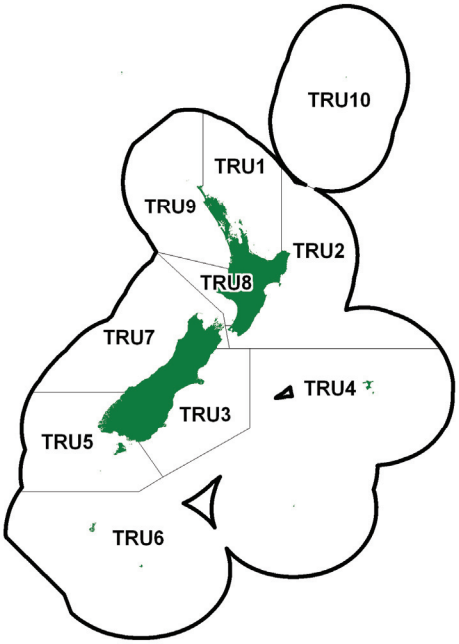
TRUMPETER (TRU)

(*Latris lineata*)
Kohikohi



1. FISHERY SUMMARY

1.1 Commercial fisheries

Total reported landings of trumpeter were generally less than 10t until the early 1980s, when they increased steadily to reach 162 t in 1995–96 (Tables 1 & 2). Since 1995–96 landings continued to decrease, reaching 25 t in 2000–01 and remaining at that level in 2001–02. Over recent years landings have increased, with over 100t reported in the 2007–08 fishing year. Historic under-reporting is probable (Paul 1999).

Most landings of trumpeter have come from the east coast between the eastern Bay of Plenty and Southland. There have been changes over time in contributions from different parts of the east coast, but the reason for this is not known. Until the early 1950s most landings were made in QMA 3. From the mid 1950s until the mid 1980s most landings were in QMA 2. The rapid increase in landings since the mid 1980s has come predominantly from QMAs 3 and 4, reportedly from an increase in line fishing on the outer shelf and in the Mernoo Bank region. Landings in QMA 3 and 4 have declined in the last few years, falling well below the TACC. Figure 1 shows the historical landings and TACC values for the main TRU stocks.

Most trumpeter is taken as bycatch in line-fisheries; a small amount is trawled, and from the 1970s it has also been taken by setnet. Only a small proportion of trumpeter is targeted. Catches are irregular with no seasonal trend and are likely to be driven by fishing activities for other species. No information on changes in fishing effort is available.

Trumpeter are managed under the Quota Management System in New Zealand with a TAC of 144 t (Ministry of Fisheries Science Group 2006). The TAC was increased to this level in October 2001 following a period of declining landings, and landings have never reached this TAC (the greatest landings in the last eight years were 90 t in 2004-05, and the next greatest landings were 51 t). In recent years, significant landings have come only from TRU 4 on the Chatham Rise, with small landings also coming from TRU 2, 3, 5, and 7 (south-eastern North Island and South Island). Trumpeter are also taken by recreational fishers in southern New Zealand, and although good estimates of recreational catch are not available, they may be around one-third to one-half of the commercial.

Table 1: Reported total landings (t) of trumpeter from 1931 to 1982. Values for 1931 through 1944 are April-March years, listed against the April year. Fisheries Annual Report (1931 to 1974) or FSU data (Paul 1999).

Year	Landings	Year	Landings	Year	Landings	Year	Landings	Year	Landings
1936	20	1946	16	1956	5	1965	4	1974	5
1937	41	1947	13	1957	5	1966	5	1975	4
1938	30	1948	19	1958	3	1967	7	1976	3
1939	37	1949	6	1959	3	1968	5	1977	3
1940	17	1950	6	1960	3	1969	5	1978	6
1941	11	1951	11	1961	3	1970	7	1979	17
1942	5	1952	11	1962	4	1971	10	1980	10
1943	5	1953	5	1963	3	1972	4	1981	12
1944	11	1954	5	1964	3	1973	5	1982	37
1945	11	1955	6						

Table 2: Reported landings (t) of trumpeter by QMA and fishing year, 1983–84 to 2008–09*.

Fishstock	TRU 1		TRU 2		TRU 3		TRU 4		TRU 5	
FMA	1		2		3		4		5	
	Landings	TAC	Landings	TAC	Landings	TAC	Landings	TAC	Landings	TAC
1982–83	0	-	5	-	3	-	0	-	0	-
1983–84	1	-	17	-	2	-	0	-	1	-
1984–85	0	-	15	-	3	-	0	-	4	-
1985–86	0	-	4	-	6	-	0	-	1	-
1986–87	0	-	4	-	5	-	0	-	5	-
1987–88	0	-	4	-	4	-	0	-	0	-
1988–89	0	-	7	-	1	-	0	-	0	-
1989–90	0	-	8	-	5	-	0	-	0	-
1990–91	3	-	16	-	13	-	5	-	0	-
1991–92	1	-	16	-	25	-	19	-	1	-
1992–93	3	-	21	-	21	-	4	-	1	-
1993–94	3	-	17	-	26	-	24	-	2	-
1994–95	2	-	20	-	27	-	65	-	5	-
1995–96	2	-	19	-	29	-	69	-	37	-
1996–97	2	-	16	-	35	-	33	-	42	-
1997–98	1	-	11	-	28	-	23	-	6	-
1998–99	< 1	1	11	9	15	28	16	42	4	18
1999–00	< 1	1	6	9	11	28	8	42	5	18
2000–01	< 1	1	6	9	7	28	6	42	3	18
2001–02	< 1	3	6	20	5	33	9	59	<1	22
2002–03	< 1	3	7	20	7	33	32	59	1	22
2003–04	1	3	6	20	7	33	24	59	4	22
2004–05	< 1	3	5	20	8	33	70	59	3	22
2005–06	< 1	3	7	20	8	33	65	59	3	22
2006–07	< 1	3	8	20	16	33	66	59	3	22
2007–08	1	3	9	20	22	33	63	59	4	22
2008–09	< 1	3	9	20	21	33	19	59	6	22

Fishstock	TRU 6		TRU 7		TRU 8		TRU 9			
FMA	6		7		8		9		Total	
	Landings	TAC	Landings	TAC	Landings	TAC	Landings	TAC	Landings	TAC
1982–83	0	-	0	-	0	-	0	-	8	-
1983–84	0	-	0	-	0	-	0	-	21	-
1984–85	0	-	0	-	0	-	0	-	22	-
1985–86	0	-	0	-	0	-	0	-	11	-
1986–87	0	-	2	-	0	-	0	-	16	-
1987–88	0	-	0	-	0	-	0	-	8	-
1988–89	0	-	1	-	0	-	0	-	9	-
1989–90	0	-	0	-	1	-	0	-	14	-
1990–91	0	-	7	-	0	-	0	-	44	-
1991–92	0	-	4	-	0	-	0	-	69	-
1992–93	0	-	4	-	2	-	0	-	56	-
1993–94	0	-	6	-	0	-	0	-	78	-
1994–95	0	-	4	-	0	-	0	-	123	-
1995–96	0	-	6	-	0	-	0	-	162	-
1996–97	2	-	3	-	< 1	-	< 1	-	133	-
1997–98	< 1	-	3	-	< 1	-	0	-	72	-
1998–99	0	0	3	2	< 1	0	0	0	50	100
1999–00	0	0	2	2	< 1	0	0	0	33	100
2000–01	0	0	3	2	< 1	0	< 1	0	25	100
2001–02	0	0	5	6	< 1	1	0	0	25	144
2002–03	0	0	3	6	< 1	1	< 1	0	51	144
2003–04	0	0	2	6	< 1	1	< 1	0	44	144
2004–05	0	0	4	6	< 1	1	0	0	90	144
2005–06	0	0	4	6	< 1	1	0	0	88	144
2006–07	0	0	4	6	< 1	1	0	0	99	144
2007–08	< 1	0	2	6	< 1	1	< 1	0	101	144
2008–09	0	0	2	6	< 1	1	< 1	0	63	144

*The data in this table have been updated from those published in previous Plenary Reports by using the data through 1996–97 in table 41 on p. 288 of the "Review of Sustainability Measures and Other Management Controls for the 1998–99 Fishing Year – Final Advice Paper" dated 6 August 1998. There are no landings reported from TRU 10, which has a TAC of 0.

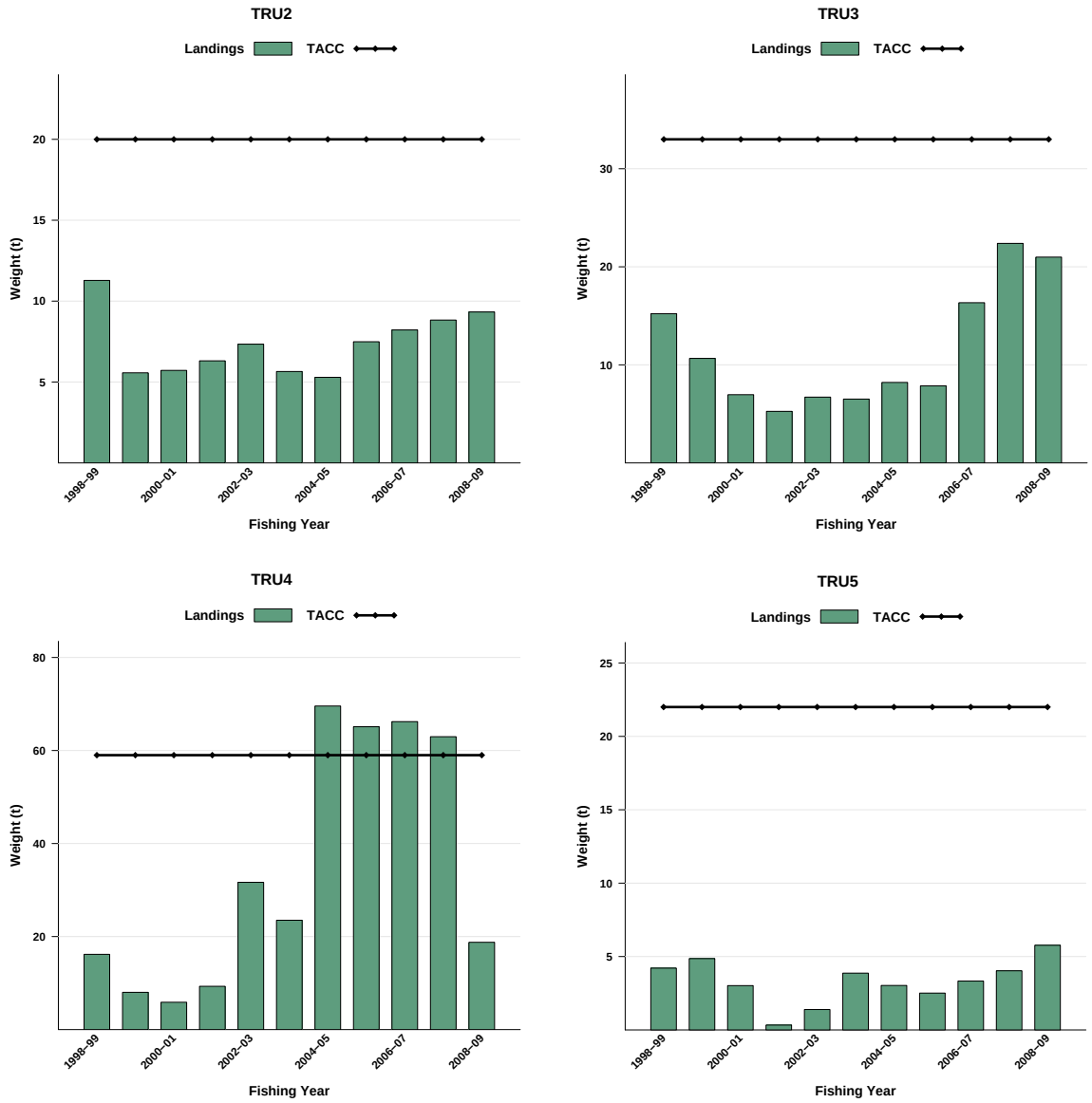


Figure 1: Historical landings and TACC for the four main TRU stocks. From top left to bottom right: TRU2 (Central East), TRU3 (South East Coast), TRU4 (South East Chatham Rise), and TRU5 (Southland). Note that these figures do not show data prior to entry into the QMS.

1.2 Recreational fisheries

Results from two separate recreational fishing surveys undertaken in the 1990s are shown in Table 3. Most of the recreational catch was taken in QMAs 3, 5 and 7 with a marked increase in catch reported in QMA 5 in 1996 compared to the early 1990s. Provisional estimates of the tonnage of the recreational catch can be derived by multiplying the total number of fish by a mean weight of 1 kg. Note, however, this mean weight was derived from a sample of mainly small fish and is possibly unrepresentative, so an estimate of the recreational catch by weight may have been underestimated. The Recreational Technical Working Group concluded that the harvest estimates from the diary surveys should be used only with the following qualifications: a) they may be very inaccurate; b) the 1996 and earlier surveys contain a methodological error; and, c) the 2000 and 2001 estimates are implausibly high for many important fisheries.

Table 3: Estimated number of trumpeter caught by recreational fishers by QMA and survey. Surveys were carried out in different years in Ministry of Fisheries regions: South in 1991–92, Central in 1992–93, North in 1993–94 and National in 1996 (Bradford 1998).

			Total
FMA	Survey	Number	CV (%)
1991–92			
FMA 3	South	6 000	29
FMA 5	South	6 000	33
FMA 7	South	8 000	–
1992–93			
FMA 2	Central	1 000	–
FMA 3	Central	3 000	–
FMA 5	Central	1 000	–
FMA 7	Central	0	–
FMA 8	Central	0	–
1993–94			
FMA 1+9	North	0	–
FMA 2	North	1 000	–
FMA 8	North	0	–
1996			
FMA 1	National	< 500	–
FMA 2	National	1 000	–
FMA 3	National	13 000	19
FMA 5	National	21 000	19
FMA 7	National	3 000	–

1.3 Customary non-commercial fisheries

The customary non-commercial take has not been quantified.

1.4 Illegal catch

There is no quantitative information on illegal fishing activity or catch.

1.5 Other sources of mortality

No quantitative estimates are available regarding the impact of other sources of mortality on trumpeter stocks. Trumpeter principally occur on deep coastal reefs, where they are taken in net and line fisheries targeted at other species.

2. BIOLOGY

Trumpeter have a Southern Hemisphere distribution in cool temperate waters. They occur in New Zealand, Australia, the subantarctic islands of the southern Indian and Atlantic oceans, the Foundation Seamount in the central South Pacific, and possibly off Chile (Roberts 2003, Tracey and Lyle 2005). In New Zealand, trumpeter occur from the Three Kings Islands through all of mainland New Zealand to the Auckland Islands; however they are rare north of East Cape and Cape Egmont (Kingsford et al. 1989, Francis 1996, 2001). The greatest concentrations of trumpeter apparently occur on the Chatham Rise and around the southern South Island and Stewart Island.

Trumpeter have an extended larval and postlarval duration of up to 9 months in surface waters (Tracey and Lyle 2005), resulting in extensive drift of young fish among geographic regions. Juveniles are largely sedentary, but some adults are highly migratory with tagged fish travelling 650 km from Tasmania to southern New South Wales, and 5,800 km from Tasmania to St Paul Island in the southern Indian Ocean (Lyle and Murphy 2002). This suggests there is one circum-global genetic stock in the Southern Hemisphere, though analysis of otolith morphometrics from Tasmania and St Paul and Amsterdam Islands showed regional variation (Tracey et al. 2006) suggesting that migration and inter-breeding may be limited.

Trumpeter occur mainly over rocky reefs ranging from shallow inshore waters to deep reefs on the central continental shelf. In New Zealand, they apparently range from a depth of a few metres down to about 200 m. In Australia some reports indicate they may go as deep as 300 m (reviewed by Paul 1999).

Fish inhabiting inshore reefs tend to be smaller, whereas fish from deep reefs tend to be much larger. Trumpeter initially settle on to inshore reefs at the end of their long postlarval period, where they remain for several years, before migrating into deeper areas as they reach maturity (Tracey and Lyle 2005).

Some biological traits differ between New Zealand and Tasmanian populations. Notably, trumpeter are thought to spawn in winter (July) in New Zealand (Graham 1939), and late winter to spring in Australia (peaking around September in Tasmania) (Ruwald et al. 1991, Furlani and Last 1993, Morehead 1998, Morehead et al. 1998, 2000, Furlani and Ruwald 1999). However, the New Zealand data seem to be based on limited sampling, and it is uncertain whether the apparent regional difference is real.

Trumpeter grow to about 110-120 cm fork length (FL) and 25-27 kg weight in New Zealand and Australia (Gomon et al. 1994, Paul 1999, Francis 2001). Nothing is known about growth, longevity or maturity in New Zealand waters. However, because of their importance for aquaculture in Australia, a comprehensive study has recently been completed on their age and growth in Tasmania (Tracey and Lyle 2005, Tracey et al. 2006). Partial validation of age estimates was completed there by comparison of otolith growth in known-age reared fish and wild fish (enabling validation of the time of formation of the first growth band), and tracking a strong wild cohort over seven years (ages 1+ to 7+). Although full validation was not achieved, the authors considered their ages validated up to and beyond the size and age of habitat transition.

In Australia, trumpeter grow rapidly during the first 4-5 years, reaching about 45 cm FL at that stage, and moving offshore to deeper water (Tracey and Lyle 2005, Tracey et al. 2006). At that time, there is a reduction in growth rate. They reach a maximum age of about 43 years (though the largest fish in the samples was 95 cm FL, which is well below the reported maximum length of 120 cm), and there are no clear differences between males and females (though small sample sizes of fish older than 10 years meant the power to detect differences was low). Similarly, no differences were found in growth rates between fish from Tasmania and St Paul and Amsterdam Islands. Growth rates are seasonally variable, at least for the first few years, with maximum growth in late summer-autumn. It is thought that maturation coincides with the offshore movement to deep habitat.

In New Zealand, the only population information available for trumpeter comes from a 6-year survey (1994-1999) in Paterson Inlet, Stewart Island. Chadderton and Davidson (2003) carried out underwater visual counts, and obtained comprehensive length-frequency distributions from 1,065 fish caught by rod at 12-15 different sites. Their length-frequency data show two or three clear juvenile cohorts which progress through time (a strong cohort was also found in Tasmania by Tracey and Lyle (2005)). Chadderton and Davidson (2003) interpreted this as evidence of variable annual recruitment pulses. Their largest fish was 46.9 cm FL with few fish over 40 cm in most years. This is consistent with evidence from Australia of offshore migration at about 45 cm, though the migration may occur at a slightly smaller size in the New Zealand population.

3. STOCKS AND AREAS

There are no data relevant to stock boundaries in New Zealand. Trumpeter are potentially wide-ranging, and there is one circum-global genetic stock in the Southern Hemisphere, although analysis of otolith morphometrics from Tasmania and St Paul and Amsterdam Islands showed regional variation (Tracey et al. 2006) suggesting that migration and inter-breeding may be limited. Therefore there may be localised populations in areas of suitable habitat as they seem to be restricted to rocky reef habitat.

4. STOCK ASSESSMENT

4.1 Estimates of fishery parameters and abundance

No estimates are available.

4.2 Biomass estimates

No estimates are available.

4.3 Estimation of Maximum Constant Yield (MCY)

No estimate of MCY is available.

The level of risk to the stock by harvesting trumpeter at recent catch levels cannot be determined.

4.4 Estimation of Current Annual Yield (CAY)

No estimates of current biomass, fishing mortality, or other information are available which would permit the estimation of CAY.

4.5 Other factors

There is anecdotal information from Australia and New Zealand that localised populations of trumpeter can be quickly depleted.

5. STATUS OF THE STOCKS

No estimates of current and reference biomass are available.

It is not known if recent catch levels are sustainable.

TACCs and reported landings of trumpeter for the 2008–09 fishing year are summarised in Table 4.

Table 4: Summary of TACCs (t), and reported landings (t) of trumpeter for the most recent fishing year.

Fishstock		FMA	2008–09 Actual TACC	2008–09 Reported landings
TRU 1	Auckland (East)	1	3	< 1
TRU 2	Central (East)	2	20	9
TRU 3	South-east (Coast)	3	33	21
TRU 4	South-east (Chatham)	4	59	19
TRU 5	Southland	5	22	6
TRU 6	Sub-Antarctic	6	0	0
TRU 7	Challenger	7	6	2
TRU 8	Central (West)	8	1	< 1
TRU 9	Auckland (West)	9	0	0
TRU 10	Kermadec	10	0	0
Total			144	57

6. FOR FURTHER INFORMATION

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