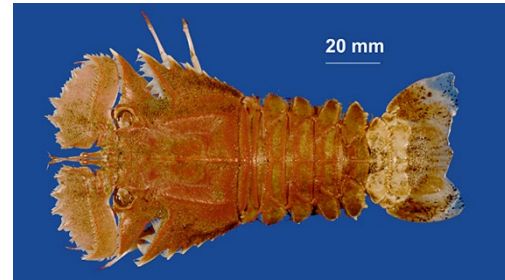
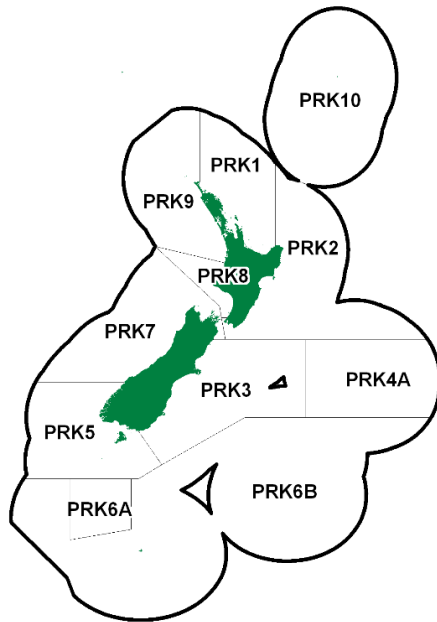


## PRAWN KILLER (PRK)

(*Ibacus alticrenatus*)



### 1. FISHERY SUMMARY

Prawn killer (*Ibacus alticrenatus*) was introduced into the Quota Management System on 1 October 2007, with a total TAC of 37.4 t and TACC of 36 t. There are no allowances for customary non-commercial or recreational fisheries. A total of 1.4 t was allocated for other sources of mortality. Allowances, TACCs, and TACs are shown in Table 1.

**Table 1: Recreational and Customary non-commercial allowances, other mortality, TACCs and TACs (t) for prawn killer by Fishstock.**

Fishstock	Recreational allowance	Customary non-commercial allowance	Other sources of mortality	TACC	TAC
PRK 1	0	0	1.2	24.5	25.7
PRK 2	0	0	0.2	3.5	3.7
PRK 3	0	0	0	1.0	1.0
PRK 4A	0	0	0	1.0	1.0
PRK 5	0	0	0	1.0	1.0
PRK 4A	0	0	0	1.0	1.0
PRK 4A	0	0	0	1.0	1.0
PRK 7	0	0	0	1.0	1.0
PRK 8	0	0	0	1.0	1.0
PRK 10	0	0	0	0	0

#### 1.1 Commercial fisheries

Almost all prawn killer are taken as a bycatch in the scampi target bottom trawl fishery mainly in the Bay of Plenty region and to a lesser extent in the Hawke Bay and Wairarapa region (SCI 1 and SCI 2). Reported catches in PRK 1 peaked at 42 t in 1992–93 (Figure 1), but declined to less than 0.5 t since 2011–12. Landings in PRK 2 reached a maximum of 8.09 t in 2002–03, but have been minimal since with less than 0.01 t reported in 2018–19, and no landings reported since 2019–20 (Table 2, Figure 1). Landings are minimal to non-existent in other QMAs. Years with higher landings coincide with years in which the scampi fleet fished at shallower depths than usual. They can be legally discarded under Schedule 6 of the Fisheries Act but it is likely that reported catches are lower than actual catches due to non-reporting.

TACCs for all QMAs have been in place since the species entered the Quota Management System (QMS) on 1 October 2007. Since then reported landings have ranged from 0.896 to 7.51 t (Table 1), considerably lower than the overall TACC of 36 t. The only QMA where the TACC has been exceeded is PRK 7 in the 2007–08, 2015–16 and 2016–17 fishing years (20%, 66% and 37% overruns respectively).

**Table 2: TACCs and reported landings (t) of prawn killer by Fishstock from 1990–91 until the present from CELR and CLR data. QMA's are shown as defined in 2007–08. [Continued on next page]**

Fishstock	PRK 1		PRK 2		PRK 3		PRK 4A	
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
1990–91	11.59	—	0	—	0	—	0	—
1991–92	3.34	—	0.48	—	0	—	0	—
1992–93	42.24	—	6.86	—	0	—	0	—
1993–94	10.95	—	0.03	—	0	—	0	—
1994–95	0.52	—	0	—	0	—	0	—
1995–96	1.78	—	0	—	0	—	0	—
1996–97	23.13	—	0	—	0	—	0	—
1997–98	0	—	0	—	0	—	0	—
1998–99	0	—	0.19	—	0	—	0	—
1999–00	0.08	—	0	—	0	—	0	—
2000–01	0	—	0	—	0	—	0	—
2001–02	6.05	—	0.37	—	0	—	0	—
2002–03	20.99	—	8.09	—	0	—	0	—
2003–04	24.35	—	0.57	—	0.01	—	0.01	—
2004–05	3.25	—	1.15	—	0	—	0	—
2005–06	2.25	—	0.20	—	0	—	0	—
2006–07	4.6	—	0.10	—	0	—	0	—
2007–08	5.36	24.5	0.92	3.5	0.01	1	0.02	1
2008–09	0.22	24.5	0.08	3.5	0	1	0	1
2009–10	0.75	24.5	0.03	3.5	0	1	0	1
2010–11	3.55	24.5	0.08	3.5	0	1	0	1
2011–12	0.42	24.5	0.17	3.5	0	1	0	1
2012–13	0.26	24.5	0.02	3.5	0	1	0	1
2013–14	0.10	24.5	0.04	3.5	0	1	0	1
2014–15	0.00	24.5	0.04	3.5	0	1	0	1
2015–16	0.02	24.5	0.07	3.5	0	1	0	1
2016–17	0.35	24.5	0.15	3.5	0	1	0.01	1
2017–18	0.45	24.5	0.01	3.5	0	1	0	1
2018–19	0.30	24.5	< 0.01	3.5	0	1	< 0.01	1
2019–20	< 0.01	24.5	0	3.5	< 0.01	1	0	1
2020–21	0.02	24.5	0	3.5	0	1	0	1
2021–22	< 0.01	24.5	0	3.5	0	1	0	1
2022–23	0.24	24.5	0	3.5	0	1	0	1
2023–24	0.31	24.5	0	3.5	< 0.01	1	0	1

Fishstock	PRK 5		PRK 6A		PRK 6B		PRK 7	
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
1990–91	0	—	0	—	0	—	0	—
1991–92	0	—	0	—	0	—	0	—
1992–93	0	—	0	—	0.02	—	0	—
1993–94	0	—	0	—	0	—	0	—
1994–95	0	—	0	—	0	—	0	—
1995–96	0	—	0	—	0	—	0	—
1996–97	0	—	0	—	0	—	0	—
1997–98	0	—	0	—	0	—	0	—
1998–99	0	—	0	—	0	—	0	—
1999–00	0	—	0	—	0	—	0	—
2000–01	0	—	0	—	0	—	0	—
2001–02	0	—	0	—	0	—	0	—
2002–03	0	—	0	—	0	—	0	—
2003–04	0	—	0	—	0	—	0	—
2004–05	0	—	0	—	0	—	0	—
2005–06	0	—	0	—	0	—	0.01	—
2006–07	0	—	0	—	0	—	0.03	—
2007–08	0	1	0	1	0	1	1.2	1
2008–09	0	1	0	1	0	1	0.88	1
2009–10	0	1	0	1	0	1	0.48	1
2010–11	0	1	0	1	0	1	0.69	1
2011–12	0	1	0	1	0	1	0.73	1
2012–13	0	1	0	1	0	1	0.60	1
2013–14	0.001	1	0	1	0	1	0.66	1
2014–15	0	1	0	1	0	1	1	1
2015–16	0	1	0	1	0	1	1.66	1
2016–17	0	1	0	1	0	1	1.37	1
2017–18	0	1	0	1	0	1	0.55	1
2018–19	0	1	0	1	0	1	0.45	1
2019–20	0	1	0	1	0	1	0.01	1
2020–21	0.001	1	0	1	0	1	0.04	1
2021–22	0.003	1	0	1	0	1	0.16	1
2022–23	0	1	0.002	1	0	1	0	1
2023–24	0	1	0	1	0	1	0.08	1

Table 2 [Continued]:

Fishstock	PRK 8		PRK 9		TOTAL	
	Landings	TACC	Landings	TACC	Landings	TACC
1990–91	0	–	0	–	11.58	–
1991–92	0	–	0	–	3.82	–
1992–93	0	–	0	–	49.12	–
1993–94	0	–	0	–	10.98	–
1994–95	0	–	0	–	0.52	–
1995–96	0	–	0	–	1.78	–
1996–97	0	–	0	–	23.13	–
1997–98	0	–	0	–	0	–
1998–99	0	–	0	–	0.19	–
1999–00	0	–	0	–	0.08	–
2000–01	0	–	0	–	0	–
2001–02	0	–	0	–	6.42	–
2002–03	0	–	0	–	29.08	–
2003–04	0	–	0	–	24.94	–
2004–05	0	–	0	–	4.40	–
2005–06	0	–	0.01	–	2.47	–
2006–07	0	–	0	–	4.73	–
2007–08	0	1	0	1	7.51	36
2008–09	0	1	0	1	1.18	36
2009–10	0	1	0	1	1.27	36
2010–11	0.01	1	0	1	4.33	36
2011–12	0	1	0	1	1.32	36
2012–13	0.01	1	0.01	1	0.90	36
2013–14	0.01	1	0.15	1	0.94	36
2014–15	0	1	0	1	1.04	36
2015–16	0.01	1	0.02	1	1.78	36
2016–17	0	1	1.26	1	3.14	36
2017–18	0	1	0	1	1.01	36
2018–19	0	1	0.01	1	0.76	36
2019–20	0	1	0	1	0.01	36
2020–21	0	1	0.02	1	0.08	36
2021–22	0	1	< 0.01	1	0.16	36
2022–23	0	1	0	1	0.29	36
2023–24	0	1	0	1	0.39	36

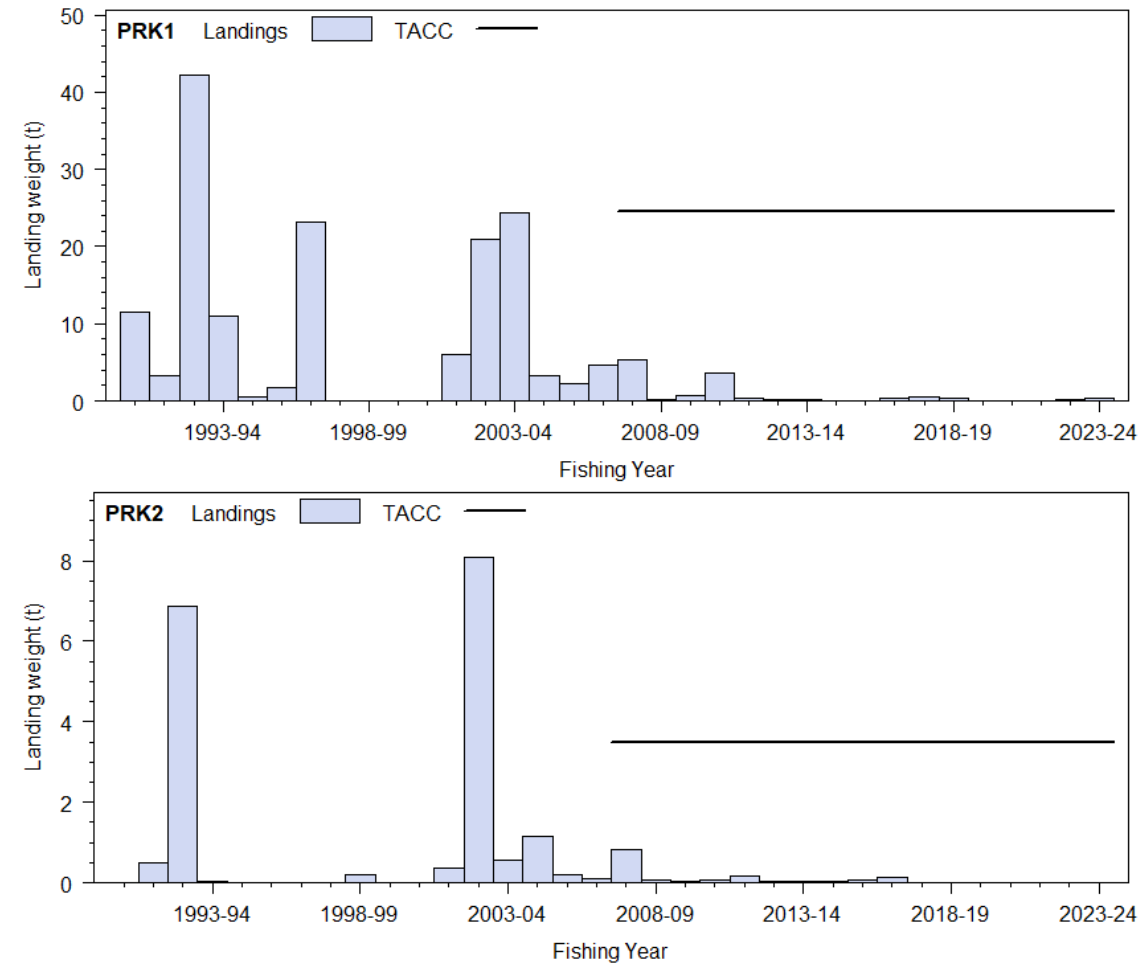


Figure 1: Reported commercial landing and TACC for PRK 1 and PRK 2.

### 1.2 Recreational fisheries

Given the depths and locations at which prawn killer are found, recreational catch is likely to be negligible or non-existent.

### 1.3 Customary non-commercial fisheries

Given the depths and locations at which prawn killer are found, customary catch is likely to be negligible or non-existent.

### 1.4 Illegal catch

No quantitative information is available on the level of illegal catch of prawn killer. Given the low value and lack of markets, illegal catches are unlikely.

### 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 (Cryer et al 2002).

## 2. BIOLOGY

*Ibacus alticrenatus* are a scyllarid lobster, a group of decapod crustaceans also known as slipper lobsters. They are widely distributed around the New Zealand coast, principally in depths of 80–300 m. Research and commercial trawls show that they are found around much of New Zealand but mostly in the Bay of Plenty, east coast North Island, and to a lesser extent, the Mernoo Bank and north-west Chatham Rise and the west coast South Island. They appear to be extremely rare in the Sub-Antarctic and the west coast of the North Island, and totally absent from the Southland region. Prawn killer are found on soft sediment seafloors, where they dig into the substrate and cover themselves with sediment. The phyllosoma larval stage of prawn killer lasts for several months which would suggest that there is potential for widespread dispersal of prawn killer. The apparent lack of prawn killer in more southern areas may also be due to other factors such as temperature, food availability, competition, and habitat.

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. Trawl surveys of the Bay of Plenty and Hawke Bay and Wairarapa regions have found maximum carapace length of 46 and 52 mm for males and females respectively. Information from Australia suggests that this species has relatively low fecundity (1700–14 800 eggs, 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 about two years after settlement and longevity is suggested to be five years or more. No ageing work has been carried out on prawn killer in either New Zealand or Australia.

There are currently no estimates of natural mortality for this species or maximum age. *Ibacus peronii* is a similar species that lives in shallow waters (20–500m) around Australia. Growth models for *I. peronii*, suggest the potential for this species to live for more than 15 years. As a consequence, the Intrinsic Productivity Level is categorised as Medium for this species. As these species appear to be similar ecologically, this assumption is unlikely to give rise to great errors.

## 3. STOCKS AND AREAS

For management purposes stock boundaries are based on those used for scampi. There is no biological information on stock structure, recruitment patterns, or other biological characteristics which might indicate stock boundaries, but there are three main fishing areas where they are caught: Bay of Plenty, and to a lesser extent Hawke Bay and Wairarapa and the northern west coast of the South Island. The lack of prawn killer bycatch in the scampi target fisheries on the Mernoo Bank (PRK 3) and around the Auckland Islands (PRK 6A) would suggest the prawn killer numbers are very low to non-existent south of the three main fishing areas.

## 4. STOCK ASSESSMENT

### 4.1 Estimates of fishery parameters and abundance

There are no estimates of fishery parameters or abundance for any prawn killer fishstock. Sporadic and varying catches by the scampi fleet mean that development of reliable CPUE indices is not possible.

### 4.2 Biomass estimates

There are no reliable biomass estimates for any prawn killer fishstock. Combined trawl and photographic surveys for scampi in the Bay of Plenty (PRK 1) and Hawke Bay and Wairarapa (PRK 2) are the only trawl surveys that catch prawn killer regularly (MacGibbon 2015). Prawn killer biomass estimates from these surveys are variable from year to year, have high coefficients of variation, and are not considered validated indices of abundance. The focus of these surveys has changed over the years to focus more on photographic work and not all strata have been surveyed in all years.

### 4.3 Yield estimates and projections

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

## 5. STATUS OF THE STOCKS

For all Fishstocks there is insufficient information to estimate current stock status.

## 6. FOR FURTHER INFORMATION

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