and assessment processes based on standardised risk assessment methodologies to better plan objective compliance services. The model is adaptive, allowing changes at any time, such as acting quickly to combat emerging or opportunistic compliance issues in the short term as well as allowing for longer term strategic responses to issues such as organised criminal involvement in fisheries.
- Rate of compliance in the EGF since the fishery was first assessed are as follows:

2003/04	91%
2004/05	92%
2005/06	93%
2006/07	93%

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<sup>6</sup> Palmer, M. (2004) Report on Illegal Fishing for Commercial Gain or Profit in NSW. Available at [www.fisheries.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0004/4819/Black-Market-Report.pdf](http://www.fisheries.nsw.gov.au/__data/assets/pdf_file/0004/4819/Black-Market-Report.pdf)

The rate of compliance is calculated using information from quality inspections reflected on the program activity reports (PARs) that are completed by NSW DPI Fisheries Officers when undertaking inspections of fishers and fishing gear in the EGF.

#### Consultation processes

- Section 284 of the Act identifies the type of items for which NSW DPI is required to consult with the public and the public consultation procedure.
- See Section 7 (Consultation) (pp 52 – 55) of the EG FMS.

Note: Changes have been made to Ministerial Advisory Councils since the publication of the EG FMS in 2003. Two Ministerial Advisory Councils are currently established under the *Fisheries Management Act 1994*. The Councils provide advice on matters referred to them by the Minister for Primary Industries, or on any other matters the Councils consider relevant.

The wild harvest fishery related Ministerial advisory councils in place at January 2008 are the Seafood Industry Advisory Council (SIAC) and the Advisory Council on Recreational Fishing (ACoRF).

The EGF and each of the other major share management fisheries have representatives on the SIAC. The representatives are nominated by each of the respective management advisory committees and appointed by the Minister for Primary Industries.

The name and composition of Ministerial advisory councils are determined by regulations under the *Fisheries Management Act 1994* and may be altered from time to time.

#### Cross jurisdictional management arrangements

NSW DPI continues to work with the Commonwealth and Queensland Department of Primary Industries and Fisheries (QDPI&F) to develop complementary arrangements for shared resources. For example:

- Commonwealth and QDPI&F scientific representatives attended the NSW DPI Resource Assessment Workshop held in March 2007, providing input on relevant shared fish stocks, including recent catch information, updates on existing research, research outcomes, stock assessment status, and changes to management arrangements for each relevant jurisdiction;
- NSW DPI provides data for assessments by Commonwealth Resource Assessment Groups for species which occur off NSW;
- NSW DPI and QDPI&F submitted a joint research proposal to FRDC in 2006 to estimate the fraction of mature fish (sea mullet) which migrate between fresh water and marine habitats (equates to spawning fraction). This proposal was not successful.
- Senior fisheries staff from NSW DPI and QDPI&F met in Coffs Harbour on 1 – 2 March 2007 to discuss a range of cross-border management and research issues and continue to liaise on an informal basis in relation to contemporary management issues.

#### Compliance with TAPs, recovery plans, etc and also relevant domestic and international arrangements

None of direct influence in the EGF.

### **4. Research and monitoring**

#### Results of any research completed relevant to the fishery

Appendix 5 provides references to scientific outputs relevant to the EGF. Scientific outputs and a list of current projects (and their summaries) undertaken by the NSW DPI Systems Research, Wild Fisheries Unit, can be found on the NSW DPI website [www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries](http://www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries)

A summary of key outcomes of completed research relevant to the EGF is provided below.

- Stewart, J. 2007. Observer study in the Estuary General sea garfish haul net fishery in NSW. NSW Department of Primary Industries, Cronulla

The study found that estuarine fishery for sea garfish during 2005 and 2006 had only limited bycatch, did not target juveniles or spawning aggregations, and had no deleterious interactions with threatened species.

- Stewart, J., Hughes, J.M., Gray, C.A. and Walsh, C., 2005. Life history, reproductive biology, habitat use and fishery status of eastern sea garfish (*Hyporhamphus australis*) and river garfish (*H. regularis ardelio*) in NSW waters. Fisheries Research & Development Corporation Project No. 2001/027. *NSW Department of Primary Industries - Fisheries Final Report Series No. 73*. 180pp. ISSN 1449-9967.

The study determined the sexual maturity of eastern sea garfish occurs at approximately 1 year of age with a fast growth rate, becoming vulnerable to fishing at around 1 year of age.

In-depth analyses of reported commercial catch statistics indicated that the fishery for eastern sea garfish has been in serious decline in terms of catches and catch rates. The commercial fishery for eastern sea garfish was dominated (97%) by fish aged less than 2 years old. Estimates of annual mortality rates indicated that approximately 96% of eastern sea garfish died each year, and that much of this was due to fishing. Egg per recruit and spawner biomass per recruit modeling indicated present levels of between 10 and 25% of the unexploited stock. These low levels, combined with high levels of fishing pressure and the life-history of this species (short-lived with recruitment likely to be variable and dependant upon environmental conditions) suggest that the stock of eastern sea garfish has been in danger of recruitment failure.

NSW DPI, in conjunction with commercial fishers, has developed a recovery program for eastern sea garfish that is mainly designed to reduce fishing pressure on the stock, including the continued prohibition on the taking of this species in the EGF. The study found that a reduction in fishing pressure, in conjunction with the declaration of sanctuary areas through Marine Parks, and the life-history of sea garfish (having fast growth rates with sexual maturity occurring at around 1 year of age) suggest that the stock should recover if favourable environmental conditions for recruitment occur in the future.

- Broadhurst, M.K., Macbeth, W.G. and Wooden, M.E.L., 2005. Reducing the discarding of small prawns in NSW's commercial and recreational prawn fisheries. Final Report to the Fisheries Research & Development Corporation. Project No. 2001/031. *NSW Department of Primary Industries - Fisheries Final Report Series No. 71*. 202pp. ISSN 1449-9967.

This study investigated fishing practices that improve size and selectivity and reduce bycatch and discarding of small school and king prawns in NSW's commercial (otter trawl, seines, stow (set pocket) and trap (prawn running)) nets and recreational fisheries. The study recommended changes to the majority of prawn catching gear, in particular, the use of square- mesh codends made from between 27 and 29 mm knotless mesh in most commercial trawls, seines and stow nets.

The NSW Minister for Primary Industries has since approved the mandatory introduction of square-mesh codends in commercial prawn-catching gears. NSW DPI is currently developing detailed gear specifications in association with NSW DPI scientists and Industry representatives.

- Pease, B.C. (Ed), 2004. Description of the biology and an assessment of the fishery for adult longfinned eels in NSW. Final Report to Fisheries Research and Development Corporation. Project No. 1998/127. *NSW Department of Primary Industries - Fisheries Final Report Series No. 69*. 167pp. ISSN 1449-9967.

A key recommendation from this project was to increase the minimum size limit for the recreational and commercial fisheries for long finned eels to 58cm in order to protect estuarine male spawning stocks. As part of the review of saltwater size limits for the recreational and commercial fisheries, a increase to the minimum size limit for long finned eels to 58cm was implemented in September 2007.

- Gray, C. A., Johnson, D.D., Young, D.J. and Broadhurst, M. K., 2003. Bycatch assessment of the Estuarine Commercial Gill Net Fishery in NSW. Final Report to Fisheries Research and Development Corporation. Project No. 2000/172. *NSW Fisheries Final Report Series No. 55*. ISSN 1442-0147. 58pp.

A scientific observer program was used to quantify the composition and magnitude of the retained and discarded catches taken in the fishery during the 2001 fishing season. This survey was divided into 2 components to cover (1) the specific fishery for flathead and (2) the general gillnet fishery.

Fishers operating in the flathead-net fishery are only permitted to retain legal-sized dusky flathead and legal-sized blue swimmer and mud crabs. The survey found that legal-sized dusky flathead were the most abundant organism captured accounting for 23 - 47% by number and 34 - 54% by weight of the mean observed catch. Predominant bycatch species included sea mullet, luderick, bream, yellowfin leatherjacket and blue swimmer crab. Overall, 7% of dusky flathead captured were below the minimum legal length of 36 cm and discarded.

As a result of this research, an increase to the minimum mesh size of flathead nets from 70mm to 80mm has been introduced as part of the Fisheries Management Strategy.

For the general gillnet fishery, sea mullet and luderick accounted for 85% by number of total observed catches, with a further 10% being contributed by bream, dusky flathead and blue swimmer crab. Throughout the entire survey, 6.2% by number and 3.3% by weight of catches were discarded, with undersized luderick, bream and blue swimmer crab collectively accounting for 69% by number and 49% by weight of all discards observed. Discarding was found to be greatest during the winter overnight setting period.

As part of the FMS, an increase to the minimum mesh size from 80mm to 95mm was introduced when nets were used as a set net in excess of 3 hours. The survey found that this increase in mesh size would result in fewer total discards and, in particular, have a significant effect on reducing the discarding of undersized bream and luderick.

- Henry, G.W. and Lyle, J.M., 2003. The National Recreational and Indigenous Fishing Survey. Final Report to the Fisheries Research & Development Corporation and the Fisheries Action Program. Project No. 1999/158. *NSW Fisheries Final Report Series No. 48*. ISSN 1440-3544. 188pp.

Specific results for individual species are provided in Appendix 5.

### Monitoring programs

See section 6c (Catch monitoring) (pp 50 – 51) of the FMS.

The NSW DPI fishery monitoring program includes stock assessment work on the key commercial species; use of scientific observers to record information on catches of target species and by-catch; collection of catch and effort data; and port monitoring of landed fish products (e.g. collecting data on fish length and age).

#### *Scientific observer program*

The FMSs for all the major commercial fisheries (excluding lobster and abalone) require the implementation of a scientific observer program. The program has been implemented on a cross-fishery basis based on a framework that identifies the highest priority methods for observation based on a number of measures and to ensure that resources are directed towards the methods that pose the greatest risks<sup>7</sup>. Ocean line fishing methods have been identified as the current highest priority and a three year scientific observer program for this method commenced on 1 September 2007.

#### *Collection of catch and effort data*

See section 6c (Catch monitoring) (pp 50 – 51) of the FMS

A major project is underway which aims to develop a new catch information management system and related processes which will, among other things:

- introduce and cater for finer scale spatial and temporal reporting;
- improve the Department's ability to interrogate, analyse and report on high quality data; and
- improve the Department's ability to plan research, compliance and management activities (including enhancing cross-jurisdictional cooperation).

Stage 1 of this project which involves business process improvements and core systems functionality is anticipated to be implemented by mid to late 2008.

#### *Port monitoring*

Involves the collection of length (and age samples where relevant) of a set of commercially targeted species. The species are determined based upon risks assessments (as part of the EIS) and socio-economic values<sup>8</sup>. For the 2005/06 period the following species were subject of the port monitoring project: sea mullet, yellowfin bream, snapper, yellowtail scad, yellowtail kingfish, mud crabs, bonito, Australian salmon, pilchards, sand flathead, teraglin, red mullet, rubberlip morwong, silver sweep, Balmain bugs, pipis and flounders. This list will be reviewed at the end of each fiscal year period.

## **5. Catch data**

### Total catch of primary and key secondary species taken in the EGF

Refer to Appendix 6 of this submission.

### Total catch of primary and key secondary species taken in other NSW fisheries

Refer to Appendix 6 of this submission.

### Harvest by each sector (commercial, recreational, Indigenous and illegal)

- Refer to Appendix 6 of this submission for harvest information by the commercial and recreational sectors.

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<sup>7</sup> Scandol, J. 2005. A prioritisation model for the NSW observer program. Cronulla NSW DPI.

<sup>8</sup> Resource Assessment and Monitoring of Commercially Harvested Species (FSC2003/123)

- No estimate available for the Indigenous sector. Refer to Section 6e(iii) (Indigenous people) (pg B70) and Section 6 (Indigenous Issues) (pp H367 – H369) of the EIS.
- No estimate available for illegal catch.

#### Fishing effort data

Refer to Appendix 6 of this submission.

### **6. Status of target stock**

NSW DPI has developed and implemented a Resource Assessment Framework for the assessment of marine fish species harvested in NSW. The framework incorporates a standardised method of reporting on the exploitation status of fish stocks across all commercial fisheries, including an annual review and interpretation of available data by fisheries scientists. The status of primary and key secondary species in the EGF for 2005/06 is shown in Table 5.

**Table 5: Status of Primary and Key Secondary Species in the EGF for 2005/06**

Primary Species	Resource Assessment Class		Exploitation Status
	Target	Current	
Yellowfin bream	2	3	Fully Fished
Mud crab	2	4	Undefined
River eels (longfin and shortfin)	2	3	Uncertain
Dusky flathead	2	3	Fully Fished
Luderick	2	3	Moderately Fished
Sea mullet	2	2	Fully Fished
Pipi	2	4	Undefined
Eastern king prawn	2	2	Growth Overfished
School prawn	2	2	Growth Overfished
Sand whiting	2	3	Fully Fished
Key Secondary	Resource Assessment Class		Exploitation Status
Beachworm spp.	3	4	Undefined
Cockle spp.	3	4	Undefined
Blue swimmer crab	2	2	Fully Fished
River garfish	3	3	Fully Fished
Flat-tail mullet	3	3	Moderately Fished
Mulloway	2	2	Overfished
Greasyback prawn	3	4	Undefined
Silver biddy	3	4	Moderately Fished
Trumpeter whiting	2	3	Undefined

(Source: NSW DPI Resource Assessment System)

## 7. Interaction with threatened or protected species

### Frequency and nature of interactions

Chapter F Section 2 (Threatened and Protected Species) (pp F288 - F300) of the EG EIS identifies threatened and protected species (under the NSW *Fisheries Management Act 1994*, *Threatened Species Conservation Act 1995* and the Commonwealth EPBC Act 1999) that may interact with the EGF, and, potential direct and indirect impacts. The EIS found that the fishery in its current form was not having a direct and/or adverse impact on any threatened species. The lifecycles, preferred habitats of many threatened species and techniques used in the fishery suggest that there is limited scope for the fishery to have a significant impact on them. It was noted in the EIS that there was a high degree of uncertainty associated with this assessment due to the paucity of quantitative data and reliance upon anecdotal or speculative information.

An observer study in the Estuary General sea garfish haul net fishery in NSW reported no record of deleterious interactions with threatened species<sup>9</sup>.

Mandatory reporting of threatened species interactions was implemented for the EGF in 2005. Since that time one report (August 2005) has been received reporting the entanglement of a juvenile female great white shark in an EGF set mesh net in Tuggerah Lakes. The shark was dead.

### Management actions taken to reduce interactions and results of such action

Refer to Table 6 below.

**Table 6: Potential impacts of the EGF on threatened species and the status of the relevant management responses in the EG FMS\* (as identified in Table F10 (pg F-298) of the EIS)**

Potential Impacts	Management Response	Status / Progress
Capture – fish, turtles, mammals, penguins	1.1 all Prevent and/or minimise direct and indirect effects	1.1(a) Implemented
		1.1(b) The use of discard chutes implemented for methods meshing nets and flathead nets during the period one hour before official sunrise to one hour after official sunset.
		NSW DPI has completed several research projects on improving the selectivity of prawn-catching gear and reducing unwanted bycatch. As a result of this research implementation of square mesh codends (highly effective at retaining targeted species and reducing bycatch) in the EG prawn fisheries has been approved
		1.1(c) Implemented
		1.1(d) Implemented
		1.1 (e) Implemented
		1.1(f) Scientific-observer program implemented on a cross-fishery basis. Observation of commercial fishing methods are subject to a prioritisation framework.
		1.1(g) Ongoing
		1.1(h) Ongoing
		1.1(i) Complete

<sup>9</sup> Stewart, J. 2007. Observer study in the Estuary General sea garfish haul net fishery in NSW. NSW Department of Primary Industries, Cronulla

Potential Impacts	Management Response	Status / Progress
Capture – fish, turtles, mammals, penguins	1.2 (a) & (b) Closures and gear restrictions to avoid interactions	1.2(a)(i) Implemented
		1.2(a)(ii) & (iii) Commenced in 2003 and being progressed through the seagrass mapping process
		1.2(a)(iv) Ongoing
		1.2(a)(v),(vi) & (vii) Current and ongoing
		1.2(a)(viii) & (ix) To be implemented as required.
		1.2(b) No modifications recommended other than those required under the FMS
	1.2(c) Code of Practice	Implemented
	1.3(d) May increase areas closed to commercial fishing	Two new marine parks have been declared in NSW waters since the EGF was assessed in 2003, the Port Stephens-Great Lakes Marine Park and the Batemans Marine Park.
	3.1(a) Catch and effort return forms	Implemented
	3.1(b) Considers threat abatement plans	Implemented as required
3.1(c) Regulate species	Ongoing	
Goal 6 Effective compliance	Refer to <i>Fishery Management Strategies Performance Report 2004</i> (pp 16 – 20) and Appendix 3 of this submission.	
Goal 7 Community education	Refer to <i>Fishery Management Strategies Performance Report 2004</i> (pp 16 – 20) and Appendix 3 of this submission.	
Habitat modifications	1.1(g) & (h) Regulates gear	Ongoing
	1.2 all Increases areas closed to fishing	Refer to Status / Progress for Management Response 1.2(a), 1.2(b) and 1.2(c) under 'Capture – fish, turtles, mammals, penguins' above.  1.2(d) and 1.2(e) - Ongoing
	1.3(d) May increase areas closed to fishing	Two new marine parks have been declared in NSW waters since the EGF was assessed in 2003, the Port Stephens-Great Lakes Marine Park and the Batemans Marine Park.
	1.5 all Habitat mapping, rehabilitation and management	Implemented through the MAC process
	2.4 Manages externalities	Ongoing
	3.1(b) Considers threat abatement plans	Implemented as required
	7.1, 7.2, 7.3 Community education	Ongoing

Potential Impacts	Management Response	Status / Progress
Disturbance	1.1(f) Data collection – some needs to be fishery independent	Scientific-observer program implemented on a cross-fishery basis. Observation of commercial fishing methods are subject to a prioritisation framework.
	1.2 Closures and research programs	Refer to Status / Progress for Management Response 1.2(a), 1.2(b) and 1.2(c) under 'Capture – fish, turtles, mammals, penguins' above.  1.2(d) and 1.2(e) - Ongoing
	1.5 all Habitat mapping, rehabilitation and management	Implemented through the MAC process
	2.2(c) Licensing arrangements	Implemented. Significant reforms to the commercial fisheries licensing arrangements occurred in February 2007. Refer to Section 2 of this submission.
	3.1 Considers threat abatement plans	Implemented as required
	Goal 6 Effective compliance	Refer to <i>Fishery Management Strategies Performance Report 2004</i> and Appendix 3 of this submission.
Trophic effects	1.1(b) Minimises bycatch	Refer to Status / Progress for Management Response 1.1(b) under 'Capture – fish, turtles, mammals, penguins' above.
	1.3(a) – (c) Understanding the fishery impacts on ecosystem function and composition	1.3(a) & (b) As required 1.3(c) Refer to Appendix 3 of this submission

\*For further detail relating to management responses and their implementation refer to the *Fishery Management Strategies Performance Report 2004* and Appendix 3 of this submission.

## 8. Impacts of the fishery on the ecosystem in which it operates

### Results of any Ecological Risk Assessments

There are a range of sections within the EG EIS which examined the ecological risk of the fishery including Chapter E (Impact on the Fish Resources) (pp E193 – E256); Chapter F (Impact on the Biophysical Environment) (pp F257 – F323).

For the EGF one species was rated as a high risk of overfishing, the silver trevally. A recovery program is required to be developed under the Ocean Trawl Fishery Management Strategy as silver trevally is a primary species for that fishery. The EGF will be required to adopt any management measures required under a recovery program for the species.

At this stage NSW DPI has introduced, in September 2007, a minimum legal length of 30 cm (total length) for silver trevally to assist the recovery of the species. In addition, significant areas have been closed to trawling as part of the introduction of the Batemans Marine Park zoning plan.

### Nature of the impacts on the ecosystem including impacts on any key conservation values

Chapter F Section 1 of the EG EIS (Biodiversity and Habitat Issues) (pp F-257 to F-287) identified potential effects of the fishery on various habitat types. There is limited or no data to determine the extent or magnitude of the effects, therefore the EG FMS adopted a

precautionary approach implementing several management actions aimed at reducing any potential impacts on habitat types (see below).

Chapter F Section 3 (Trophic Structure) (pp F-301 to F-305) of the EIS found that the risks of significant or irreversible trophic effects are low for most elements of the estuarine biota.

#### Management actions taken to reduce the impacts

A number of management actions have been implemented as part of the EG FMS which constrain the impact of the fishery on the ecosystem (see Goals 1 – 3 (pp 58 – 81)). Implementation status of these management actions is included in Appendix 3 of this submission.

#### **9. Consolidated detailed information outlining progress in implementing recommendation and conditions**

The Australian Government's Assessment of the New South Wales Estuary General Fishery in 2003 identified a number of management actions within the EG FMS which were considered crucial to the long term sustainable management of the fishery. The implementation of these specific management actions are to be reviewed as part of the next Commonwealth review of the fishery.

Refer to Appendix 7 of this submission.

**Appendix 1: Closures authorised under Section 8 or Section 11 of the *Fisheries Management Act 1994* relevant to the EGF**

The table below outlines closures that affect the EGF. Further details can be found on the NSW DPI website [www.dpi.nsw.gov.au/fisheries/closures](http://www.dpi.nsw.gov.au/fisheries/closures)

Closure Title	General Description
Manning River and tributaries	Bait collection, seasonal prawn closure, set mesh net closure, weekend netting closure, netting closure
Moruya (or Deau) River and tributaries, and Willija (or 'Y') Swamp at Moruya Heads	Use of various types of nets on weekends and public holidays and use of various types of nets in described waters
Bega River, its creeks, tributaries, inlets and lagoons	Netting closure
Richmond River - Tatham Bridge to Morco Weir	Commercial netting
Tuggerah Lakes (including Munmorah & Budgewoi Lakes)	Use of various types of nets in described waters
Lake Macquarie (County of Northumberland)	Trapping, digging and use of hand hauled prawn nets and push/scissor nets
Richmond River, Wilsons River and their tributaries, Prospect & Chickiba Lakes (Ballina's Artificial Lakes)	Weekend netting closure and use of various types of nets within described waters
Myall Lake, Myall River, Boolambayte Lake and Boolambayte Creek	Use of various types of nets in described waters
Jervis Bay (including Currambene Creek)	Prohibits the taking of scallops by commercial fishers, and use of all nets (except dip or scoop net and landing nets) in described waters
Werri Creek	Prohibits the use of all nets (except dip or scoop net, hand hauled prawn net and landing net) to take fish in waters described
Minnamurra River	Prohibits the use of all nets (except dip or scoop net and landing net) to take fish in waters described
Port Kembla	Prohibits the taking of fish by certain methods in waters described
Korogoro Creek, Hat Head	Prohibits the use of all nets (except the landing net) to take fish in waters described
Lake Illawarra (Including Maquarie Rivulet)	Weekend / public holiday closure and use of various types of nets in waters described
Crooked River	Prohibits the use of all nets (except dip or scoop net, hand hauled prawn net, push or scissor net and landing net) to take fish in described waters

Closure Title	General Description
Longneck Lagoon	Prohibits the use of all nets (except the landing net) to take fish in waters described
Wallagoot Lake	Prohibits the use of all nets (except dip or scoop net, hand hauled prawn net, push or scissor net, hoop or lift net and landing net) to take fish in described waters
St Georges Basin, including Sussex Haven	Prohibits use of all nets (except the dip or scoop net, for the capture of prawns only and the landing net) to take fish in described waters
Sandy Beach Creek & Bournda lagoon	Prohibits the use of all nets (except dip or scoop net and landing net) to take fish in waters described
Port Stephens and Tributaries	Use of various types of nets in described waters
Port Stephens – Set Mesh Nets	Use of set mesh nets within described waters
Nadgee River, Nadgee Lake, Merrica River and Little Creek	Prohibits the use of all nets (except the landing net) to take fish in waters described
Lake Arragan	Prohibits the use of all traps and nets (except dip or scoop net and landing net) to take fish in waters described
Hastings River & Lake Innes	Weekend/public holiday closure in Lake Innes and use of nets in Hastings River
Buttler's Creek, Willinga Lake, Canal Lagoon, Lake Wollumboola, Moona Moona Creek, Swan Lake & Tabourie Lake	Use of various types of nets in described waters
Mooball Creek	Prohibits the use of all nets (except dip or scoop net, hand hauled prawn net, push or scissor net, hoop or lift net and landing net) to take fish in described waters
Jerusalum Creek	Prohibits the use of all nets (except dip or scoop net, hand hauled prawn net, push or scissor net, hoop or lift net and landing net) to take fish in described waters
Cuttagee Lake and Little Lake	Use of various types of nets in described waters
Cudgera Creek, Cudgen Creek & Cudgen Lake - County of Rous	Prohibits the use of all nets (except dip or scoop net, hand hauled prawn net, hoop or lift net and landing net) to take fish in described waters
Coila Lake	Prohibits the use of a prawn running net in described waters
Boambee, Bonville & Pine Creeks	Prohibits the use of all nets (except dip or scoop net and landing net) to take fish in waters described
Wallaga Lake	Use of various types of nets in described waters
Deep Creek	Prohibits the use of all nets (except hand hauled prawn net, push or scissors net, dip or scoop net, and the landing net) to take fish in waters described

Closure Title	General Description
Merimbula Lake, Yowaka River, Pambula Lake/River, Twofold Bay, Merimbula Bay and Towamba River	Use of various types of nets and other fishing methods in described waters
Cathie Creek and Cathie Lake - County of Macquarie	Use of various types of nets in described waters
Clarence River, its lakes, lagoons, inlets, channels, creeks and tributaries - County of Clarence	Use of various types of nets in described waters
Macleay River and its tributaries, including the Belmore River, South West Rocks Creek and Trial Bay Front beach	Netting closures and the use of various types of nets in described waters
Khappinghat Creek - County of Gloucester	Prohibits the use of all nets (except hand hauled prawn net, the push or scissors net and the dip or scoop net when used for the capture of prawns only, and the hoop or lift net and the landing net) to take fish in waters described
Yarrahapinni Wetland Reserve	Closed to all methods
Shoalhaven & Crookhaven Rivers	Netting and trapping closures in described waters
Tweed River - Parish of Terranora; County of Rous	Weekend netting closure and the use of various types of nets in described waters and time periods
Arrawarra Creek	Prohibits the use of all traps (except a bait trap) to take fish in described waters
Smiths lake - County of Gloucester	Weekend netting closure (except push or scissors net (prawns), the hand-hauled prawn net, the prawn net (set pocket), the dip or scoop net (prawns) and the landing net) in described waters and time periods and a winter prawning closure
Wallis Lake & tributaries & Ocean Waters (Forster) - County of Gloucester	Weekend netting closures, winter prawning closures and other netting closures in waters described
Belmore River	Closed to EGF
Lady Denman Heritage Complex Fish Enclosure - Huskisson	Closed to all methods
Evans River	Closed to trapping
Killick or Crescent Head Creek	Prohibits the use of all nets (except hand hauled prawn net, the dip or scoop net and the landing net) to take fish in waters described
Bouddi National Park	Closed to all methods

**General Additional Closures Relevant to EGF**

<b>Closure</b>	<b>Period</b>
Taking of invertebrates from Intertidal Protected Areas	For a period of 5 years commencing on 10 November 2006
Taking of bivalve molluscs: pipis, cockles and whelks by all methods in the whole waters of Kogarah Bay and its tributaries (including the foreshore)	11 May 2003 to 10 May 2008
Taking Australian salmon and tailor by nets	For a period of 5 years commencing on 31 August 2006
Taking pipis (of any species) from all ocean beaches of NSW other than for use as fishing bait in the immediate area or by an appropriately authorised commercial fisher operating under an approved biotoxin management plan.	For a period of 5 years commencing 6 February 2004

## Appendix 2: Description of Estuary General Gear

### Traps

#### **Fish trap**

The standard dimensions for an estuarine fish trap are a maximum of 2 metres in length, 1.5 metres in width and 1 metre in depth with mesh not less than 50mm (clause 59 *FM(G)R 2002*). The *Fisheries Management (Estuary General Share Management Plan) Regulation 2006* prescribes limits to the number of traps that may be set in certain estuarine waters.

#### **Crab Trap**

The standard dimensions for an estuarine crab trap are a maximum of 1.2 metres in length, 1 metre in width and 0.5 metre in depth (or has a diameter not exceeding 1.6 metres at the top or bottom), with mesh not less than 50 mm (clause 61 *FM(G)R 2002*). The *FM(EGSMP)R 2006* prescribes limits to the number of crab traps that may be set in certain estuarine waters.

#### **Eel Trap**

The standard dimensions for an eel trap are a maximum of 2 metres in length, 0.5 metre in width and 0.5 metre in depth or not exceeding 1 metre in length, 1 metre in width and 0.5 metre in depth. The mesh in the trap must be between 20 mm and 40 mm (diagonal) and the entrance funnel must not be more than 100 mm in diameter (clause 65 *FM(G)R 2002*). The *FM(G)R 2002* limits a commercial fisher to no more than 10 eel traps permitted to be set at any one time.

### Meshing nets

#### **Meshing net**

Parameters	Description	Implementation
<b>Time</b>	<u>Dec-Jan</u> : splashing only (Region 3 & north, Region 4 & south). <u>Feb-April</u> : 3hrs max. (Region 3 & north, Region 4 & south). <u>May</u> : 3hrs max. (Region 3 & north), overnight (Region 4 & south). <u>June-Aug</u> : overnight (Region 3 & north). <u>June Sept</u> : overnight (Region 4 & south).	Clause 41 <i>FM(G)R 2002</i>
<b>Total Length</b>	Lake Wooloweyah & Broadwater: <1450m Durras Water & Wallaga Lake: <375m All other waters: <725m	
<b>Mesh size, Bunt or Wings</b>	Mesh >95mm when used as set net in excess of 3hrs and >80mm in any other case.	
<b>Method of Use</b>	May be used in two ways: 1) by the method of splashing 2) as a set net (subject to time restrictions) When net is used in Clarence River an alternative method of splashing may be used.	

### Flathead net

Parameters	Description	Implementation
<b>Area</b>	Wallis Lake, Smiths Lake, Tuggerah Lakes, Lake Illawarra	Clause 43 <i>FM(G)R 2002</i>
<b>Time</b>	Not to be used, set or left in Lake Illawarra for any period from 1 September to 31 May or for a period exceeding 6hrs between sunrise and sunset from 1 June to 31 August. Not to be used, set or left in any other water from 1 Nov to 31 March or between sunrise and sunset during any other period. When net is set after sunset, it must be retrieved or in process of retrieval by sunrise.	
<b>Total Length</b>	Smith's Lake:<375m All other permitted areas: <725m	
<b>Mesh size, Bunt or Wings</b>	Depth of mesh <16 meshes Mesh >80mm (Increase minimum mesh size from 70mm to comply with increase in minimum legal length of dusky flathead from 33 to 36cm)	

### Hoop or lift net

Parameters	Description	Implementation
<b>Time</b>	Not set or left in water in the period between sunset and sunrise.	Clause 48 <i>FM(G)R 2002</i>
<b>Total Length</b>	Maximum length from plane of hoop, ring or frame to the extremity of the net <1m Diameter <1.25m	
<b>Mesh size, Bunt or Wings</b>	Mesh <13mm	
<b>Method of Use</b>	Only used as a hand implement and only by method of lowering the net into the water and then drawing the net vertically to the surface. No more than 10 hoop or lift nets are to be used by a fisher at any one time.	

Fish hauling nets

**General purpose hauling net**

Parameters	Description	Implementation
<b>Time</b>	For nets <500m in length, the net is to be hauled no more than once between midnight on one day and midnight on the immediately following day.	Clause 26 <i>FM(G)R 2002</i>
<b>Total Length</b>	Wallaga Lake (Narooma-Bermagui Road seawards): 500m Wallaga Lake (inwards): 375m Durras Water: 375m Wagonga River: 375m All other waters: 375m Tuggerah Lakes and Wallis Lake: 500m	
<b>Mesh size, Bunt or Wings</b>	Bunt (in full): <90m or one quarter of the total length of net. Bunt (center): 25-50m Mesh: 30mm-50mm Bunt (remainder of): <50m; mesh >50mm; mesh of wings >80mm.	
<b>Method of Use</b>	If the net is <500m in length no more than one net is to be used by the endorsement holder.	
<b>Minimal No. of Fishers Required</b>	Operated by at least 2 fishers.	

**Trumpeter whiting net**

Parameters	Description	Implementation
<b>Area</b>	Port Stephens	Clause 27 <i>FM(G)R 2002</i>
<b>Time</b>		
<b>Total Length</b>	Total length not exceeding 275m	
<b>Mesh size, Bunt or Wings</b>	Mesh of wings not 50 – 65mm, depth of not more than 50 meshes Bunt of net: 50m; mesh 30-40mm. Length of hauling lines: 100-225m.	
<b>Method of Use</b>	Hauling	

**Garfish bullringing net**

Parameters	Description	Implementation
<b>Time</b>	Between 1 February and 30 November	Clause 28 <i>FM(G)R 2002</i>
<b>Total Length</b> <b>Mesh size, Bunt or Wings</b>	Clarence River: total length not exceeding 375m and mesh throughout 28 – 45mm Tuggerah Lakes: Total length not exceeding 550m and mesh throughout 28 – 36mm All other waters: total length not exceeding 275m and mesh throughout 28 – 36mm	

Prawn nets

**Prawn hauling net**

The standard dimensions for a prawn hauling net is a maximum length of 40 m with mesh of between 30mm and 36 mm and each hauling line must not exceed 130 m in length. Specific dimensions and specifications apply to the use of prawn hauling nets in specific waters as prescribed in clauses 32, 33 and 34 of the *FM(G)R 2002*.

**Seine net (prawns)**

Parameters	Description	Implementation
<b>Area</b>	Waters within Lake Illawarra, Tuggerah Lakes, Queen's Lake and Watson Taylors Lake, Wallis Lake and Coolongolook and Wallingat Rivers, and Macleay River as prescribed in clause 37 <i>FM(G)R 2002</i>	Clause 37 <i>FM(G)R 2002</i>
<b>Time</b>		
<b>Total Length, Mesh size, Bunt or Wings</b>	Lake Illawarra: total length not exceeding 140m, mesh throughout 30 – 36mm and length of hauling line not exceeding 220m Tuggerah Lakes: total length not exceeding 140m, mesh throughout 30 – 36mm and length of hauling line not exceeding 140m Queen's Lake and Watson Taylors Lake: total length not exceeding 140m, mesh throughout 30 – 36mm and length of hauling line not exceeding 140m Wallis Lake and Coolongolook and Wallingat Rivers: total length not exceeding 140m, mesh throughout 30 – 36mm and length of hauling line not exceeding 140m Macleay River: total length not exceeding 140m, mesh throughout 30 – 36mm and length of hauling line not exceeding 140m	

**Prawn running net**

Parameters	Description	Implementation
<b>Area</b>	Wallaga Lake, Durras Water, Cuttagee Lake, Middle Lake, Lake Wollumboola, Swan Lake, Coila Lake, Corunna Lake, Tilba Lake, Lake Birroul or Brou Lake, including all their respective bays, inlets and creeks  Tuggerah Lakes and Lake Illawarra	Clause 36 <i>FM(G)R 2002</i>
<b>Time</b>		
<b>Total Length Mesh size, Bunt or Wings</b>	Tuggerah Lakes and Lake Illawarra: total length not exceeding 140 metres and mesh throughout 25 - 36 mm. Other waters mentioned above: total length not exceeding 75 metres and mesh throughout 25 - 36 mm	

### **Prawn net (set pocket)**

<b>Parameters</b>	<b>Description</b>	<b>Implementation</b>
<b>Area</b>	Waters within Myall River, Wallis Lake, Queen's Lake Entrance, Watson Taylors Lake, Tuggerah Lakes and Lake Illawarra, Cathie Creek, Sussex Inlet, Clarence River, Munmorah Power Station inlet cooling canal, and Smiths Lake as prescribed in clause 35 <i>FM(G)R 2002</i>	Clause 35 <i>FM(G)R 2002</i>
<b>Total Length Mesh size, Bunt or Wings</b>	Myall River, Wallis Lake, Queen's Lake Entrance, Watson Taylors Lake, Clarence River: total length not exceeding 20m and mesh throughout 30 – 36mm Tuggerah Lakes and Lake Illawarra and Sussex Inlet: total length not exceeding 5m and mesh throughout 30 – 36mm Cathie Creek: total length not exceeding 10m, length of pocket, from cod-end to cork line not exceeding 10 metres and mesh throughout 30 - 36 mm. Munmorah Power Station inlet cooling canal: total length 18 – 20m and mesh throughout 25 – 30mm Smiths Lake: total length not exceeding 63 metres, length of pocket, bunt or bag not exceeding 9 metres, mesh throughout 30 - 36 mm, and wings of net to be set at such an angle that the distance between the ends of the net does not exceed 45 metres.	
<b>Method of Use</b>	Method of setting, must not be left unattended during the period it is set	

### **Hand-hauled prawn net**

A hand-hauled prawn net has a maximum overall length of 6 metres and mesh size between 30 and 36mm. The method is operated by hand and is only used in relatively shallow water (clause 49 *FM(G)R 2002*).

### **Push or scissor prawn net**

A push or scissor net (prawns) is a net attached to a scissors-type frame; length of lead or bottom line between the lower extremities of the poles not exceeding 2.75 metres and mesh between 30 and 36 mm (clause 50 *FM(G)R 2002*).

### Other methods

#### **Handgathering** (clause 74 *FM(G)R 2002*)

Handgathering includes the taking of fish by hand, or with the assistance of any of the following implements:

- a pump or similar device having a barrel or cylinder with a diameter of not more than 85 mm, or
- a tube or cylinder (whether or not fitted with a cap at one end) with a length of not more than 250 mm and a diameter of not more than 85 mm, or
- a single blade knife with a blade longer than it is wide, or
- a spade or fork (except in a seagrass bed, mangrove or saltmarsh area or for the taking of pipis), or
- pliers.

#### **Hand lining**

Clause 66 *FM(G)R 2002* limits the number of lines that may be used to 10 with no more than 6 hooks on each line.

### Appendix 3: Report on the Implementation of Management Actions within the Estuary General Fishery Management Strategy

ACTION	STATUS
<p>1.1(a) Increase the minimum mesh size (and other dimensions if needed) of flathead nets from 70mm following the 2001 research program into mesh net selectivity (November 2003)</p>	<p>Implemented through regulation (Clause 43 <i>FM(G)R 2002</i>)</p>
<p>1.1(b) Using best available knowledge and appropriate technology, modify fishing practices (such as by adopting bycatch reduction devices) to reduce the impacts of the fishery on non-retained fish, invertebrates, reptiles, mammals and birds. (Ongoing)</p>	<p>A study<sup>10</sup> (funded by NSW DPI and FRDC) was done to investigate fishing practices that improve size and selectivity and reduce bycatch and discarding of small school and king prawns in NSW's commercial (otter trawls, seines, stow (set pocket) and trap (prawn running) nets and recreational fisheries. The study recommended changes to the majority of prawn catching gear, in particular, the use of square- mesh codends made from between 27 and 29 mm knotless mesh in most commercial trawls, seines and stow nets.</p> <p>Independent observations of fishing practices generated by the scientific observer surveys are to provide information to assist this process.</p>
<p>1.1(d) Phase out the setting of mesh nets with a mesh size less than 95mm between sunset and sunrise over winter (November 2003)</p>	<p>Implemented through regulation (Clause 41 <i>FM(G)R 2002</i>)</p>

<sup>10</sup> Broadhurst, M.K., Macbeth, W.G., and Wooden, M.E.L. 2005. Reducing the discarding of small prawns in NSW's commercial and recreational fisheries. FRDC Project No. 2001/031, NSW Department of Primary Industries – Fisheries Final Report Series No. 71 ISSN 1449-9967

**ACTION****STATUS**

1.1(f) Introduce an industry-funded scientific observer program to collect information on the quantity and composition of bycatch (non-retained species) for methods where little or no information is known, and periodically repeat for all methods used in the fishery  
December 2003 and ongoing

An observer study in the Estuary General sea garfish haul net fishery in NSW was conducted during 2005 and 2006<sup>11</sup>.

A scientific observer program was used to quantify the composition and magnitude of the retained and discarded catches taken in the estuarine gill (mesh) net fishery during the 2001 fishing season<sup>12</sup>

The FMSs for all the major commercial fisheries (excluding lobster and abalone) require the implementation of a scientific observer program. NSW DPI has therefore implemented the program on a cross-fishery basis and has developed a framework that identifies the highest priority methods for observation based on a number of measures and to ensure that resources are directed towards the methods that pose the greatest risks<sup>13</sup>. Ocean line fishing methods have been identified as the current highest priority and a three year scientific observer program for this method commenced on 1 September 2007.

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<sup>11</sup> Stewart, J. 2007. Observer study in the Estuary General sea garfish haul net fishery in NSW. NSW Department of Primary Industries, Cronulla

<sup>12</sup> Gray, C.A., Johnson, D.D., Young, D.J., and Broadhurst, M.K. 2003 Bycatch assessment of the Estuarine Commercial Gill Net Fishery in NSW. Final Report to FRDC. Project No. 2000/172. NSW Fisheries Final Report Series No. 55 ISSN 1442-0147 58pp

<sup>13</sup> Scandol, J. 2005. A prioritisation model for the NSW observer program. Cronulla NSW DPI.

ACTION	STATUS
<p>1.1(i) Investigate the sustainability of grading uncooked prawns April 2005</p>	<p>A study <sup>14</sup> (funded by NSW DPI and FRDC) was done to investigate the short-term mortality and stress incurred by juvenile school prawns discarded from an estuarine trawler. The study found mortality of up to 35% for juvenile school prawns discarded from estuarine prawn trawlers, partitioned into mortality caused by trawling, 16%, and by subsequent sorting and grading, using a riddler as per current commercial practices, at 19%. The study recommended modifications to sorting practices, such as sorting and separating school prawns in water-filled compartments, to significantly improve survival of discarded school prawns.</p>
<p>1.2(a)(iii) Identify areas of seagrass (of any species) which should be closed to prawn hauling and prawn seining methods (December 2003)</p>	<p>Current regulation prohibits the use of a prawn net (hauling) or seine net (prawns) over a bed of seagrass (any species) that is identified on a map approved by the Minister. The development of maps of seagrass beds for the purpose of this management action has commenced.</p>

<sup>14</sup> Macbeth, W.G., Broadhurst, M.K., Paterson, B.D., and Wooden, M.E.L. 2006. Reducing the short-term mortality of juvenile school prawns (*Metapenaeus macleayi*) discarded during trawling. ICES Journal of Marine Science, 63: 831 – 839.

**ACTION****STATUS**

1.3(c) Through an expert workshop conduct a risk assessment of the impacts of the EGF on the ecosystem and initiate appropriate management programs  
(December 2004)

The EG FMS and EIS were prepared prior to the finalisation of the national Ecologically Sustainable Development (ESD) reporting framework by the Sustainability Indicators Working Group of the then Standing Committee on Fisheries and Aquaculture. At that time, the working group was recommending that Australian fisheries management agencies undertake a risk assessment for each fishery to determine the level of management or reporting necessary for component of the ecosystem

The national ESD reporting framework has since been finalised and actively applied in recent Environment Protection Biodiversity Conservation assessments (prepared to meet Commonwealth environmental assessment requirements). In comparing the risk assessments conducted through the NSW EIS process to some assessments recently prepared under the national ESD framework approach, it is apparent that the ecosystem risk assessments undertaken in the NSW fishery EISs cover a greater range of ecosystem components and in general provide a more in-depth analysis than those done under the national framework.

With regard to the risk assessment process, the national ESD framework adopts a stakeholder and expert workshop based approach. In comparison, the NSW EISs were prepared over a long time frame with significant input from a wide range of stakeholders, subject to expert peer review, and subject to public comment – accordingly; the outcomes can be reasonably expected to be consistent.

ACTION	STATUS
<p>1.5(b) EGMAC to provide advice to NSW DPI regarding priority issues for habitat rehabilitation and conservation (annually)</p>	<p>This is being done through the MAC process.</p>
<p>1.5(d) EGMAC to provide advice to NSW DPI regarding habitat rehabilitation and research applications to ensure they provide a benefit for the fishery (annually)</p>	<p>This is being done through the MAC process.</p>
<p>2.1(e) Consider the need for minimum legal lengths for key secondary and secondary species, and</p> <p>2.1.1(a) Review and, where appropriate, implement minimum legal lengths for the primary finfish species in the EGF to give a high probability that at least 50% of the fish of each species landed have reached reproductive maturity, and consider the need for minimum legal lengths for key secondary and secondary species in the EGF (timeframes yet to be determined)</p>	<p>A review of saltwater size limits for the recreational and commercial fisheries, and recreational bag limits and fishing methods was undertaken and a number of 'proposals' and 'options' for changes to the current fishing rules were outlined in discussion papers that were placed on public exhibition from 1 August to 21 October 2005.</p> <p>Bag and size limit changes, implemented in September 2007, were formulated in light of the findings of environmental assessments of the relevant fisheries based on the best available science, the results of the National Recreational and Indigenous Fishing Survey (2000/01), the Palmer inquiry into illegal fishing, advice from expert committees of anglers, key stakeholder Advisory Councils, and the more than 3300 public submissions.</p> <p>Refer to <a href="http://www.dpi.nsw.gov.au/fisheries/recreational/summary">http://www.dpi.nsw.gov.au/fisheries/recreational/summary</a> for a summary of changes to size limits, bag limits and fishing methods introduced.</p>

ACTION	STATUS
2.1.1(b) Monitor the total commercial landings of each primary species annually for comparison against reference levels (annually)	Primary species and landings are being monitored through the annual resource assessment process <sup>15</sup> .
2.1.1(c) Develop a system for and conduct a formal stock assessment of the primary species within five years and review the assessment at least every three years thereafter (from 2003)	<p>The Resource Assessment Framework was finalised in 2004. This framework is a well-defined, accessible program for the resource assessment of all marine fish species harvested in NSW<sup>15</sup>. The type of assessment carried out for each species (or species complex) will take account of commitments made in FMSs, levels of risk identified in the environmental impact statements, the commercial and recreational importance of the species and its biology.</p> <p>Refer to '<i>A Framework for the Assessment of Harvested Fish Resources in NSW</i><sup>16</sup> and '<i>Determining the Biological Sustainability of Wild Fisheries in NSW: Concepts and Definitions</i><sup>17</sup>.</p>

<sup>15</sup> The Resource Assessment Process is the annual review and interpretation of data available for each primary/target and key secondary/conditional target/byproduct species (or species complex) by fisheries scientists in accordance with the Resource Assessment Framework; including consultation with the Catch and Effort Working Group.

<sup>16</sup> Scandol, J.P. 2004. A Framework for the Assessment of Harvested Fish Resources in NSW, NSW Department of Primary Industries – Fisheries Resource Assessment Series No. 15, ISSN 1449- 9940.

<sup>17</sup> Scandol, J.P. 2006. Determining the Biological Sustainability of Wild Fisheries in NSW: Concepts and Definitions. Cronulla, NSW DPI.

ACTION	STATUS
<p>2.1.1(d) Use the Total Allowable Catch Setting and Review Committee to make determinations relating to the maximum level of effort that may be applied to prawn stocks, after receiving advice from Estuary General MAC and other stakeholders (from 2003)</p>	<p>As reported in 2004<sup>18</sup>, a joint project funded by NSW DPI, the University of NSW and the Australian Research Council, is continuing to, among other things, study the biological and socio-economic consequences of effort allocation amongst the three commercial fisheries and the recreational fishery for prawns in NSW.</p> <p>In addition, the Department is in the final year of a four year study funded by the FRDC to estimate fishing mortality and growth in school prawn populations. The results from this project will provide important information needed to determine the best suite of biological conditions for harvesting school prawn populations in a sustainable manner. The final report for the project is due with the Fisheries Research and Development Corporation by July 2008.</p>
<p>2.1.2(a) Monitor commercial landings of adult longfin and shortfin eels in each catchment (annually)</p>	<p>Commercial landings are monitored on a Statewide basis through the annual resource assessment process. In addition, as part of the FMS performance monitoring process, an analysis of the distribution of landings among estuary general regions for these species is undertaken.</p>

<sup>18</sup> NSW Department of Primary Industries (2004). Fishery Management Strategies Performance Report 2004. Cronulla, NSW DPI

ACTION	STATUS
2.1.2(b) Evaluate the quantity of eels taken for aquaculture purposes within stock assessment and monitoring processes (annually)	Under a separate permit, eel aquaculture permit holders may harvest glass eels for aquaculture purposes from NSW coastal catchments with the exception of the Clarence, Hawkesbury and Port Stephens catchments. The maximum allowable catch of glass eels (of both species combined) is 300kg/yr with a maximum of 30kg/yr to be harvested from any individual catchment. No harvest of glass eels was recorded for the periods 2003/04, 2004/05 and 2005/06.
2.1.2(c) Finalise the current review of eel harvesting and implement the outcomes (December 2002)	The review has been finalised. A policy governing the commercial harvest of river eels from farm dam and impoundments of NSW was approved November 2007.
2.1.3(a) Monitor commercial landings of mud crabs in each estuary (annually)	Commercial landings of mud crabs are monitored on a regional basis through the resource assessment process. In addition, as part of the FMS performance monitoring process, an analysis of the distribution of landings among estuary general regions for this species is undertaken.
2.1.3(c) Consider the feasibility of implementing a tradeable crab trap regime based on shareholdings (December 2003)	This response can now be further progressed following implementation of share management provisions for the EGF.
2.1.4(a) Monitor the total commercial landings of each key secondary species, and species subsequently identified as requiring additional monitoring, annually for comparison against reference levels (annually)	These species and landings are being monitored through the annual resource assessment process.
2.1.4(b) Monitor the commercial landings of all other secondary species taken in the EG fishery annually for comparison against an historical range for each of those species (annually)	These species and landings are being monitored as part of the annual FMS performance monitoring process.

ACTION	STATUS
<p>2.1.4(c) Develop an objective system for defining and setting trigger points to detect concerning trends in landings of all species permitted to be taken in the EGF (annually from 2003)</p>	<p>Research has been undertaken on improving methods to detect trends in landings. A 2.5 year review of all (EG, OH &amp; EPT) performance indicators resulted in a move away from landings based triggers towards indicators and triggers to reflect stock status and progress towards improved resource assessment across all species.</p>
<p>2.2(b) Identify the level of active effort (as opposed to latent effort) in each endorsement type and region in the EG fishery and implement minimum shareholding over set time periods to ensure that the level of active effort does not exceed historical levels (December 2003 and ongoing)</p>	<p>Minimum shareholding provisions established in the <i>Fisheries Management (Estuary General Share Management Plan) Regulation 2006</i>.  Further, in July 2007, NSW DPI engaged Mr Richard Stevens, Government Relations and Fisheries Management Advisor, to conduct an independent study on the structural adjustment opportunities, benefits, options and costs for a number of the State's major commercial fisheries, including the EGF. A report has been submitted to the NSW Minister for Primary Industries for consideration.</p>

ACTION	STATUS
<p>2.3(b) Establish minimum entry requirements for new entrants at the fishing business level to prevent increases in effort by small businesses (December 2003)</p>	<p>In general, the minimum entry requirement for a new entrant at the fishing business level is that all components (as outlined in the fishing business determination<sup>19</sup>) of a fishing business must be transferred to that person in its entirety.</p> <p>Minimum shareholding requirements are provided for in each share management plan for the EG, OH and EPT fisheries and, in respect of a new entrant, apply at the share class level.</p>
<p>2.5(a) Where a fishery is a major harvester of an overfished species, develop and implement a recovery program for the species within a specified timeframe (recovery program to be drafted for consultation within 6 months)</p>	<p>At the 2006 Aquatic Resource Assessment Workshop the exploitation status for mullet (<i>Argyrosomus japonicus</i>), a key secondary species in the EG Fishery and a conditional target species in the OH Fishery, was changed from 'undefined' to 'overfished' for the 2004/05 period.</p> <p>The development of a recovery program commenced in 2007.</p>
<p>2.5.1(a) Participate in any consultation with other harvest sectors of silver trevally over the development of a recovery program for that species, in particular consider the introduction of an appropriate size limit to address the growth overfishing problem (ongoing)</p>	<p>The Ocean Trawl Fishery Management Strategy requires a recovery program for silver trevally to be developed within one year of the date of approval of the strategy, i.e. by March 2008. Within this context and following the review of saltwater size limits for the recreational and commercial fisheries, a minimum legal length of 30cm (total length) for silver trevally applies from 3 September 2007. In addition, significant areas have been closed to trawling as part of the introduction of the Batemans Marine Park zoning plan.</p>

<sup>19</sup> A fishing business determination identifies the fishing business and the components of that fishing business as recorded by NSW DPI. The following things have been determined as components of fishing businesses (where applicable): the shares held by the business, the endorsements allocated to the business, and any external fishing authorities connected to the business that have been issued by another State, Territory or Commonwealth agency.

ACTION	STATUS
2.5.2(a) Prevent the taking of sea garfish in the fishery whilst a recovery program for the species is being developed through the OH fishery (December 2002)	Implemented.  The recovery program developed for sea garfish includes the continued prohibition on the taking of this species in the EG fishery until either the species is fully recovered or suitable alternative actions are included in the management plan for that fishery. The recovery program also provides for limited access to fishers (via a permit scheme) to operate garfish hauling nets in specific estuarine waters to assist with sea garfish research undertaken as part of the recovery program for this species.
3.1(a) Modify the reporting system, in consultation with the MACs, to collect and monitor information on sightings and captures of threatened or protected species using catch returns (December 2002)	Implemented
4.1(a) Estimate the size of the non-commercial catch, and the relative impact of this on resources harvested in the relevant fishery (June 2003)	This is being done through the resource assessment process.
4.2(a) Monitor the catch of the primary EGF species that are also taken in other NSW commercial fisheries (annually)	This is being done through the resource assessment process.
4.2(b) Through cross fishery consultation, determine an appropriate size at first capture for king prawn and school prawn species (as required from 2003)	Prawn counts have been implemented and will be reviewed pending outcomes of current research on fishing mortality and growth in school prawn populations.
4.3(a) Monitor the relative catch of the primary and key secondary species taken by meshing, trapping and hand lining methods (annually)	This is being done annually as part of the FMS performance monitoring process. Changes in the distribution of landings among estuary general endorsement types for each primary species are analysed.

ACTION	STATUS
<p>4.3(b) Prohibit shareholders in the EG fishery from owning more than 5% of the total number of each class of share issued in the fishery (December 2003)</p>	<p>Maximum shareholding provisions are included in the <i>Fisheries Management (Estuary General Share Management Plan) Regulation 2006</i>.</p>
<p>5.2(a) Use minimum shareholding provisions, either as a trigger point response or in accordance with the share management plan, to adjust the number of EG fishing businesses to a level which improves the economic viability of the fishery and its participants (within the limits of ecological sustainability) (December 2003)</p>	<p>In July 2007, NSW DPI engaged Mr Richard Stevens, Government Relations and Fisheries Management Advisor, to conduct an independent study on the structural adjustment opportunities, benefits, options and costs for a number of the State's major commercial fisheries, including the EGF. A report has been submitted to the NSW Minister for Primary Industries for consideration.</p>
<p>5.2(b) Develop, in consultation with the MAC, a performance measure for the economic viability at the fishing business level (December 2005)</p>	<p>Performance indicators monitoring economic viability have been refined as a part of a 2.5 year review of FMS performance monitoring. Average market values of shares and net returns to the fishery, taking into account indicative industry operational and government management costs relevant to the fishery, will be used as performance indicators.</p>
<p>5.2(c) Develop, in consultation with the Advisory Council on Commercial Fishing*, a cost recovery framework (November 2005)</p>	<p>The FMSs for the major commercial fisheries (excluding lobster and abalone) include a management action to develop a cost recovery framework. A coordinated approach across all fisheries is considered the most efficient approach due to many fishers being endorsed in multiple fisheries. Further consultation with SIAC and MACs is needed to progress this management action.</p>

\* Advisory Council on Commercial Fishing has been replaced by the Seafood Industry Advisory Council

ACTION	STATUS
<p>5.3(a) Implement the share management provisions of the FM Act 1994 (commence the share management plan by December 2003)</p>	<p>Implementation of share management is a four-stage process. Shares were allocated on a provisional basis to eligible persons in December 2004. Stage 3; the 'Limited Access Stage', commenced in March 2005 and the final stage of share management commenced on 7 February 2007 with the implementation of share management plans.</p>
<p>6.1(b) Implement an endorsement suspension scheme and share forfeiture scheme based on a demerit point scale for serious offences and habitual offenders (December 2003)</p>	<p>The FMSs for all the major commercial fisheries (excluding lobster and abalone) require the implementation of an endorsement suspension and share forfeiture scheme based on a demerit point scale. NSW DPI will therefore implement the schemes on a cross-fishery basis. Preliminary discussions have occurred with the MACs to prioritise offences under the <i>Fisheries Management Act 1994</i> and <i>Fisheries Management (General) Regulation 2002</i> according to low, medium or high rankings. Ranking the offences differentiates between the amounts of the demerits points that may apply per offence and will assist in the development of a cross-fishery ranking system that will underpin the schemes.</p> <p>Further development is pending finalisation of current reform and refinement of the associated regulations to ensure compliance with the share management provisions of the Act.</p>
<p>7.3(c) Develop and implement fishery-independent surveys for use in future stock assessments of species that inhabit estuarine waters (July 2005)</p>	<p>Information from a project by NSW DPI, the University of Sydney and FRDC<sup>20</sup> will be used to progress this management action.</p>

<sup>20</sup> Developing fishery-independent surveys for the adaptive management of NSW's estuarine fisheries. NSW Department of Primary Industries, the University of Sydney and the Fisheries Research & Development Corporation (Project No. 2002/059).

ACTION	STATUS
<p>7.4(b) Determine accuracy of current recording of species identification in catch records and provide advice to industry to make needed changes (may need to wait for results from observer study) (December 2004 and ongoing)</p>	<p>This is being considered through the resource assessment process. The introduction of the scientific observer program will assist in the ongoing implementation of this action.</p>
<p>7.5(a) Consult with the MACs on a strategy for improving the understanding of economic and social information relating to the fishery, taking into account the information gaps outlined in the economic and social assessment in the Environmental Impact Statement for the relevant fishery (July 2005)</p>	<p>The FMSs for the major commercial fisheries include management actions to promote research projects to gain knowledge relevant to economic and social factors affecting fisheries, develop strategies to identify economic issues, and, under the Ocean Trawl FMS, implement targeted surveys to obtain information on the social and economic status of commercial fisheries.</p>
<p>7.5(b) Assess, in consultation with the EG MAC, the feasibility of gathering additional information on social and/or economic aspects of the relevant fishery including: modifying the existing catch returns or fishing licence renewal application forms, undertaking targeted social and economic surveys, or any other methods (July 2005)</p>	<p>A coordinated approach across all fisheries is considered the most efficient approach due to many fishers being endorsed in multiple fisheries Further consultation with SIAC and MACs is needed to progress this and associated management actions.</p>

**Appendix 4: Report on performance indicators in the Estuary General Fishery (for the period 2003/04 to 2005/06),  
based on revised performance indicators**

<b>Performance Indicator</b>	<b>Trigger Point</b>	<b>Status</b>	<b>Comment</b>
The estimated quantity of the estuary general catch (by method) which is discarded	The quantity of discards for any observed method increases between consecutive observer surveys	-	One observer survey complete for garfish hauling.  Consecutive observer survey data not available.
Response of the EGF to marine pest and disease incursions	Guidelines specified in any Marine Pest and Disease Management Program are not adopted by the EGF	✓	<i>Caulerpa taxifolia</i> has been declared a Class 1 noxious species in all NSW waters under the <i>Fisheries Management Act 1994</i> (the Act)  The NSW Government has developed a comprehensive control program for <i>C. taxifolia</i> . To manage the potential spread of <i>C. taxifolia</i> via fishing gear, fishing closures, under section 8 of the Act, have been implemented in five affected estuaries banning the use of all nets (commercial and recreational) other than landing nets.
Number of estuaries totally closed to estuary general fishing (through regulatory controls, marine parks and/or aquatic reserves) every two years	The number of estuaries open to estuary general fishing increases after the commencement of the management strategy or any estuary that was previously closed to commercial fishing is opened	✓	Since the commencement of the EG FMS fishing closures, established under sections 8 and 11 of the <i>Fisheries Management Act 1994</i> , relevant to the EGF have been maintained. Estuaries in which the fishery is permitted to operate (as provided for in the EG FMS) are prescribed in the share management plan for the fishery.

Performance Indicator	Trigger Point	Status	Comment
Changes in the exploitation status of a primary or key secondary species in EG to 'overfished' or 'recruitment overfished'	The exploitation status of a primary/ key secondary is changed to 'overfished' or 'recruitment overfished' by NSW DPI	2003/04 ✓	In 2004/05 the exploitation status for mulloway ( <i>Argyrosomus japonicus</i> ), a key secondary species in the EGF changed from 'undefined' to 'overfished'.
		2004/05 x	Management response 2.5(a) of the EG FMS requires the development and implementation of a recovery program when the exploitation status of a species is changed to 'overfished'. The development of a recovery program for mulloway has commenced and is in the initial stages.
		2005/06 ✓	
Total annual landings of all secondary species (other than key secondary species) taken in the fishery as a percentage of the total annual Estuary General Fishery landings	Contribution of other secondary species to total estuary general landings exceeds 15% in any two consecutive years	✓	The total annual landings of all secondary species taken, as a percentage of the total annual EGF landings, was approximately 9.3% and 8.6% in 2003/04 and 2004/05 respectively and 8.4% in 2005/06.
Total Estuary General landings from each estuary region	Total Estuary General landings from any estuary region changes by more than 50% between any two consecutive years	✓	The total estuary general landings from each estuary region did not change by more than 50% between any two consecutive years (2003/04 to 2005/06)
Interactions between the fishery and threatened species, populations or ecological communities that are likely to threaten the survival of a threatened species, population or ecological community	Any interactions between the fishery and a threatened species, population or ecological community reported by endorsement holders in the fishery or observed during an observer survey that are likely to threaten the survival of that threatened species, population or ecological community, as determined by the Director-General of NSW DPI on advice from relevant threatened species experts	✓	Observer data not available, other than for garfish hauling.

Performance Indicator	Trigger Point	Status	Comment
Interactions between the fishery and protected species that are likely to threaten the survival of a protected species	A biennial review undertaken by NSW DPI of interactions between the fishery and a protected species reported by endorsement holders in the fishery or observed during an observer survey is likely to threaten the survival of that protected species as determined by the Director-General of NSW DPI on advice from relevant threatened species experts	✓	Observer data not available. Report of one interaction with a protected species since mandatory reporting was implemented for the EGF in 2005.
Change in the distribution of landings between the commercial sector and non-commercial sectors (combining recreational and Indigenous) for each primary species in the EGF	Maximum absolute difference in the distribution of landings between the commercial and non-commercial sectors is greater than 15 percentage points when compared every five years	–	The first assessment year for this indicator will be 2007 and will compare relative catch between sectors in 2005/06 to relative catch in 2000/01.
Change in the distribution of landings among <i>NSW commercial fisheries</i> for each primary species in the EGF	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 15 percentage points	–	The first assessment year for this indicator will be 2007 and will compare relative landings from 2004/05 and 2005/06 to the reference years 1999/00 and 2000/01.
Change in the distribution of landings among <i>estuary general endorsement types</i> for each primary species	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 20 percentage points	–	The first assessment year for this indicator will be 2007 and will compare relative landings from 2004/05 and 2005/06 to the reference years 1999/00 and 2000/01.
Change in the distribution of landings among <i>estuary general regions</i> for each primary species	Maximum absolute difference in the distribution of landings between the assessment and reference years is greater than 25 percentage points	–	The first assessment year for this indicator will be 2007 and will compare relative landings from 2004/05 and 2005/06 to the reference years 1999/00 and 2000/01.
Net economic returns to the EGF	The Director-General is satisfied that the gross value of production of the fishery has not exceeded the sum of indicative industry operational costs and government management costs relevant to the fishery for three consecutive years	–	Not applicable to this year's assessment. A process of determining indicative operational costs is to be developed in consultation with the Seafood Industry Advisory Council and the relevant MACs.

Performance Indicator	Trigger Point	Status	Comment
Average market of EGF shares when traded	Trigger to be determined within two years of the commencement of the share management plan	–	Not applicable to this year's assessment. Share management plans for the EGF commenced on the 5 February 2007.
Annual rates of compliance for the EGF	85% compliance	2003/04 ✓	2003/04 91% compliance
		2004/05 ✓	2004/05 92% compliance
		2005/06 ✓	2005/06 93% compliance
Number of Estuary General MAC meetings held each year	Less than two meetings for each fishery held in a calendar year, unless otherwise agreed by the MAC	2004 ✓	2004 1 and 2 July 2004, 26 November 2004
		2005 ✓	2005 9 June 2005 and 21 October 2005
		2006 ✓	2006 10 August 2006 and 26 September 2006 (joint SIAC / MAC meeting)
Reviews and outcomes of strategic plan for compliance in the EG fishery	The compliance strategic plan expires without being reviewed by NSW DPI, or the strategic plan is not modified consistent with approved outcomes of a review	✓	Compliance strategic plans for NSW commercial and recreational fisheries and aquaculture, including the overarching Statewide Compliance Plan are currently under review. The aim of the review is to align the plans with the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IUU).

Performance Indicator	Trigger Point	Status	Comment	
Number of primary and key secondary species in EGF with an 'uncertain' or 'undefined' exploitation status	The number of primary/ key secondary species with an 'uncertain' or 'undefined' exploitation status has not decreased between two consecutive odd-numbered years	✓	Number of primary and key secondary/ target and conditional target/ target and byproduct species harvested in the EG/OH/EPT fisheries with an exploitation status "uncertain' or 'undefined'	
			<b>Year</b>	<b>Uncertain / Undefined</b>
			2003/04	12
			2004/05	8
The difference between the current and target resource assessment class for primary and key secondary species of the EGF	The sum of the difference between the current and target assessment class for primary/ key secondary species has not decreased between two consecutive odd-numbered years	✓	The sum of the difference between the current and target assessment class	
			2003/04	30
			2004/05	21
			2005/06	14
The number of research projects underway which have a flow of benefits to the fishery and fill information gaps identified by the environmental impact assessment for the fishery	The number of relevant research projects relevant to identified information gaps falls to less than two during any one year	<b>2003/04</b>	Refer to Appendix 5 of this submission for further details of research projects relevant to the EGF	
		✓		
		<b>2004/05</b>		
		✓		
		<b>2005/06</b>		
		✓		
Accuracy of catch return data (in terms of quantity of product, record completeness and species identification)	The accuracy of catch return data has not improved when reviewed every two years	✓	Baseline data has been collected from a sample of fishers to be compared with fresh data in 2005/06.	

## Appendix 5: Relevant Scientific Outputs for the Estuary General Fishery

Refer to the NSW DPI website for online summaries and, in some cases, full outputs at [www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries](http://www.dpi.nsw.gov.au/research/areas/systems-research/wild-fisheries)

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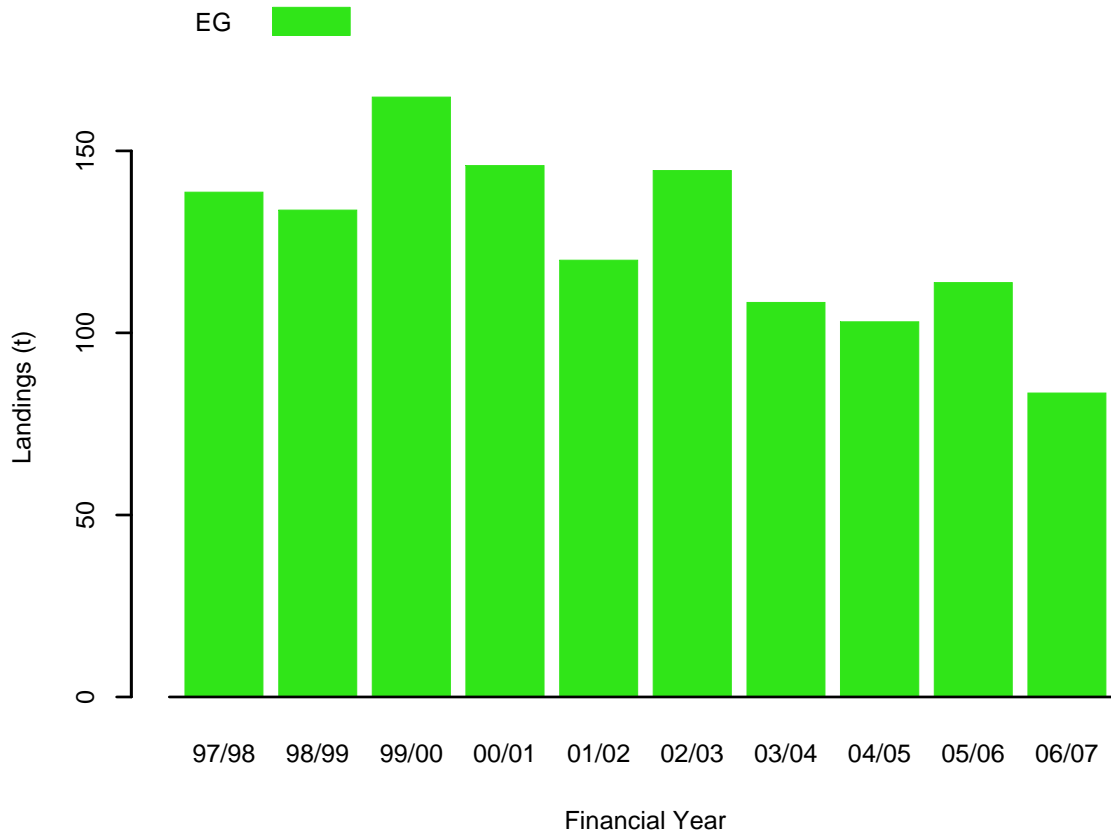
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## Appendix 6: Catch Data Information for Estuary General Primary and Key Secondary Species

(Source: NSW DPI Resource Assessment System)

### Giant Mud Crab (*Scylla serrata*)

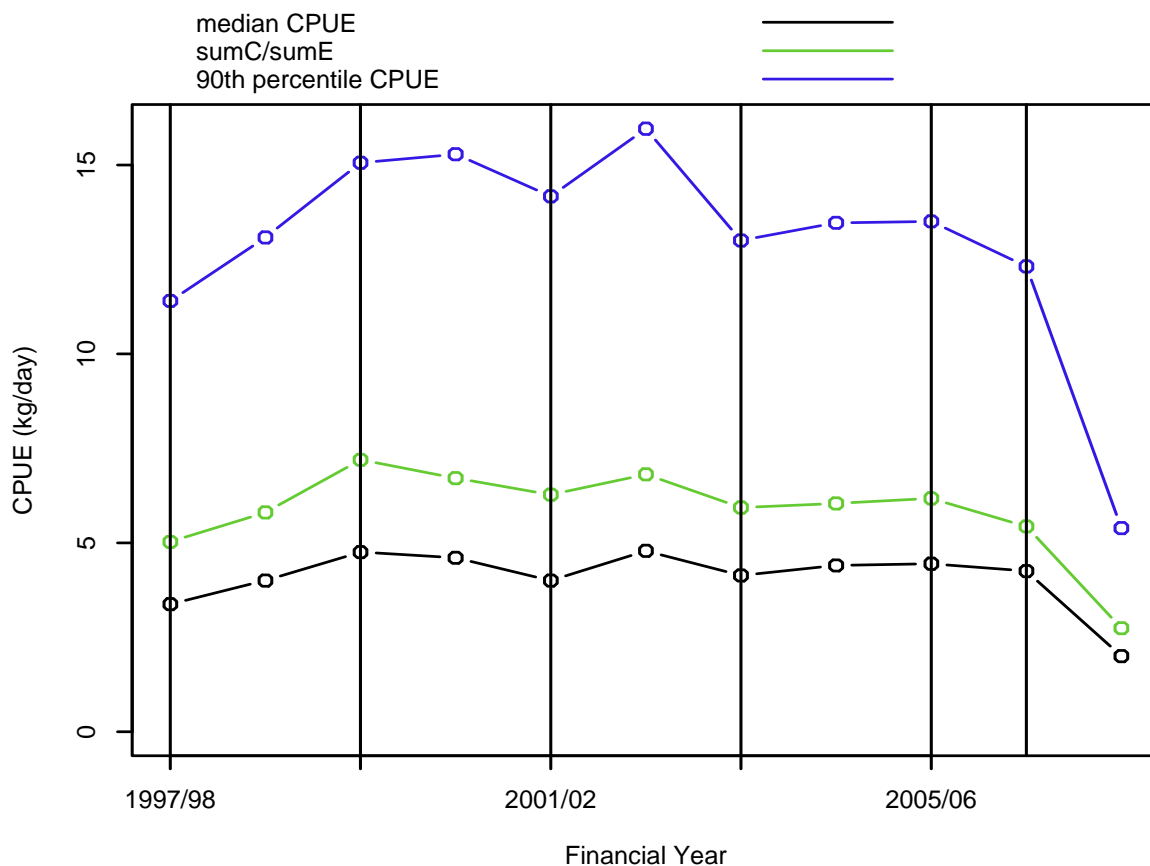


**Figure 1:** Landings of giant mud crab from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 8:** Landings (in tonnes) of giant mud crab from NSW commercial fisheries since 1997/98.

Year	Estuary General
1997/98	138.6532
1998/99	133.7686
1999/00	164.74552
2000/01	145.98235
2001/02	119.98838
2002/03	144.5758
2003/04	108.3728
2004/05	103.0594
2005/06	113.806
2006/07	83.4916

\*Fisheries which contribute less than 1% of the landings are excluded for clarity



**Figure 2:** Commercial catch rates of giant mud crab harvested using crab potting for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey<sup>21</sup>)

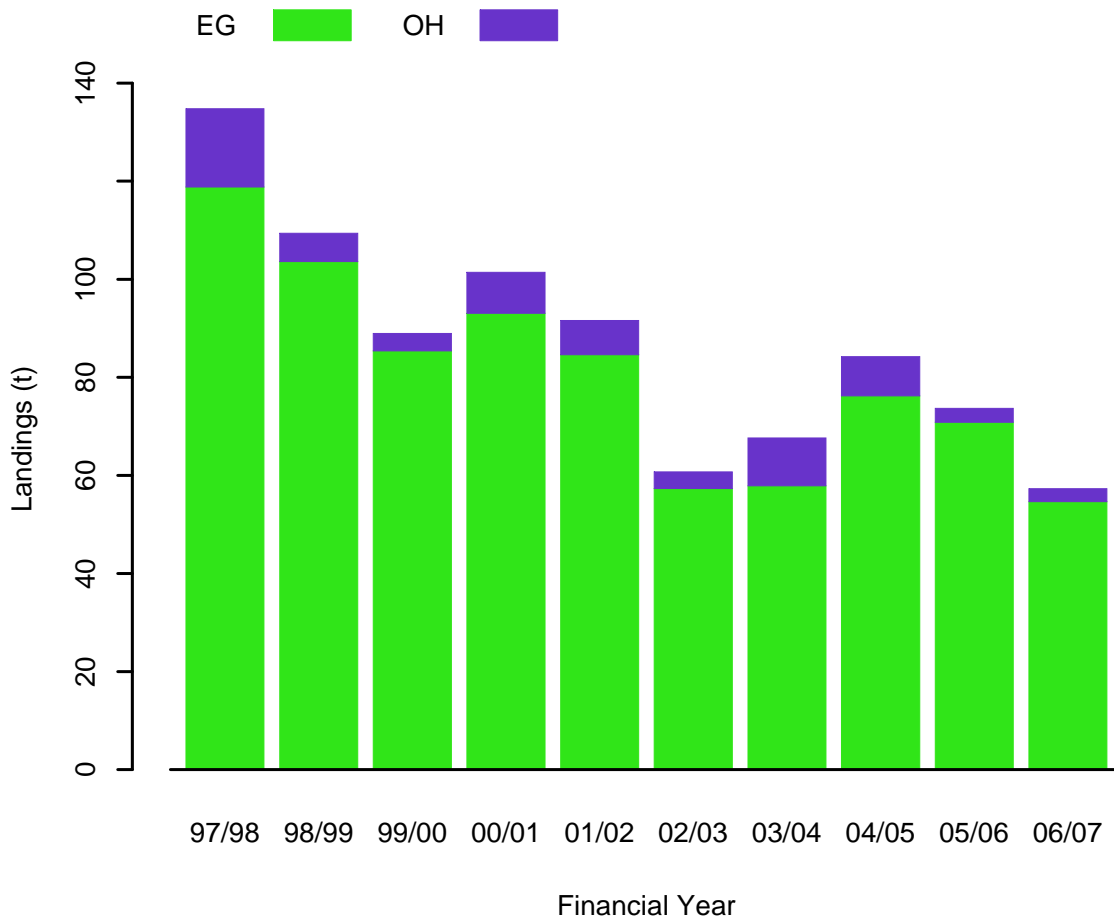
**Table 9:** Estimated number and weight of Mud crab that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Inshore	0	0
Estuarine	51.7	30

\*Catch weights are calculated assuming an average weight of 0.58 kg/fish

<sup>21</sup> Henry, G.W. and Lyle, J.M. (2003). The national recreational and indigenous fishing survey. Final report to the Fisheries Research and Development Corporation, Project 99/158. NSW Fisheries Final Report Series No. 40, 188pp.

Goldspot mullet / Flat-tail mullet (*Liza argentea*)



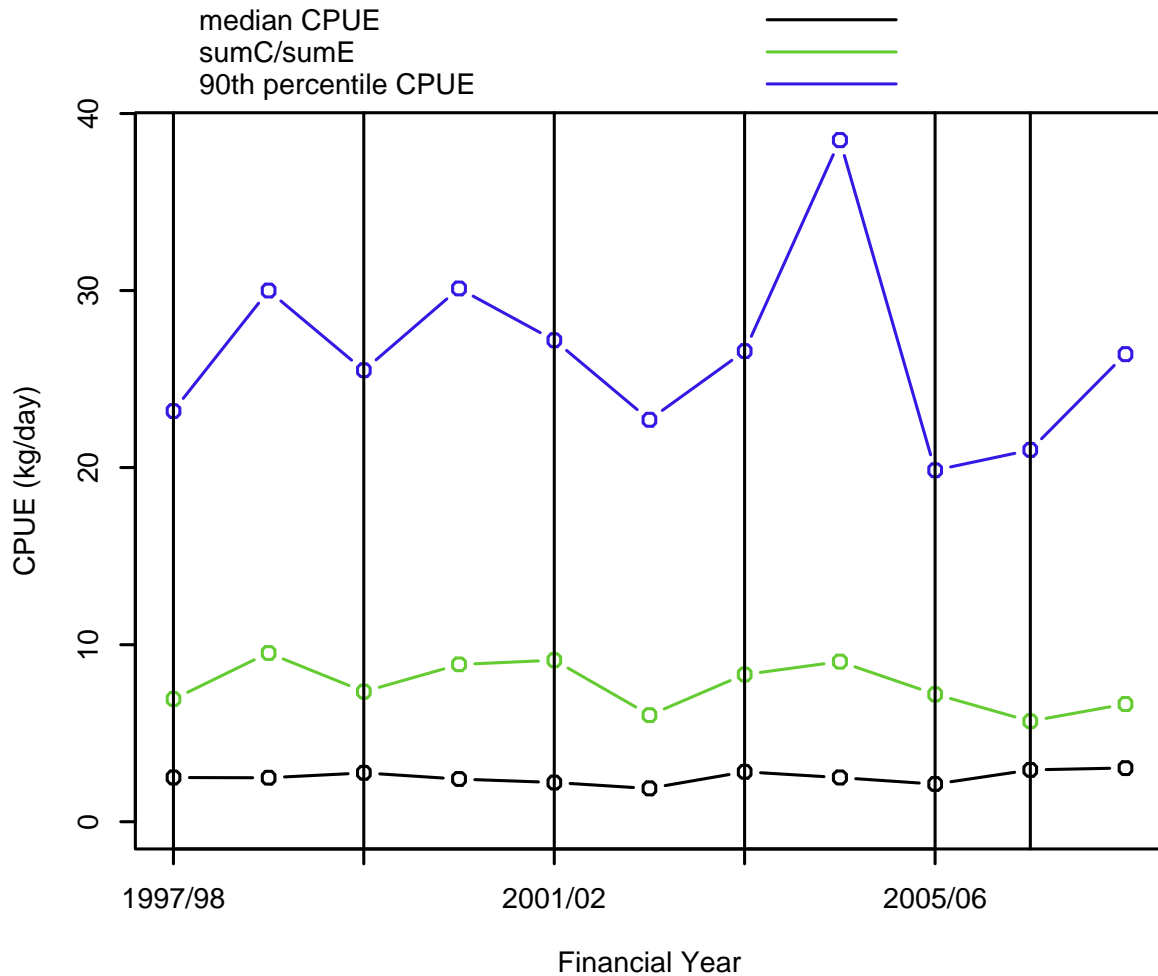
**Figure 3:** Landings of goldspot mullet (*Liza argentea*) from NSW commercial fisheries from 1997/98.

\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy

**Table 10:** Landings (in tonnes) of goldspot mullet from NSW commercial fisheries since 1997/98.

Year	Estuary General	Ocean Hauling
1997/98	118.8098	15.9358
1998/99	103.6012	5.7404
1999/00	85.3816	3.5445
2000/01	93.0658	8.3571
2001/02	84.6152	6.9736
2002/03	57.3103	3.3982
2003/04	57.8662	9.7889
2004/05	76.221	7.9807
2005/06	70.8113	2.8627
2006/07	54.6299	2.6492

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



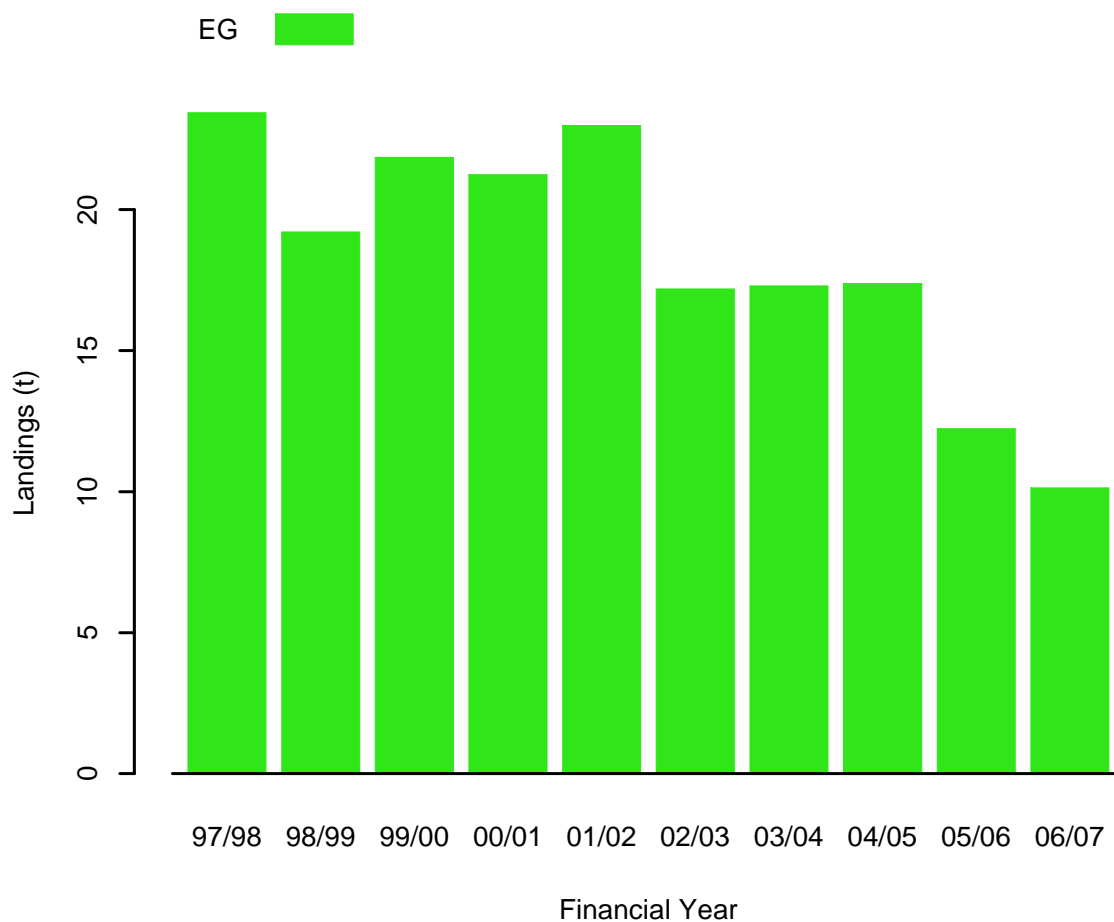
**Figure 4:** Commercial catch rates of goldspot mullet harvested using mesh-netting for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

Beachworms (Onuphidae)

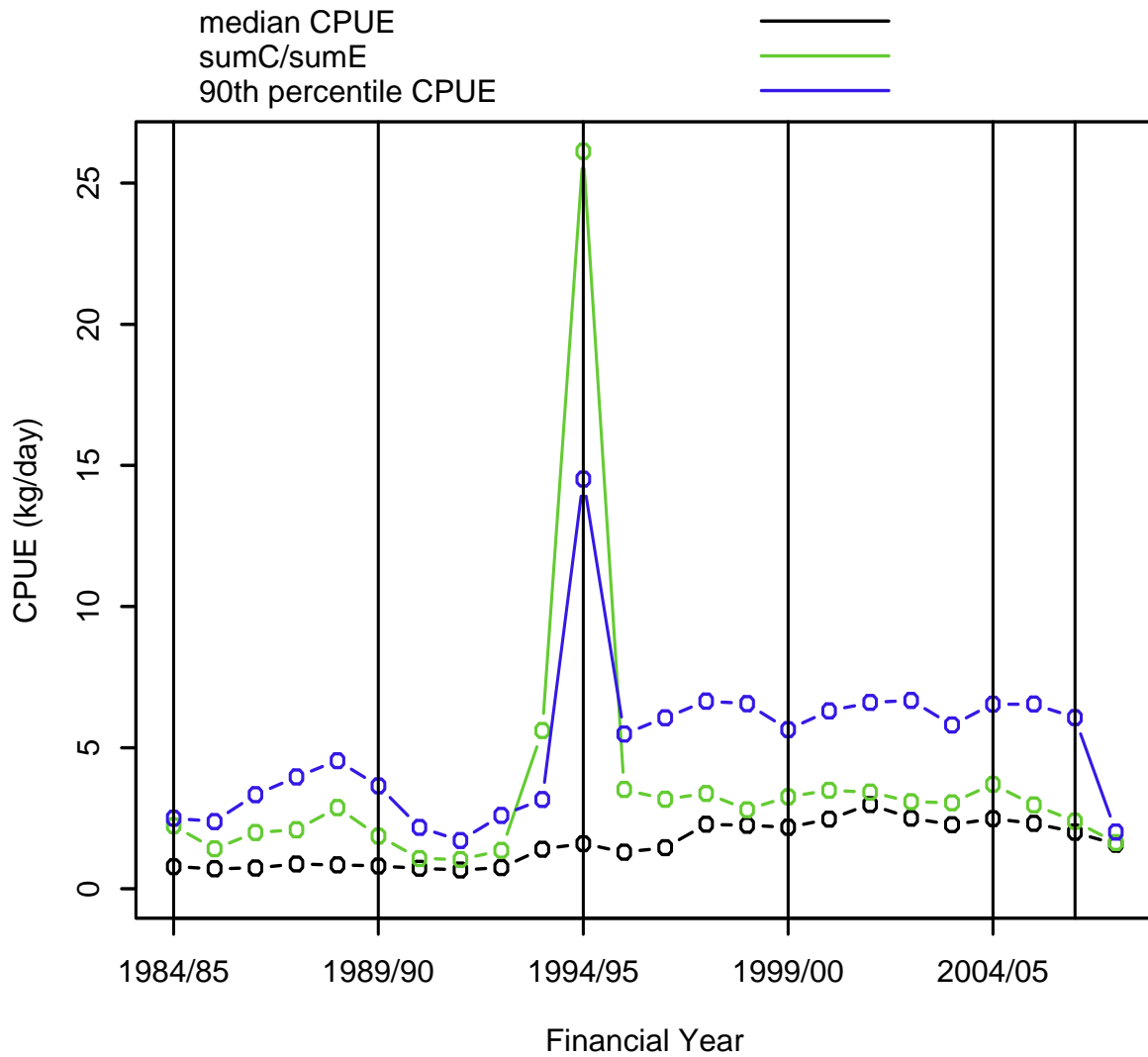


**Figure 5:** Landings of beachworms from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 11:** Landings (in tonnes) of beachworms from NSW commercial fisheries since 1997/98.

Year	Estuary General
1997/98	23.4296
1998/99	19.206
1999/00	21.85209
2000/01	21.23299
2001/02	22.9823
2002/03	17.1862
2003/04	17.2912
2004/05	17.3811
2005/06	12.2302
2006/07	10.1332

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



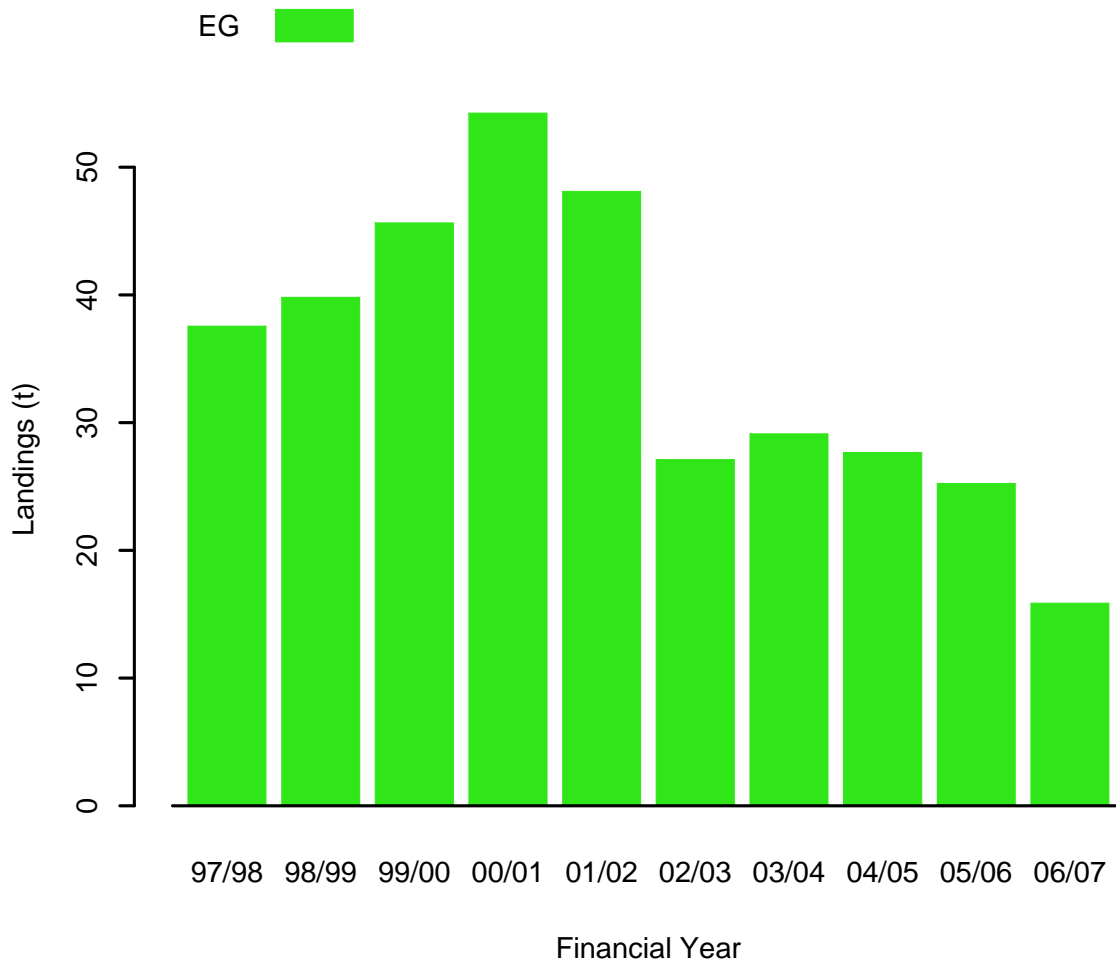
**Figure 6:** Commercial catch rates of beachworms harvested using hand gathering for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

Cockles (Arcoida and Veneroida)

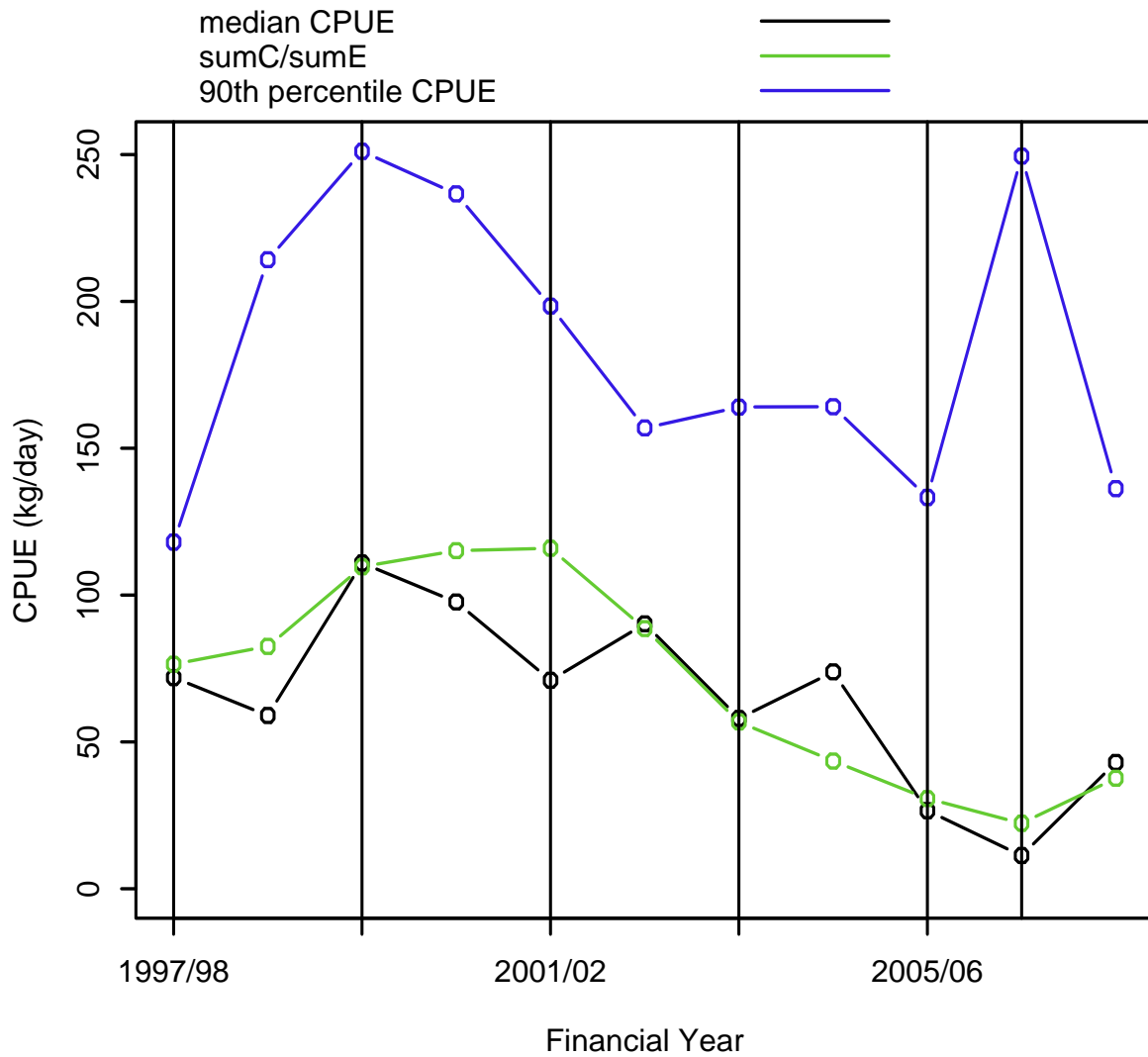


**Figure 7:** Landings of cockles from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 12:** Landings (in tonnes) of cockles from NSW commercial fisheries since 1997/98.

Year	Estuary General
1997/98	37.5578
1998/99	39.7972
1999/00	45.6293
2000/01	54.2185
2001/02	48.113
2002/03	27.1074
2003/04	29.1257
2004/05	27.6521
2005/06	25.2395
2006/07	15.8659

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



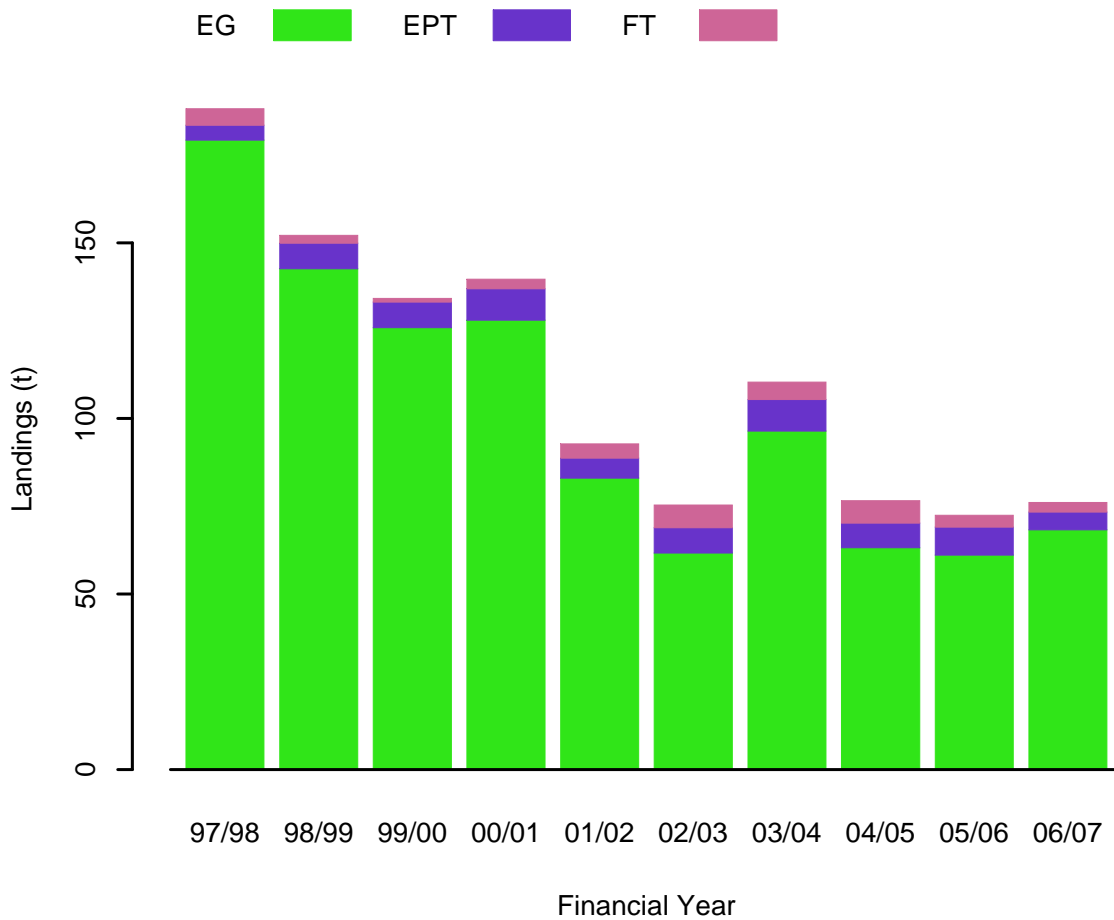
**Figure 8:** Commercial catch rates of cockles harvested using hand gathering for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

Common silverbidy (*Gerres subfasciatus*)

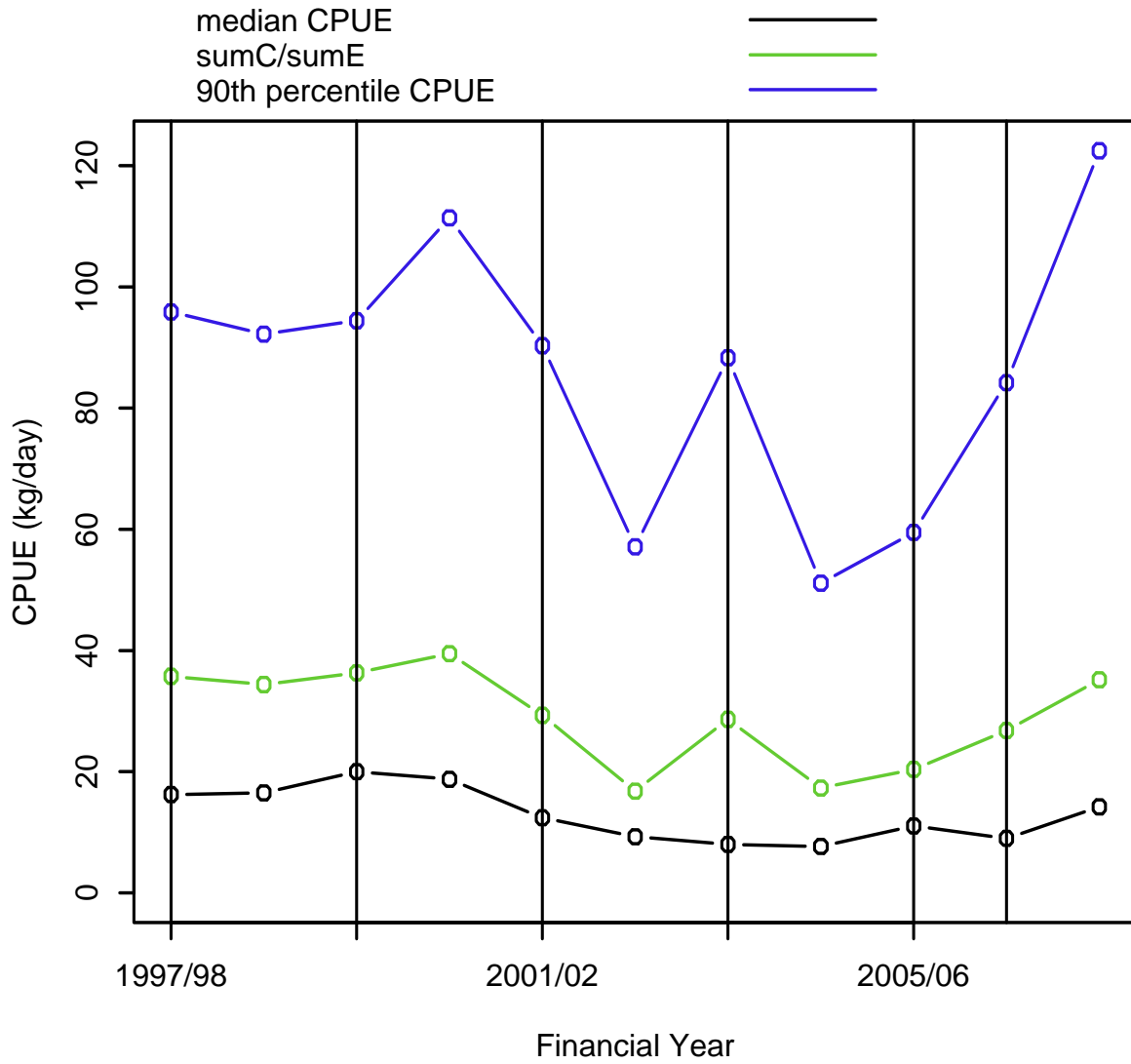


**Figure 9:** Landings of common silverbidy from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 13:** Landings (in tonnes) of common silverbidy from NSW commercial fisheries since 1997/98.

Year	Estuary General	Estuary Prawn Trawl	Fish Trawl
1997/98	179.277	4.2682	4.6334
1998/99	142.664	7.2606	2.231
1999/00	125.8537	7.303	1.09
2000/01	128.0127	8.9444	2.755
2001/02	83.0194	5.7094	4.0526
2002/03	61.6867	7.1892	6.4425
2003/04	96.4081	9.0224	4.9249
2004/05	63.1933	6.9981	6.4146
2005/06	61.0876	8.0051	3.3654
2006/07	68.273	5.0527	2.75

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



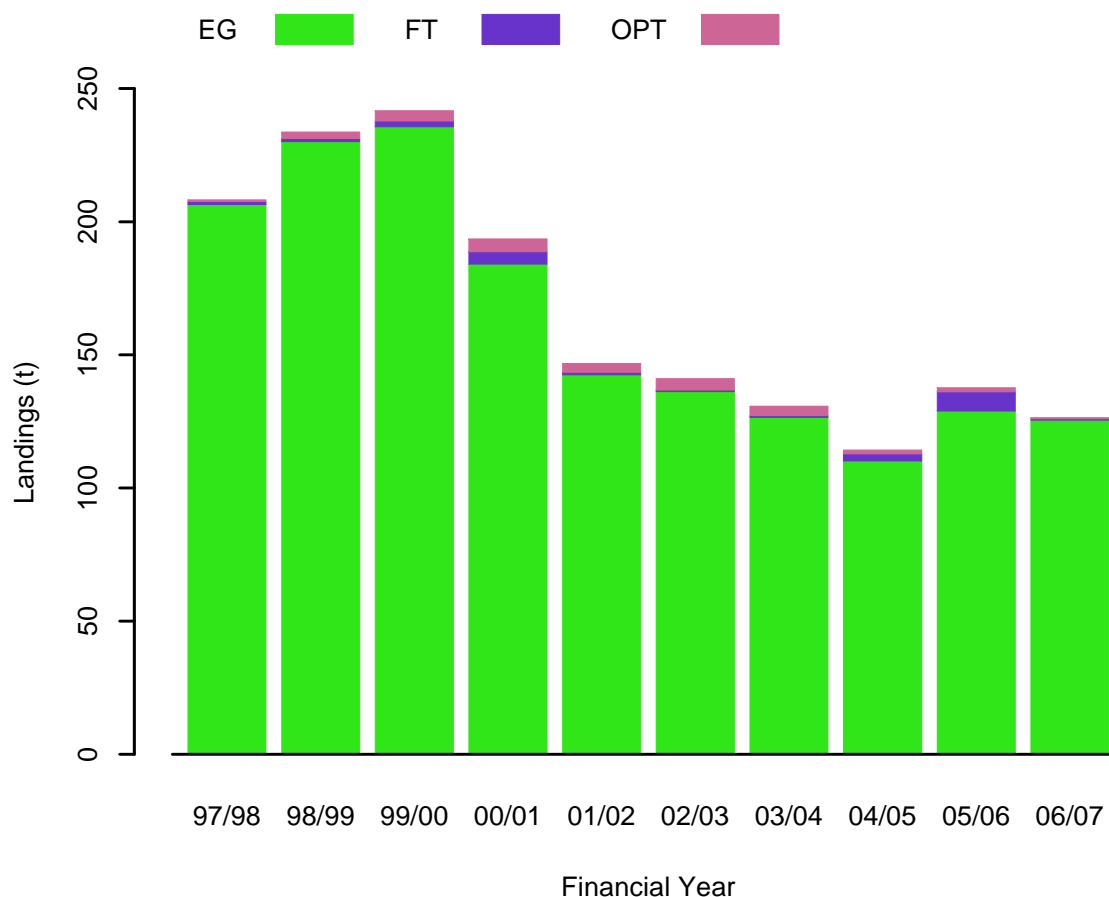
**Figure 10:** Commercial catch rates of common silverbiddy harvested using hauling for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

Dusky flathead (*Platycephalus fuscus*)

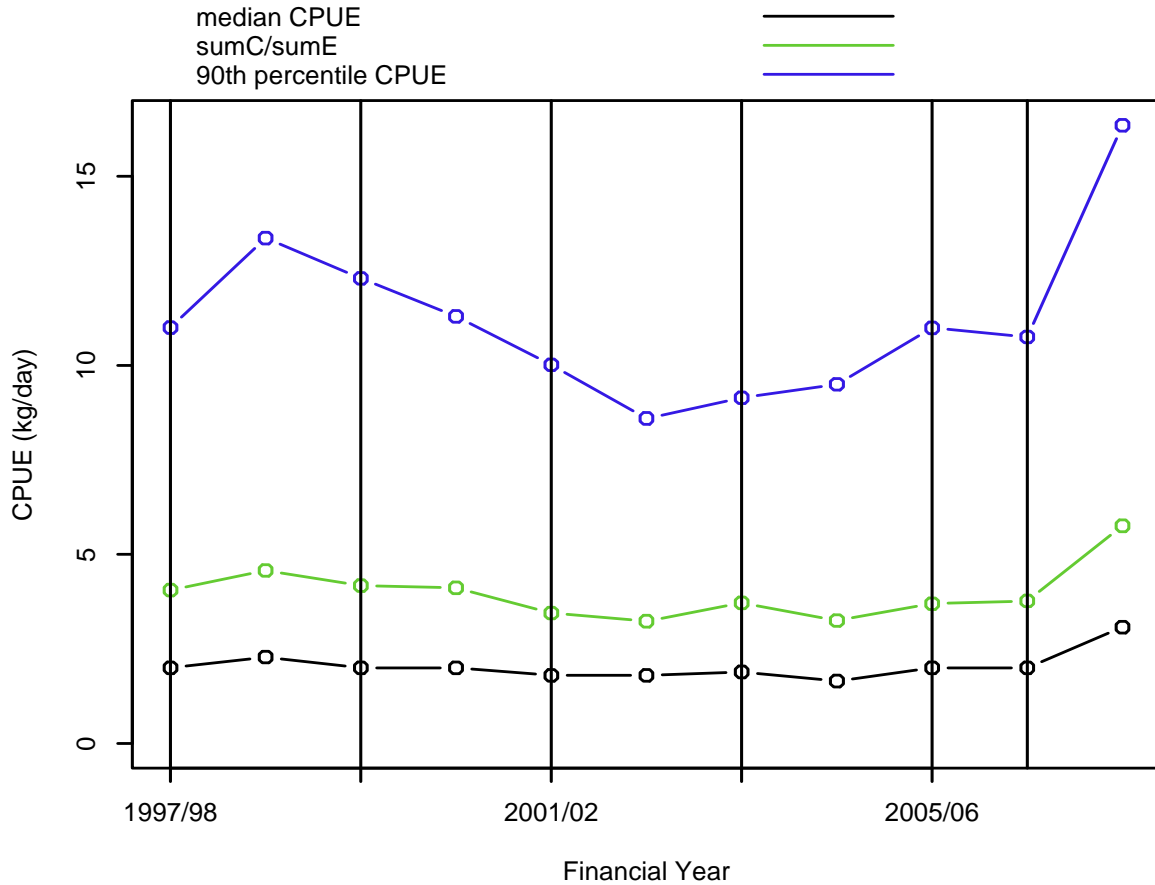


**Figure 11:** Landings of dusky flathead from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 14:** Landings (in tonnes) of dusky flathead from NSW commercial fisheries since 1997/98.

Year	Estuary General	Fish Trawl	Ocean Prawn Trawl
1997/98	206.3854	1.1704	0.5742
1998/99	230.01739	1.2303	2.45918
1999/00	235.67776	2.0702	3.8685
2000/01	184.13306	4.5918	4.8137
2001/02	142.53702	0.889	3.3294
2002/03	136.24465	0.5525	4.22375
2003/04	126.45767	0.6562	3.589
2004/05	110.16201	2.6307	1.5179
2005/06	128.87945	7.2836	1.4261
2006/07	125.44454	0.5875	0.4127

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



**Figure 12:** Commercial catch rates of dusky flathead harvested using mesh-netting for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

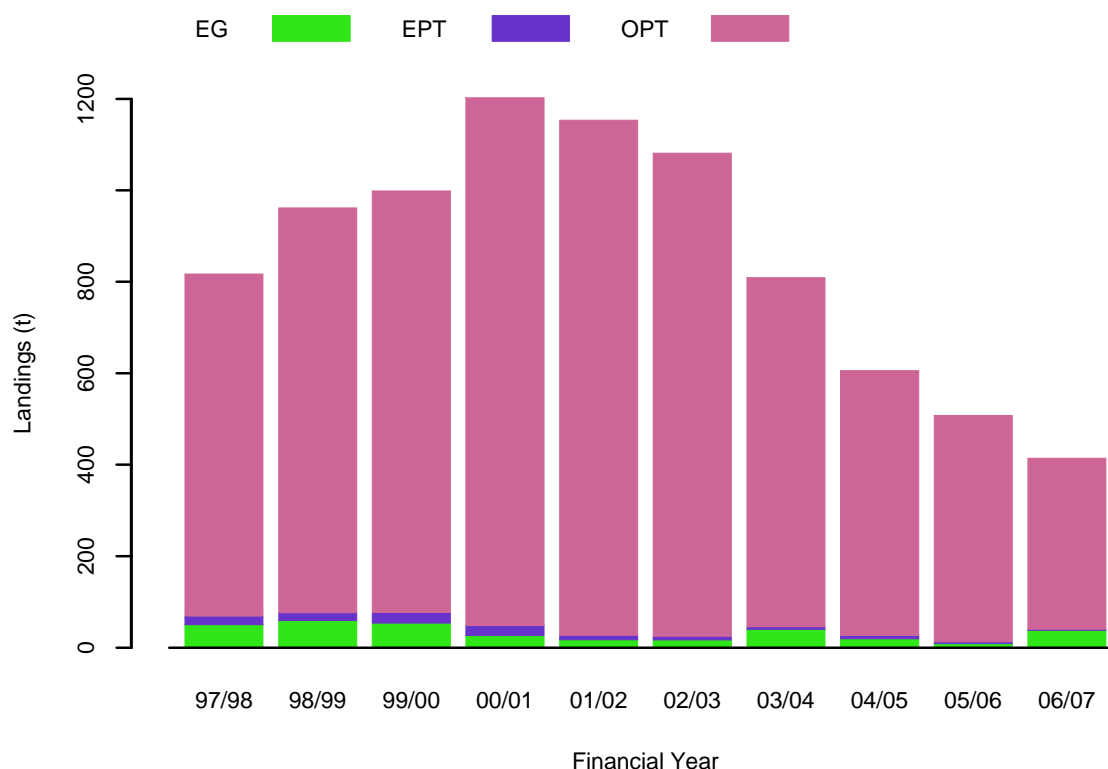
**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 15:** Estimated number and weight of flathead that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Offshore	98.8	39.5
Inshore	999.6	399.9
Estuarine	1118.6	447.4

\*Catch weights are calculated assuming an average weight of 0.4 kg/fish

Eastern king prawn (*Melicertus plebejus*)



**Figure 13:** Landings of eastern king prawn from NSW commercial fisheries from 1997/98.

\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 16:** Landings (in tonnes) of eastern king prawn from NSW commercial fisheries since 1997/98.

Year	Estuary General	Estuary Prawn Trawl	Ocean Prawn Trawl
1997/98	50.2597	18.8752	747.74955
1998/99	59.2571	17.04355	885.1573
1999/00	53.7433	22.8649	921.6295000000001
2000/01	26.7173	21.666	1153.50295
2001/02	17.4739	9.7206	1126.18075
2002/03	17.0769	7.8743	1055.8894
2003/04	39.9701	5.8561	762.97365
2004/05	19.2433	7.5889	578.7852
2005/06	9.0989	3.6474	495.1532
2006/07	37.9381	2.2813	373.8701

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

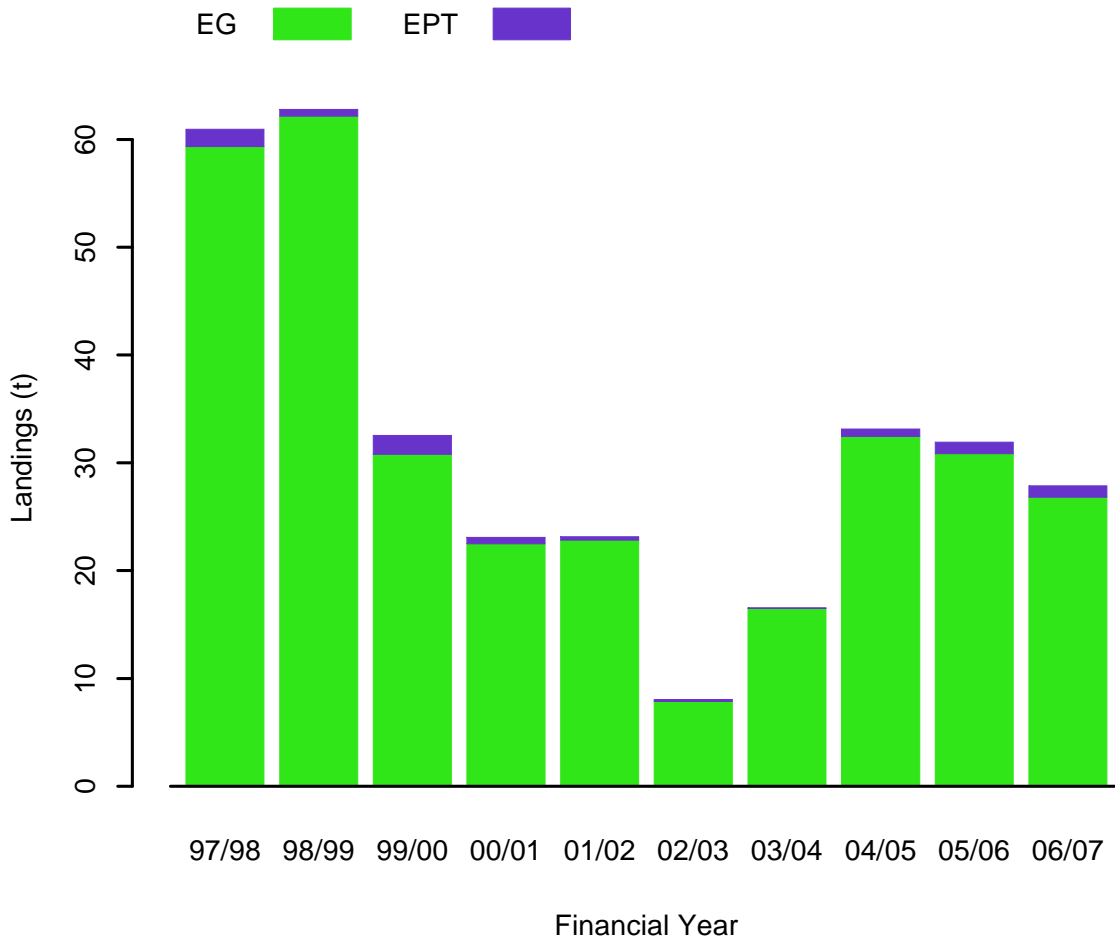
**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 17:** Estimated number and weight of Prawns (saltwater) that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Estuarine	10483.3	104.8

\*Catch weights are calculated assuming an average weight of 0.01 kg/fish

Greentail (Greasyback) prawn (*Metapenaeus bennettiae*)



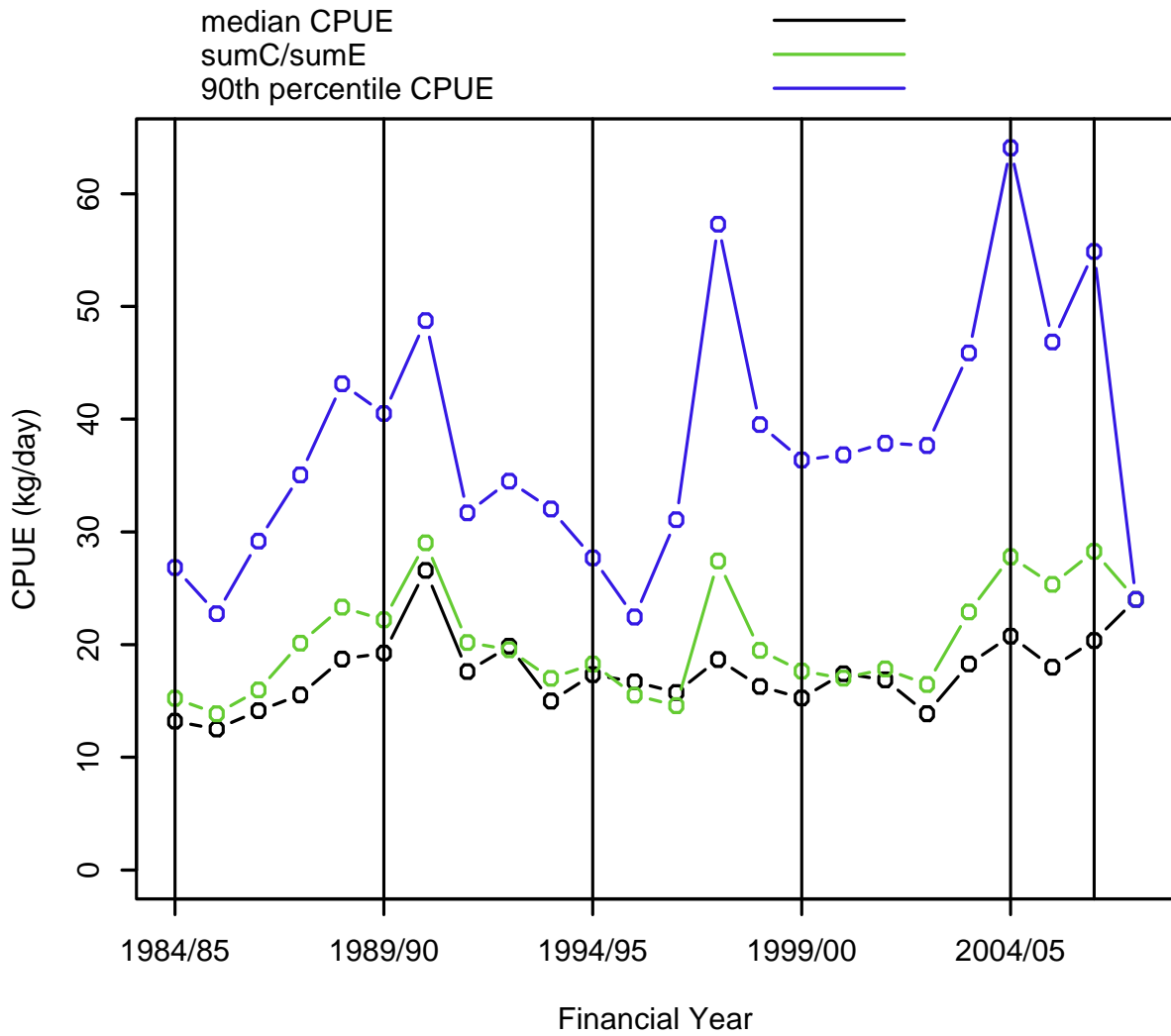
**Figure 14:** Landings of greentail prawn (*Metapenaeus bennettiae*) from NSW commercial fisheries from 1997/98.

\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 18:** Landings (in tonnes) of greentail prawn from NSW commercial fisheries since 1997/98.

Year	Estuary General	Estuary Prawn Trawl
1997/98	59.3426	1.5924
1998/99	62.1609	0.6155
1999/00	30.7847	1.7494
2000/01	22.4893	0.59
2001/02	22.8265	0.319
2002/03	7.8577	0.1838
2003/04	16.4849	0.065
2004/05	32.4512	0.682
2005/06	30.8519	1.0663
2006/07	26.8075	1.068

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

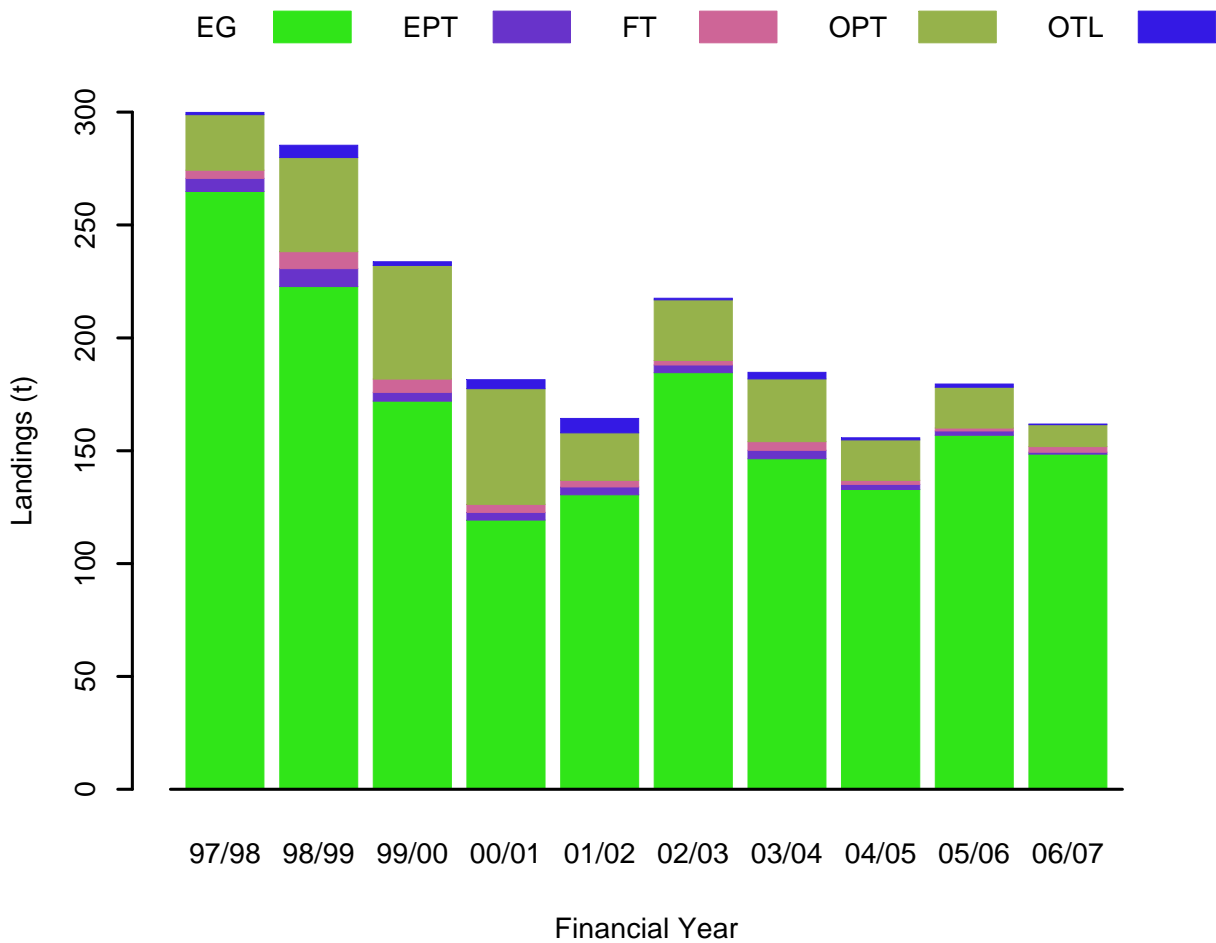


**Figure 15:** Commercial catch rates of greentail prawn harvested using prawn seining for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).  
 \*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses

**Recreational Fishery**

No recreational catch estimate available.

Blue swimmer crab (*Portunus pelagicus*)

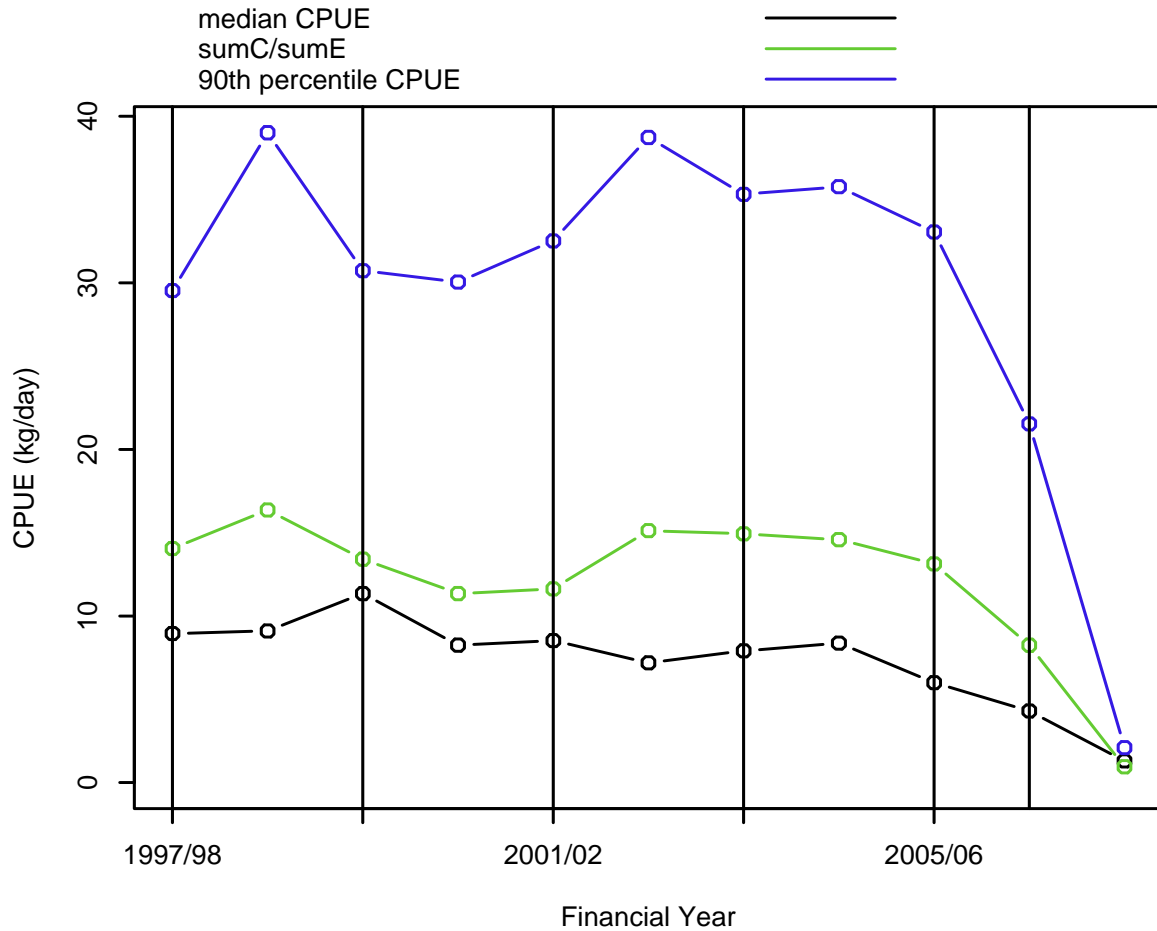


**Figure 16:** Landings of blue swimmer crab from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 19:** Landings (in tonnes) of blue swimmer crab from NSW commercial fisheries since 1997/98.

Year	Estuary General	Estuary Prawn Trawl	Fish Trawl	Ocean Prawn Trawl	Ocean Trap and Line
1997/98	264.8096	5.7995	3.6798	24.521	0.997
1998/99	222.6883	7.97315	7.4588	41.8051	5.4115
1999/00	171.9695	3.8674	5.8674	50.3685	1.6023
2000/01	119.2528	3.4308	3.5465	51.1861	4.047
2001/02	130.451	3.4855	2.903	21.0308	6.4787
2002/03	184.5155	3.4725	2.0053	26.8618	0.702
2003/04	146.4005	3.788	3.7776	27.8519	2.916
2004/05	132.8478	2.2249	1.7031	17.9637	0.975
2005/06	156.9005	1.912	1.2598	18.0012	1.508
2006/07	148.4275	0.8986	2.4598	9.7443	0.192

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



**Figure 17:** Commercial catch rates of blue swimmer crab harvested using crab potting for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

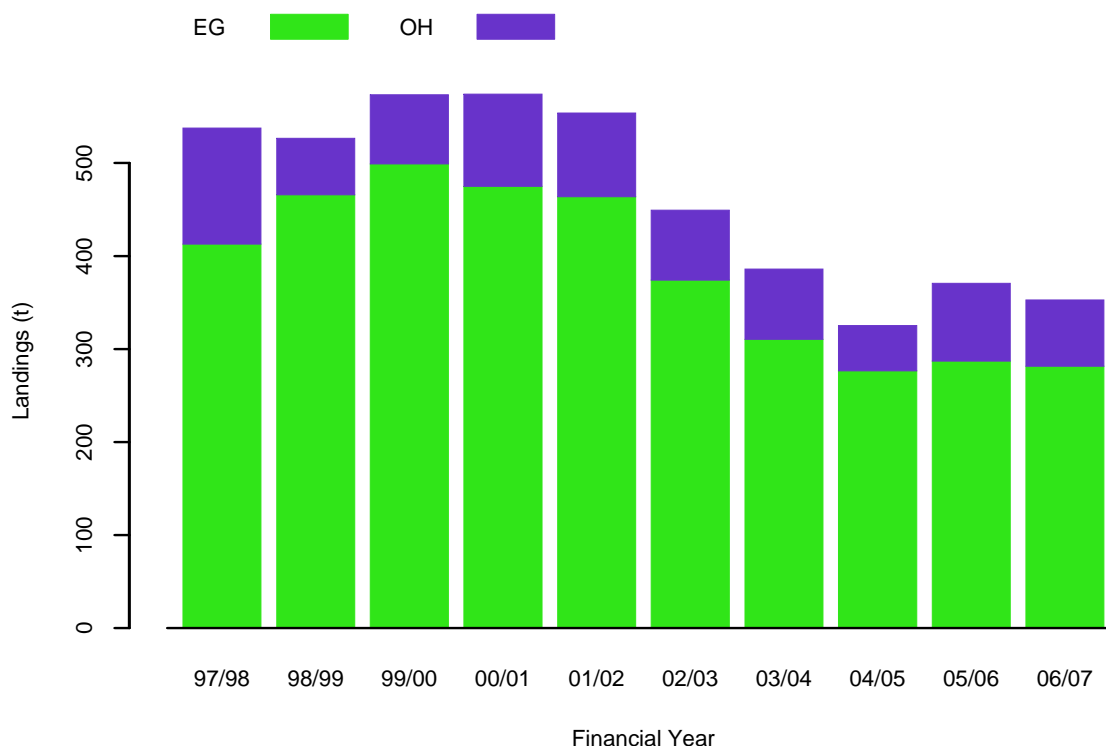
**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 20:** Estimated number and weight of Blue swimmer crab that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Inshore	0.7	0.3
Estuarine	412.2	154.6

\*Catch weights are calculated assuming an average weight of 0.375 kg/fish

Luderick (*Girella tricuspidata*)



**Figure 18:** Landings of luderick from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 21:** Landings (in tonnes) of luderick from NSW commercial fisheries since 1997/98.

Year	Estuary General	Ocean Hauling
1997/98	412.7787	124.7336
1998/99	465.88305	60.7341
1999/00	499.07225	74.1886
2000/01	474.9539	98.9998
2001/02	463.8149	89.9225
2002/03	374.1752	75.1496
2003/04	310.4763	75.3912
2004/05	276.55723	48.7062
2005/06	287.09105	83.6155
2006/07	281.474	71.234

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

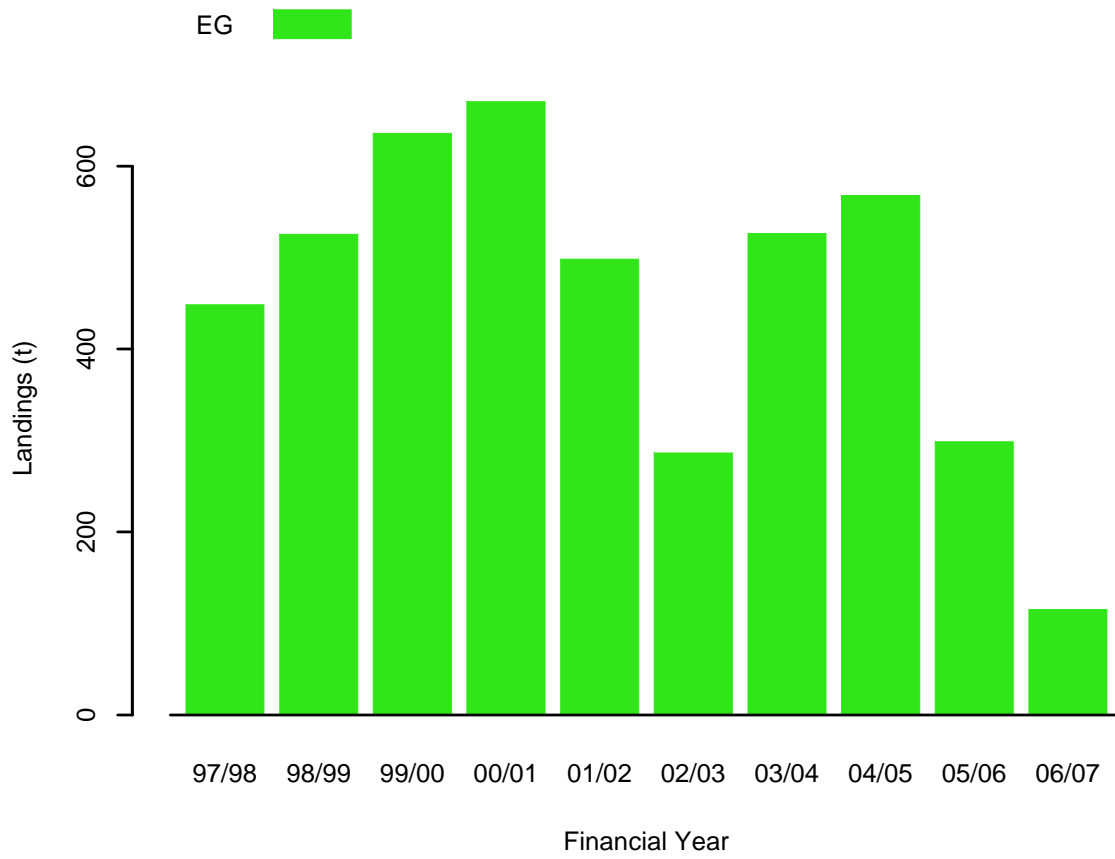
**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 22:** Estimated number and weight of Luderick that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Inshore	269.5	121.3
Estuarine	353	158.9

\*Catch weights are calculated assuming an average weight of 0.45 kg/fish

Pipi (*Donax deltoides*)

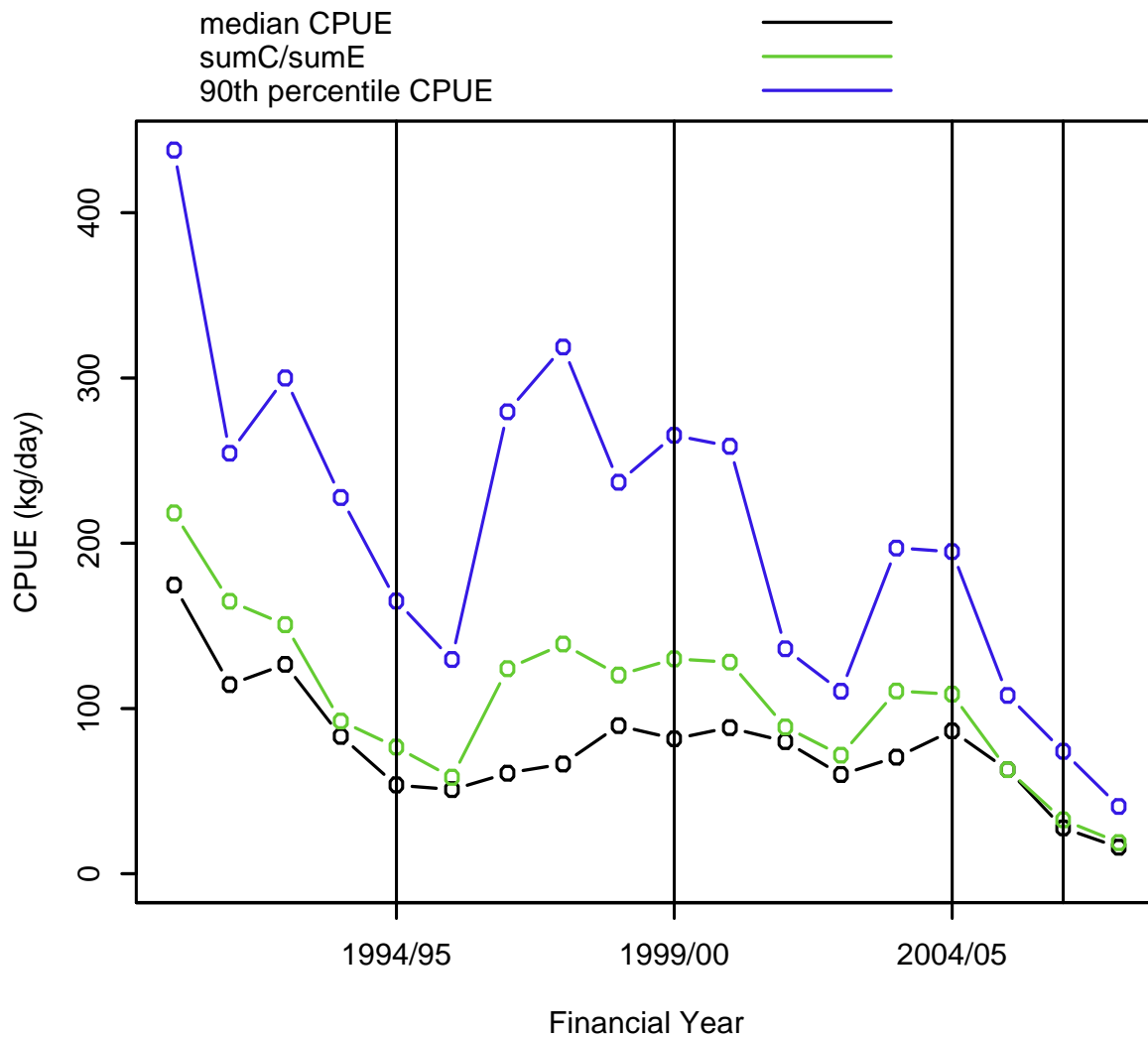


**Figure 19:** Landings of pipi from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 23:** Landings (in tonnes) of pipi from NSW commercial fisheries since 1997/98.

Year	Estuary General
1997/98	448.416
1998/99	525.4131
1999/00	635.8565
2000/01	670.4613
2001/02	498.2196
2002/03	286.423
2003/04	526.2576
2004/05	567.9657
2005/06	298.7257
2006/07	115.2519

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

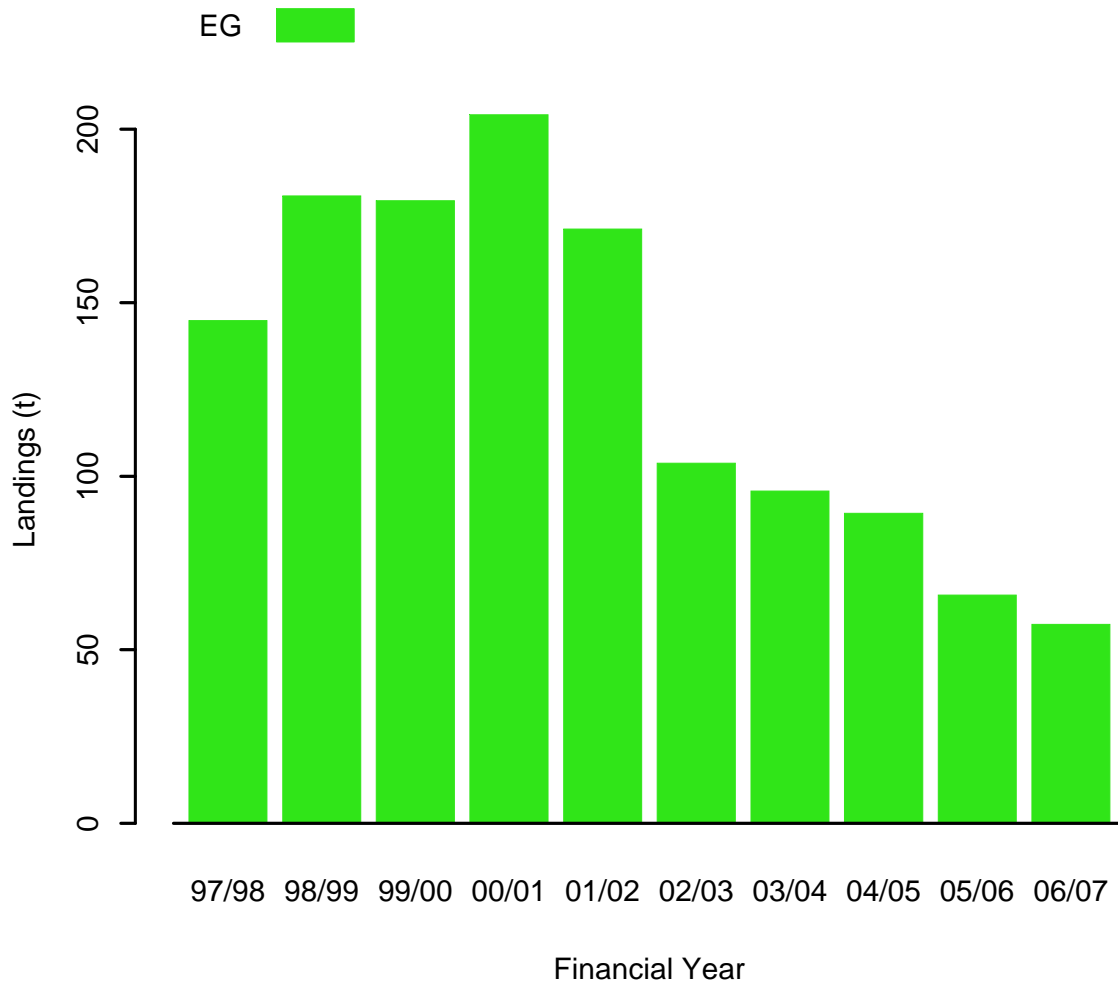


**Figure 20:** Commercial catch rates of pipi harvested using hand gathering for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).  
 \*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

River Eels (*Anguilla* spp.)

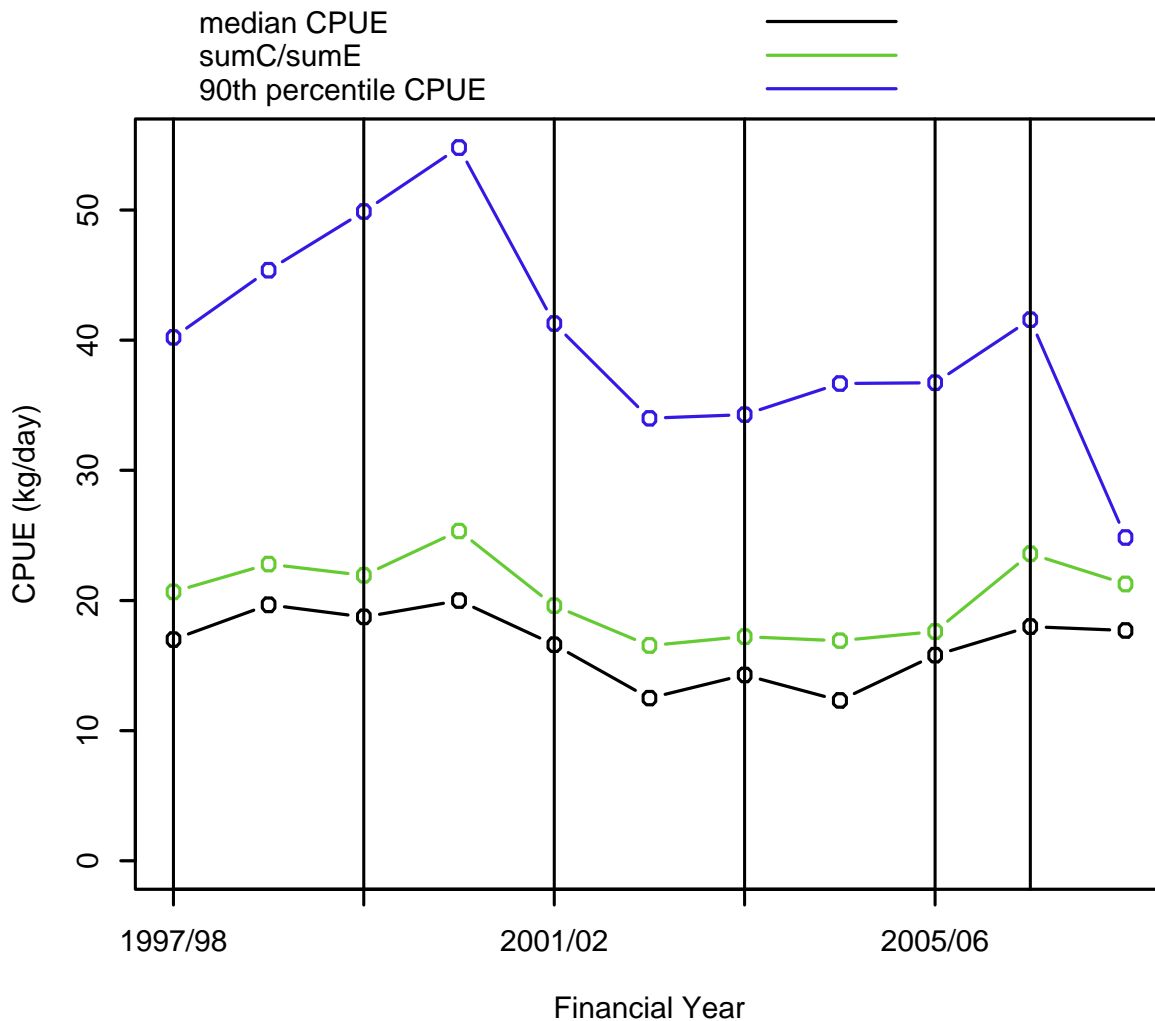


**Figure 21:** Landings of river eels from NSW commercial fisheries from 1997/98.  
 \*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 24:** Landings (in tonnes) of river eels from NSW commercial fisheries since 1997/98.

Year	Estuary General
1997/98	144.846
1998/99	180.7764
1999/00	179.315
2000/01	204.0793
2001/02	171.1655
2002/03	103.7736
2003/04	95.7209
2004/05	89.324
2005/06	65.7407
2006/07	57.3231

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



**Figure 22:** Commercial catch rates of river eels harvested using eel trapping for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

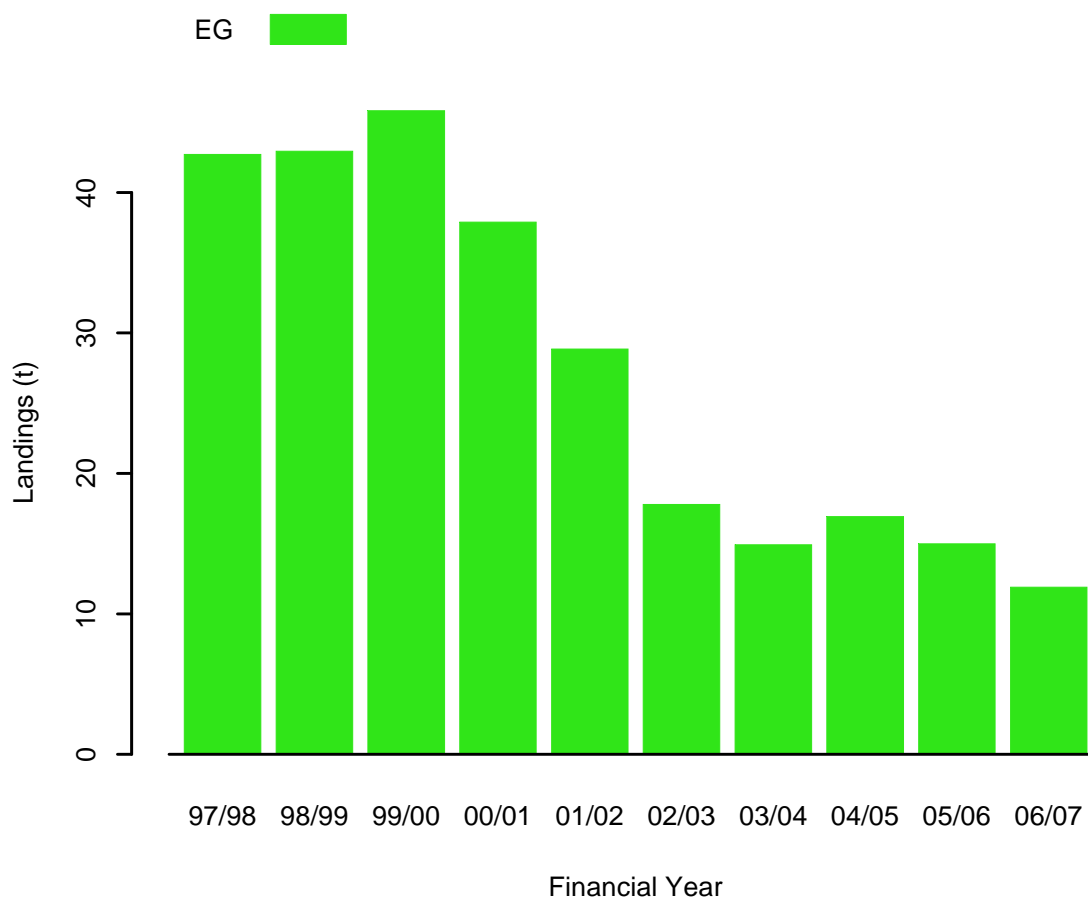
\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 24:** Estimated number of Eels that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)
Offshore	0
Inshore	1.9
Estuarine	0.6
Rivers	2.1
Dams	0.7

River garfish (*Hyporhamphus regularis*)

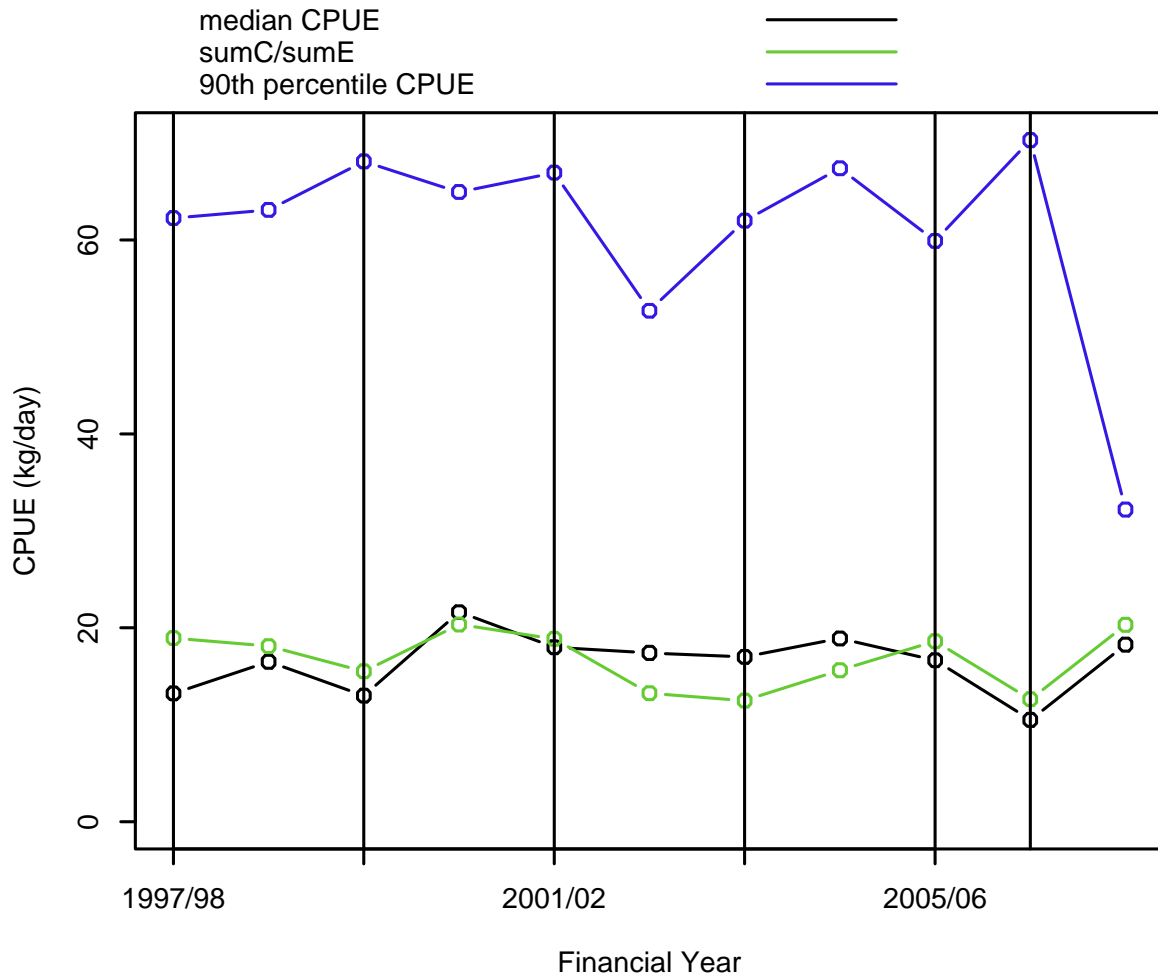


**Figure 23:** Landings of river garfish from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy

**Table 25:** Landings (in tonnes) of river garfish from NSW commercial fisheries since 1997/98.

Year	Estuary General
1997/98	42.71346
1998/99	42.9319
1999/00	45.8093
2000/01	37.8917
2001/02	28.852
2002/03	17.7857
2003/04	14.9154
2004/05	16.924
2005/06	14.9817
2006/07	11.8881

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



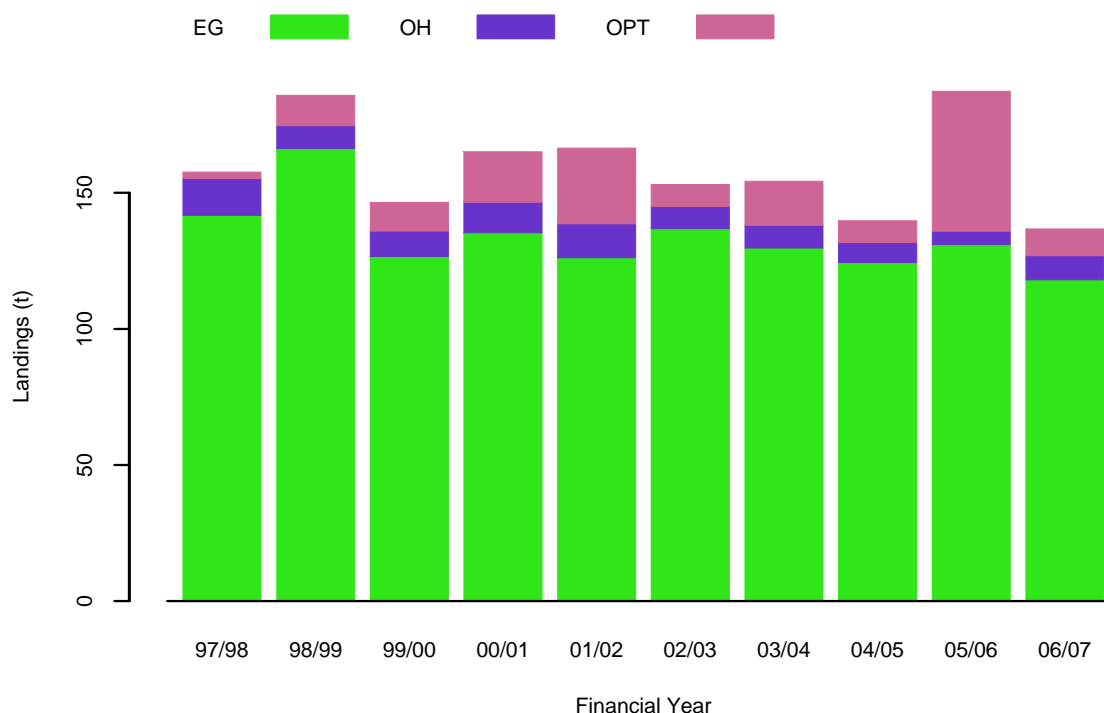
**Figure 24:** Commercial catch rates of river garfish harvested using mesh-netting and bullringing for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

## Sand Whiting (*Sillago ciliata*)



**Figure 25:** Landings of sand whiting from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 26:** Landings (in tonnes) of sand whiting from NSW commercial fisheries since 1997/98.

Year	Estuary General	Ocean Hauling	Ocean Prawn Trawl
1997/98	141.7734	13.4667	2.3639
1998/99	166.2202	8.4348	11.2006
1999/00	126.6413	9.3491	10.4954
2000/01	135.3439	11.2455	18.5085
2001/02	126.166	12.477	27.8409
2002/03	136.8716	8.1509	8.0753
2003/04	129.7153	8.3292	16.2242
2004/05	124.46572	7.2647	7.9711
2005/06	130.9957	4.8981	51.3948
2006/07	117.9838	8.8903	9.8096

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

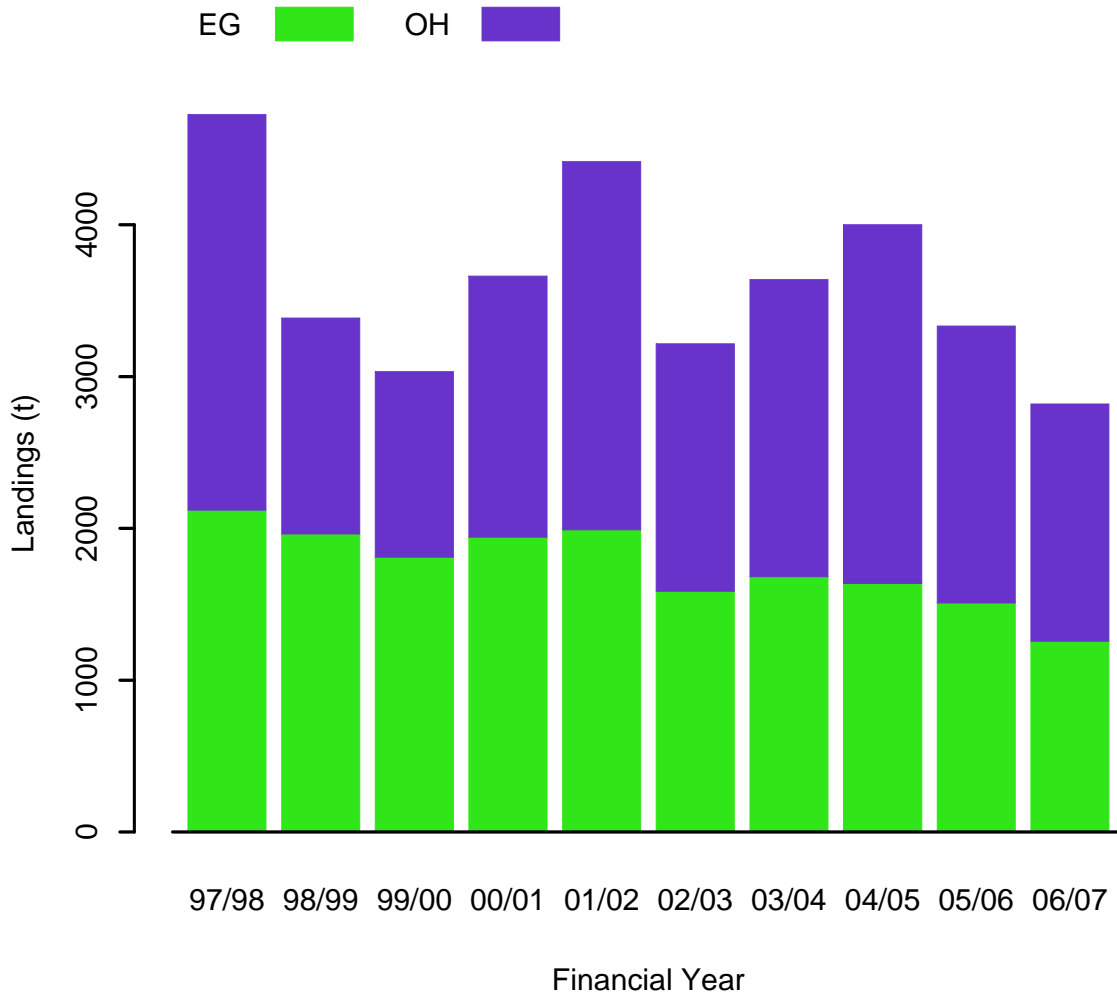
### Recreational Fishery (Source: The National Recreational and Indigenous Fishing Survey<sup>15</sup>)

**Table 27:** Estimated number and weight of Whiting that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Offshore	0	0
Inshore	326.8	71.9
Estuarine	1464.4	322.2

\*Catch weights are calculated assuming an average weight of 0.22 kg/fish

Sea Mullet (*Mugil cephalus*)

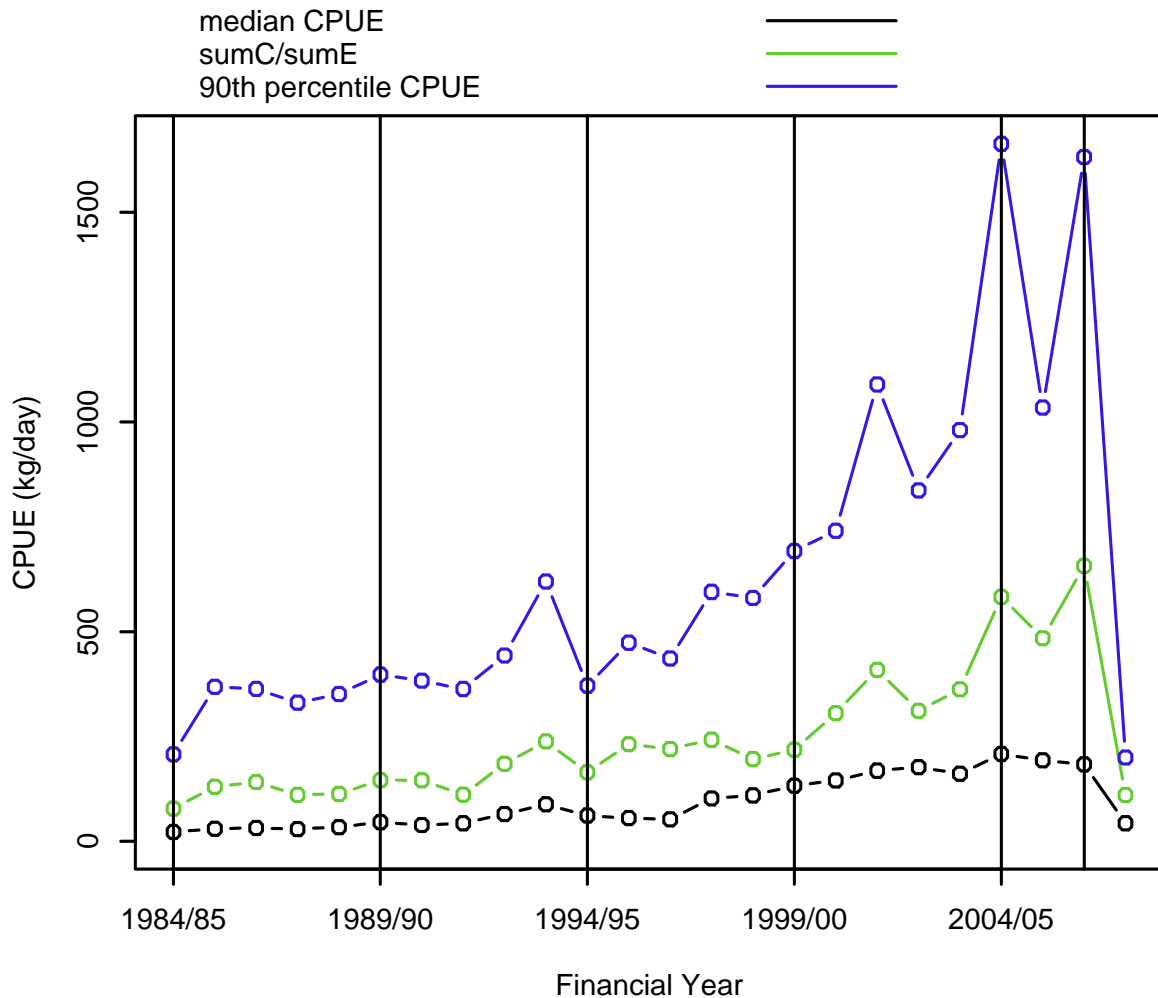


**Figure 26:** Landings of sea mullet from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 28:** Landings (in tonnes) of sea mullet from NSW commercial fisheries since 1997/98.

Year	Estuary General	Ocean Hauling
1997/98	2120.6636	2603.8515
1998/99	1962.7646	1422.9934
1999/00	1810.1567	1221.9016
2000/01	1941.9794	1719.7133
2001/02	1990.4912	2424.5416
2002/03	1585.6823	1629.7852
2003/04	1681.9571	1956.8449
2004/05	1636.8921	2362.7667
2005/06	1508.2061	1824.0173
2006/07	1256.36738	1562.9258

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



**Figure 27:** Commercial catch rates of sea mullet harvested using beach hauling for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

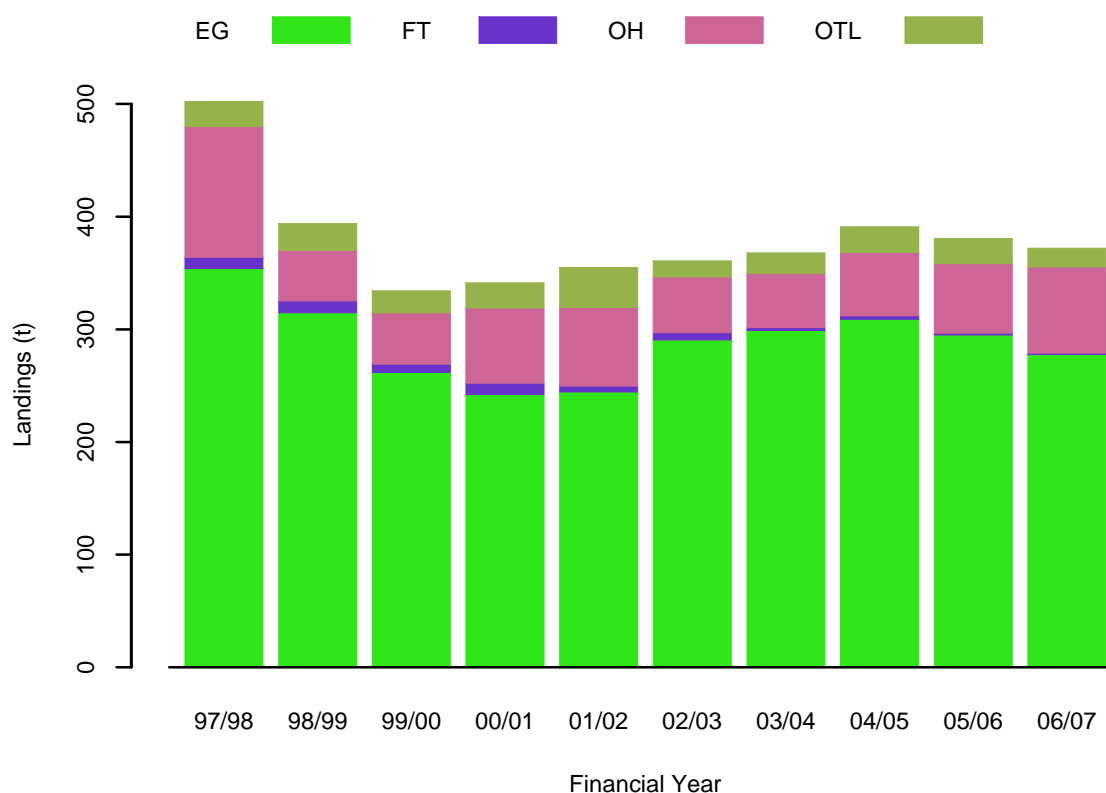
**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 29:** Estimated number and weight of Mullet that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Inshore	87	29.6
Estuarine	345.8	117.6
Rivers	10	3.4
Dams	2.3	0.8

\*Catch weights are calculated assuming an average weight of 0.34 kg/fish

## Yellowfin Bream (*Acanthopagrus australis*)



**Figure 28:** Landings of yellowfin bream from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 30:** Landings (in tonnes) of yellowfin bream from NSW commercial fisheries since 1997/98.

Year	Estuary General	Fish Trawl	Ocean Hauling	Ocean Trap and Line
1997/98	353.87904	10.1325	115.9838	22.13556
1998/99	314.7308	10.3829	45.014	23.67529
1999/00	261.6159	7.5162	45.436	19.6189
2000/01	241.9892	10.1991	66.7185	22.31994
2001/02	244.35548	5.3736	69.6259	35.55811
2002/03	290.56555	6.3358	49.7712	14.07811
2003/04	298.8792	2.5804	48.2198	18.1364
2004/05	308.92931	2.9817	56.3245	22.66385
2005/06	294.9604	1.6875	61.6383	22.39025
2006/07	277.6556	1.1208	76.6254	16.60477

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

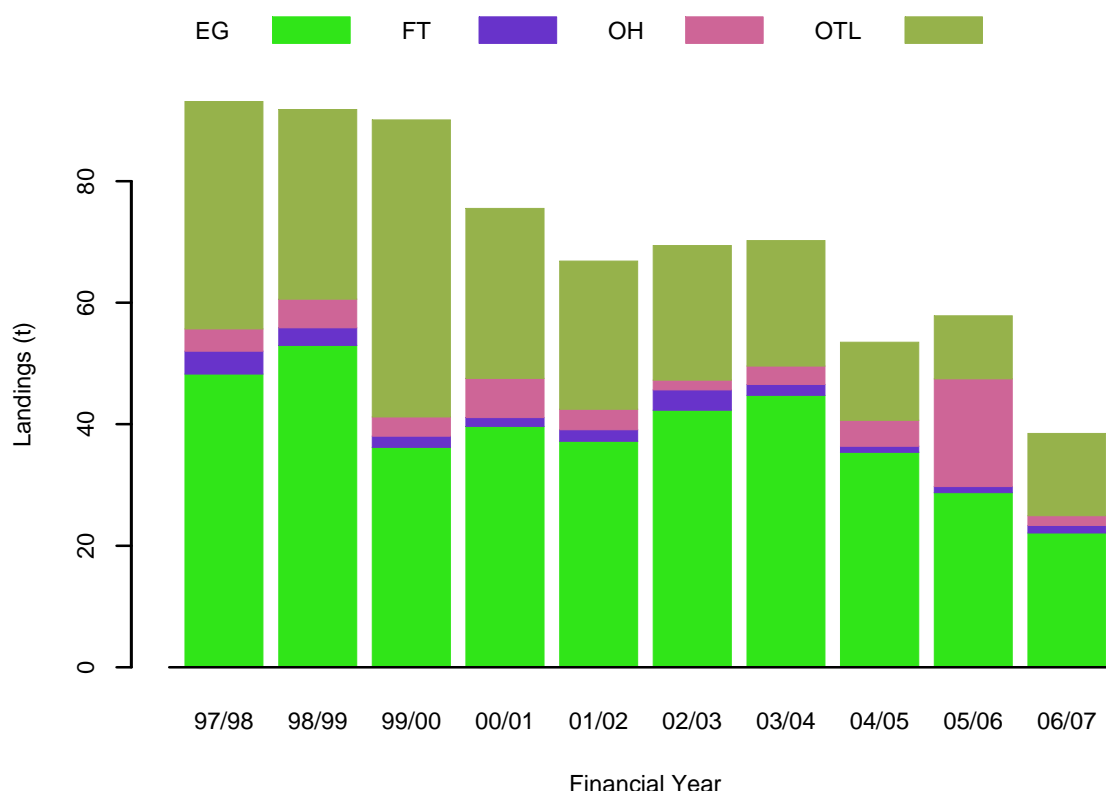
### Recreational Fishery (Source: The National Recreational and Indigenous Fishing Survey)

**Table 31:** Estimated number and weight of Bream that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Offshore	0.6	0.2
Inshore	951.7	333.1
Estuarine	1129.9	395.5

\*Catch weights are calculated assuming an average weight of 0.35 kg/fish

Mulloway (*Argyrosomus japonicus*)



**Figure 29:** Landings of mulloway from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 32:** Landings (in tonnes) of mulloway from NSW commercial fisheries since 1997/98.

Year	Estuary General	Fish Trawl	Ocean Hauling	Ocean Trap and Line
1997/98	48.24106	3.7737	3.6825	37.38546
1998/99	52.96712	2.8784	4.7435	31.20149
1999/00	36.18757	1.8337	3.1625	48.88394
2000/01	39.64154	1.4652	6.44894	27.96421
2001/02	37.18617	1.92165	3.3554	24.38737
2002/03	42.30845	3.318	1.6078	22.17465
2003/04	44.75516	1.7883	3.0365	20.62908
2004/05	35.38833	0.9641	4.2854	12.85511
2005/06	28.72898	1.0238	17.702	10.373
2006/07	22.07069	1.2493	1.6201	13.52619

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

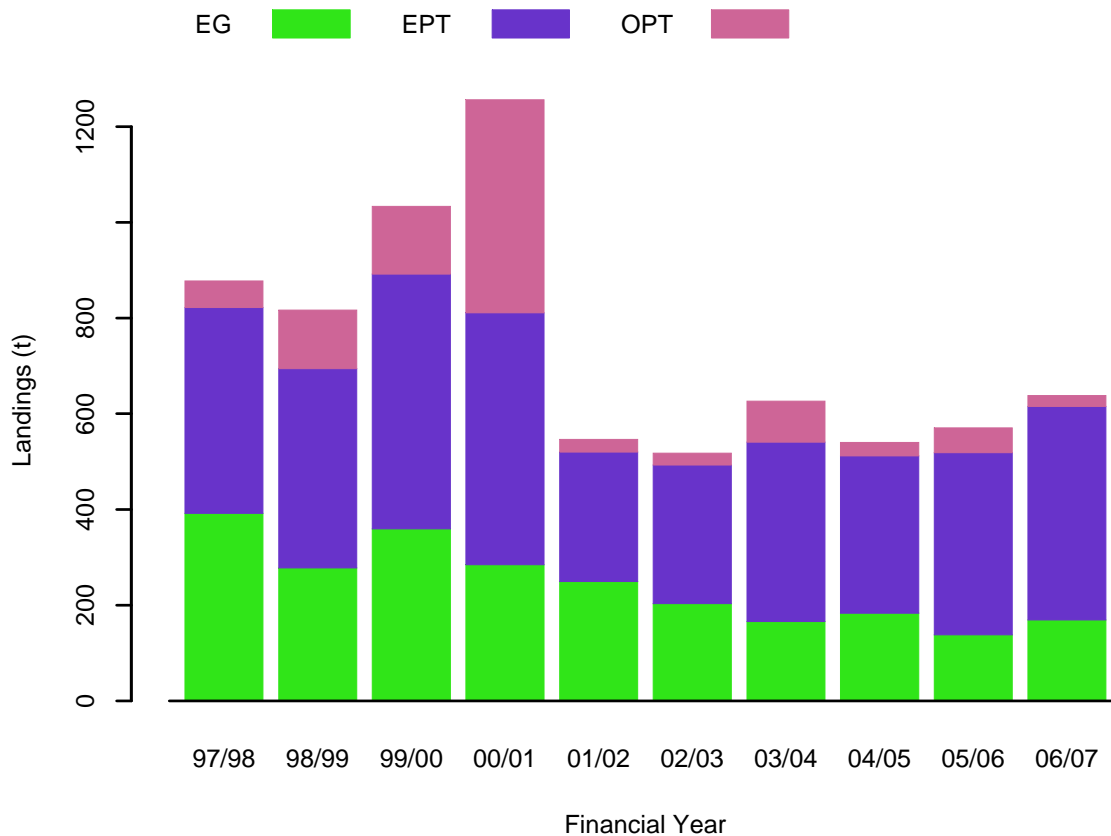
**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

**Table 33:** Estimated number and weight of Mulloway that were kept by recreational fishers for each major type of water-body in NSW (April 2000 to March 2001).

Waterbody	Estimated Total (000's)	Estimated Weight (tonnes)
Offshore	18.6	37.1
Inshore	84.4	168.8
Estuarine	33.9	67.8

\*Catch weights are calculated assuming an average weight of 2 kg/fish

School prawn (*Metapenaeus macleayi*)



**Figure 30:** Landings of school prawn from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy.

**Table 34:** Landings (in tonnes) of school prawn from NSW commercial fisheries since 1997/98.

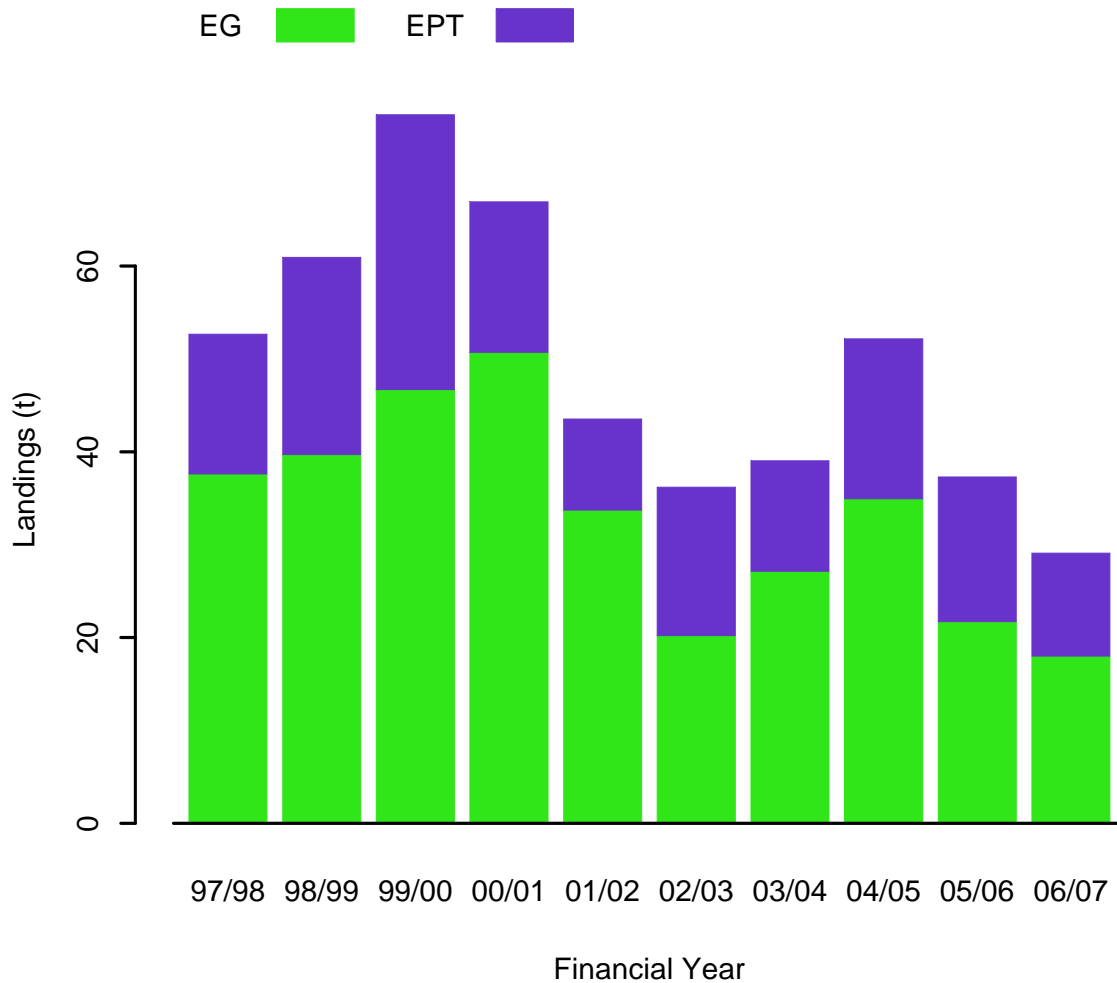
Year	Estuary General	Estuary Prawn Trawl	Ocean Prawn Trawl
1997/98	391.9336	430.2264	55.3958
1998/99	277.7563	416.5963	122.4822
1999/00	359.405	532.6561	141.452
2000/01	284.5668	526.56	444.8662
2001/02	249.2243	270.7661	26.663
2002/03	203.205	289.7742	24.8646
2003/04	165.6908	375.145	85.5704
2004/05	183.2298	328.8069	27.9034
2005/06	137.7958	381.0926	51.6374
2006/07	169.3122	445.8582	23.1457

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.

**Recreational Fishery** (Source: The National Recreational and Indigenous Fishing Survey)

Refer to Table 17 (under Eastern king prawn) above.

Trumpeter whiting (*Sillago maculata*)

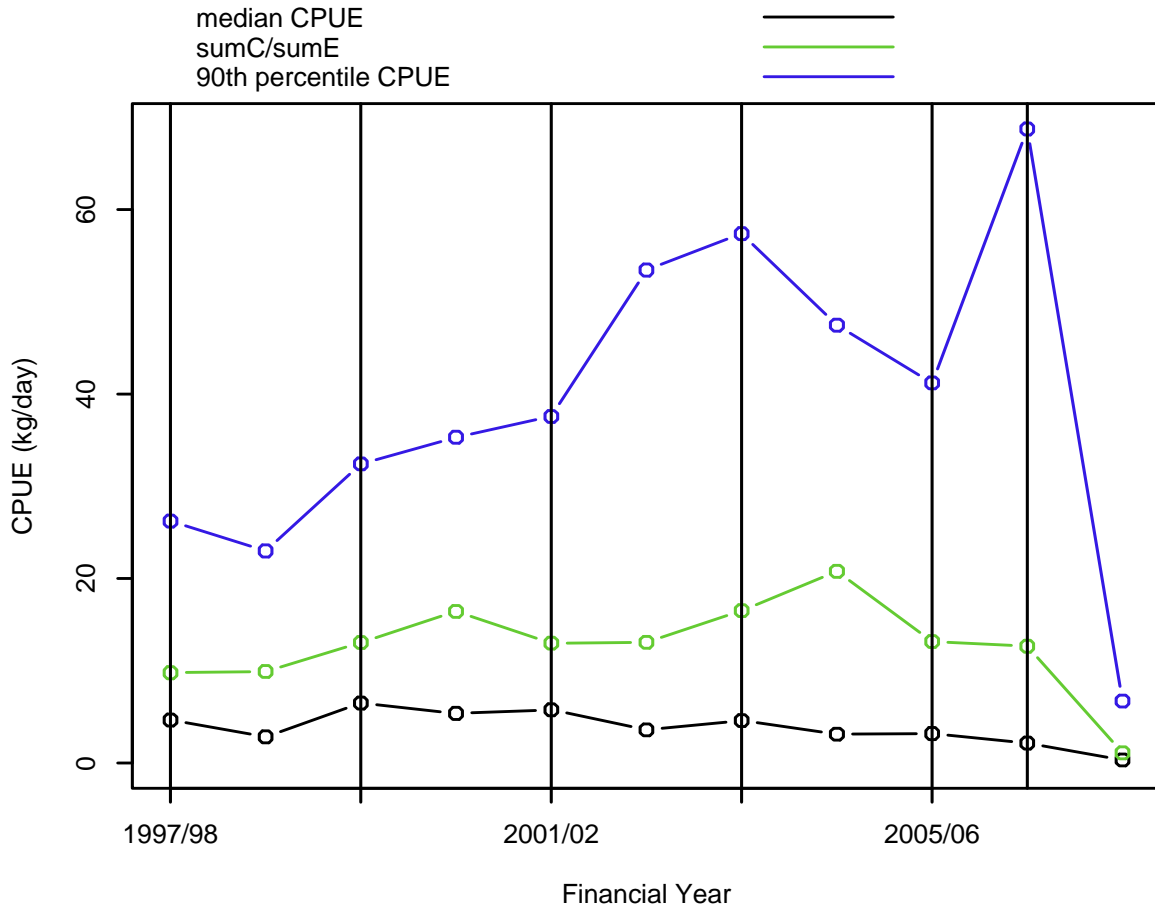


**Figure 31:** Landings of trumpeter whiting from NSW commercial fisheries from 1997/98.  
\*Fisheries which contribute less than 2.5% of the landings are excluded for clarity and privacy

**Table 35:** Landings (in tonnes) of trumpeter whiting from NSW commercial fisheries since 1997/98.

Year	Estuary General	Estuary Prawn Trawl
1997/98	37.6038	15.0508
1998/99	39.6929	21.23665
1999/00	46.6822	29.57127
2000/01	50.6862	16.1987
2001/02	33.7153	9.815
2002/03	20.2066	15.9845
2003/04	27.1341	11.8908
2004/05	34.9253	17.2198
2005/06	21.7094	15.5724
2006/07	17.9923	11.0711

\*Fisheries which contribute less than 1% of the landings are excluded for clarity.



**Figure 32:** Commercial catch rates of trumpeter whiting harvested using hauling for NSW. Two indicators are provided: (1) median catch rate (lower solid line); and (2) 90th percentile of the catch rate (upper dashed line).

\*Records with a zero catch rate (i.e. no catch recorded) are not included in these analyses.

**Recreational Fishery**

No recreational catch estimate available.

## Appendix 7: A Summary Report against Estuary General Fishery Export Approval conditions and recommendations

Condition / Recommendation	Progress
NSW Fisheries to inform Environment Australia of any future amendment to the management regime for the Estuary General Fishery	Substantial changes to the <i>Fisheries Management (General) Regulation 2002</i> applying to the EGF were made commencing 5 February 2007. The changes provided for the implementation of full category 1 share management and a series of positive commercial fishery licensing reforms. A detailed Information Paper summarising the changes was published at that time.
Introduce an industry funded scientific observer program by December 2003 (MR 1.1f)	<p>The report: <i>Fishery Management Strategies Performance Report 2004</i><sup>22</sup> presents information on the implementation of the management actions outlined in the EG FMS up to June 2004.</p> <p>Refer to the Appendix 3 for a statement of implementation of management actions in the EG FMS for the period June 2004 to June 2007.</p>
Conduct a risk assessment of the impacts of the fishery on the ecosystem and initiate appropriate management programs (e.g. monitoring) based on the outcomes of that process by December 2004 (MR 1.3(c))	
Develop a system for and conduct formal stock assessment of the primary species within five years and review the assessment at least every three years thereafter (MR 2.1.1(c))	
Develop an objective system for defining and setting trigger points to detect concerning trends in landings of all species permitted to be taken in the EGF annually from 2003 (MR2.1.4(c))	
Identify the level of active effort (as opposed to latent effort) in each endorsement type and region, and implement minimum shareholdings over set time periods to ensure that the level of active effort does not exceed historical levels (provided that those levels are biologically sustainable) by December 2003 (MR 2.2(b))	

<sup>22</sup> Available at [www.fisheries.nsw.gov.au/commercial/management-strategies](http://www.fisheries.nsw.gov.au/commercial/management-strategies)

Condition / Recommendation	Progress
Where the fishery is a major harvester of an overfished species, develop and implement a recovery program for the species within a specified timeframe (MR 2.5(a))	The report: <i>Fishery Management Strategies Performance Report 2004</i> <sup>23</sup> presents information on the implementation of the management actions outlined in the EG FMS up to June 2004.
Develop and implement fishery-independent surveys for use in future stock assessments of species that inhabit estuarine waters by July 2005 (MR 7.3(c))	Refer to the Appendix 3 for a statement of implementation of management actions in the EG FMS for the period June 2004 to June 2007.

<sup>23</sup> Available at [www.fisheries.nsw.gov.au/commercial/management-strategies](http://www.fisheries.nsw.gov.au/commercial/management-strategies)