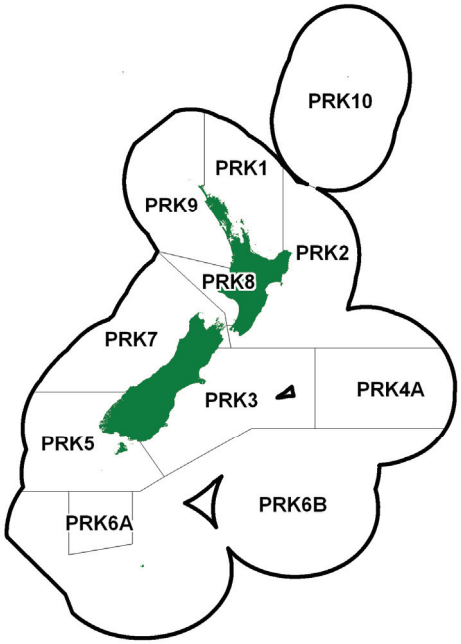
PRAWN KILLER (PRK)

(*Ibacus alticrenatus*)



1. FISHERY SUMMARY

1.1 Commercial fisheries

Prawn killer (*Ibacus alticrenatus*) was introduced to the Quota Management System on 1 October 2007, with a combined TAC of 37.4 t and TACC of 36 t. There are no allowances for customary non-commercial or recreational fisheries, and 1.4 t was allowed for other sources of mortality. PRK is almost all taken as a bycatch in the scampi target trawl fishery in SCI 1 and SCI 2. Reported catches have ranged from 0 to 24 t in PRK 1 with a maximum of 42 t in 1992–93. The greatest catch outside of PRK 1 is in PRK 2 with a maximum reported catch of 8 t in 2002–03 (Table 1). Catch and landings data are likely to be unreliable due to unreported discarding.

Table 1: TACCs and reported landings (t) of Prawn killer by Fishstock from 1990–91 to 2008–09 from CELR and CLR data. FMAs are shown as defined in 2007-08.

	PRK 1		PRK 2		PRK 3		PRK 4A		PRK 5		PRK 6A	
Fishstock	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
1990–91	11.59	–	0	–	0	–	0	–	0	–	0	–
1991–92	3.34	–	0.48	–	0	–	0	–	0	–	0	–
1992–93	42.24	–	6.86	–	0	–	0	–	0	–	0	–
1993–94	10.95	–	0.03	–	0	–	0	–	0	–	0	–
1994–95	0.52	–	0	–	0	–	0	–	0	–	0	–
1995–96	1.78	–	0	–	0	–	0	–	0	–	0	–
1996–97	23.13	–	0	–	0	–	0	–	0	–	0	–
1997–98	0	–	0	–	0	–	0	–	0	–	0	–
1998–99	0	–	0.19	–	0	–	0	–	0	–	0	–
1999–00	0.08	–	0	–	0	–	0	–	0	–	0	–
2000–01	0	–	0	–	0	–	0	–	0	–	0	–
2001–02	6.05	–	0.37	–	0	–	0	–	0	–	0	–
2002–03	20.99	–	8.09	–	0	–	0	–	0	–	0	–
2003–04	24.35	–	0.57	–	0.01	–	0.01	–	0	–	0	–
2004–05	3.25	–	1.15	–	0	–	0	–	0	–	0	–
2005–06	2.25	–	0.20	–	0	–	0	–	0	–	0	–
2006–07	4.6	–	0.10	–	0	–	0	–	0	–	0	–
2007–08	5.36	24.5	0.92	3.5	0.01	1	.02	1	0	1	0	1
2008–09	0.22	24.5	0.08	3.5	0	1	0	1	0	1	0	1

Table 1 continued:

	PRK 6B		PRK 7		PRK 8		PRK 9		TOTAL	
Fishstock	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
1990–91	0	–	0	–	0	–	0	–	11.58	–
1991–92	0	–	0	–	0	–	0	–	3.82	–
1992–93	0.02	–	0	–	0	–	0	–	49.12	–
1993–94	0	–	0	–	0	–	0	–	10.98	–
1994–95	0	–	0	–	0	–	0	–	0.52	–
1995–96	0	–	0	–	0	–	0	–	1.78	–
1996–97	0	–	0	–	0	–	0	–	23.13	–
1997–98	0	–	0	–	0	–	0	–	0	–
1998–99	0	–	0	–	0	–	0	–	0.19	–
1999–00	0	–	0	–	0	–	0	–	0.08	–
2000–01	0	–	0	–	0	–	0	–	0	–
2001–02	0	–	0	–	0	–	0	–	6.42	–
2002–03	0	–	0	–	0	–	0	–	29.08	–
2003–04	0	–	0	–	0	–	0	–	24.94	–
2004–05	0	–	0	–	0	–	0	–	4.40	–
2005–06	0	–	0.01	–	0	–	0.01	–	2.47	–
2006–07	0	–	0.03	–	0	–	0	–	4.73	–
2007–08	0	1	1.2	1	0	1	0	1	7.51	36
2008–09	0	1	0.88	1	0	1	0	1	1.18	36

1.2 Recreational fisheries

There is no known non-commercial fishery for prawn killer.

1.3 Customary non-commercial fisheries

There is no known customary non-commercial fishery for prawn killer.

1.4 Illegal catch

No quantitative information is available on the level of illegal catch of prawn killer.

1.5 Other sources of mortality

There is no quantitative information on other sources of mortality, although analysis of benthic invertebrate samples and the distribution of trawl tows in the Bay of Plenty (PRK 1) suggests that this species is negatively affected by trawling.

2. BIOLOGY

Ibacus alticrenatus is widely distributed around the New Zealand coast, principally in depths of 80–300 m. Prawn killers are found on soft sediment seafloors, where they dig into the substrate and cover themselves with sediment.

There is not much information about growth and development of *I alticrenatus* in New Zealand waters, but females are thought to mature at a carapace length of about 40 mm. Information from Australia suggests this species has relatively low fecundity (1700–14,800 egs, increasing with size) and spawns annually. Larval development takes 4–6 months, an intermediate duration for a Scyllarid lobster. Females of other *Ibacus* species reach maturity ~2 years after settlement and longevity is suggested to be 5 years or more.

Although some other species might be caught as part of the prawn killer catch — *Ibacus brucei, Antipodarctus aoteanus,* and *Scyllarus mawsoni* —these are thought to be rare.

3. STOCKS AND AREAS

For management purposes stock boundaries are based on those used for scampi. However, there is no biological information on stock structure, recruitment patterns, or other biological characteristics which might indicate stock boundaries.

4. ENVIRONMENTAL EFFECTS OF FISHING

4.1 Sea-bed disturbance

Prawn killer is rarely a target species, but bottom trawling has impacts on benthic community structure and has been shown to reduce biodiversity in heavily trawled areas.

4.2 Incidental catch (fish and invertebrates)

Prawn killer is rarely a target species, but trawling for prawn killer is likely to take similar bycatch species to the scampi fishery including other benthic species and some QMS species such as hoki, hake and ling. There is also a possibility of catching juvenile finfish in the fine mesh scampi trawls.

4.3 Incidental catch (seabirds and mammals)

Prawn killer is rarely a target species, but trawling for prawn killer uses similar gear to scampi fisheries, which has interactions with seabirds and marine mammals including fur seals and sea lions (mostly in southern FMAs). There are no estimates of the level of these interactions in prawn killer fisheries (target fishing for prawn killers would be most likely to occur in northern FMAs).

4.4 Community and trophic structure

Trawling for *I. alticrenatus* may locally reduce biodiversity.

4.5 Spawning disruption

The effects of trawling on spawning are unknown.

4.6 Habitats of special significance

Habitats of special significance have not been defined for this fishery.

4.7 Biodiversity

There is evidence that repeated bottom trawling changes the benthic community structure and reduces biodiversity over large spatial scales. Prawn killer is thought to be relatively important within the soft sediment benthic fauna of its depth range and there is evidence to suggest that this species is negatively affected by trawling.

4.8 Aquaculture and enhancement

Not relevant to prawn killer fisheries.

5. STOCK ASSESSMENT

5.1 Estimates of fishery parameters and abundance

There are no estimates of fishery parameters or abundance for any prawn killer fishstock.

5.2 Biomass estimates

There are no biomass estimates for any prawn killer fishstock.

5.3 Estimation of Maximum Constant Yield (MCY)

There are no estimates of MCY for any prawn killer fishstock.

5.4 Estimation of Current Annual Yield (CAY)

There are no estimates of CAY for any prawn killer fishstock.

6. STATUS OF THE STOCKS

There are no estimates of reference or current biomass for any prawn killer fishstock. It is not known whether prawn killer stocks are at, above, or below a level that can produce MSY.

7. FOR FURTHER INFORMATION

Atkinson, J.M. and Boustead, N.C. 1982 “The complete larval development of the scyllarid lobster *Ibacus alticrenatus* Bate, 1888 in New Zealand waters”. *Crustaceana* 42: 275-287.

Booth, J.D., Webber, W.R., Sekiguchi, H. and Coutures, E. 2005 “Diverse larval recruitment strategies within the Scyllaridae. *New Zealand Journal of Marine and Freshwater Research* **39**: 581–592.

Brown, D.E. and Holthuis, L.B. 1998 “The Australian species of the genus *Ibacus* (Crustacea: Decapoda: Scyllaridae), with the description of a new species and addition of new records”. *Zool. Meded. (Leiden)* 72(10): 113–141.

Cryer, M., Hartill, B. and O’Shea, S. 2002 “Modification of marine benthos by trawling: toward a generalization for the deep ocean?” *Ecological Applications*, **12**(6): 1824–1839.

Haddy, J.A., Courtney, A.J., and Roy, D.P. 2005 “Aspects of the reproductive biology and growth of Balmain bugs (*Ibacus* spp.) (Scyllaridae)”. *Journal of Crustacean Biology*, **25**(2): 263–273.