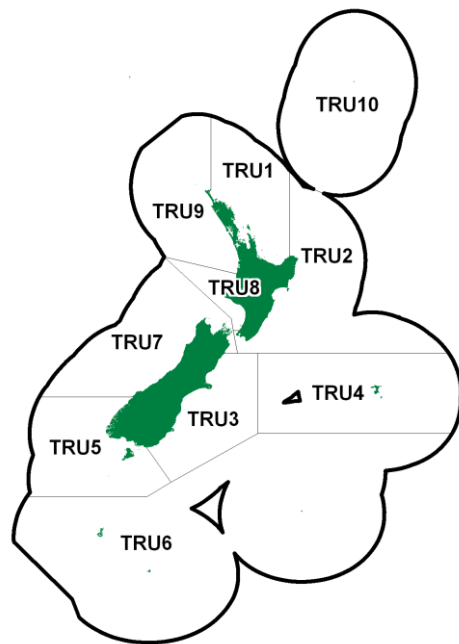


TRUMPETER (TRU)

(*Latris lineata*)
Kohikohi



1. FISHERY SUMMARY

1.1 Commercial fisheries

Historical estimated landings of are shown in Table 1 for the main trumpeter stocks. Total reported landings of trumpeter were generally less than 10 t until the early 1980s, when they increased steadily to reach 162 t in 1995–96 (Tables 2 and 3). 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 100 t reported in the 2011–2012 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 for TRU from 1936.

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 have been managed under the Quota Management System in New Zealand since 1 October 1988, at which time an original TACC of 100 t was set. The TACC was increased to 144 t in October 2001 following a period of declining landings. This TACC has never been reached; the 110 t landed in 2010–11 was the highest since 1996–97. In recent years (2004–05 to 2015–16), significant landings have come only from TRU 4 (Table 3) 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 catch.

TRUMPETER (TRU)

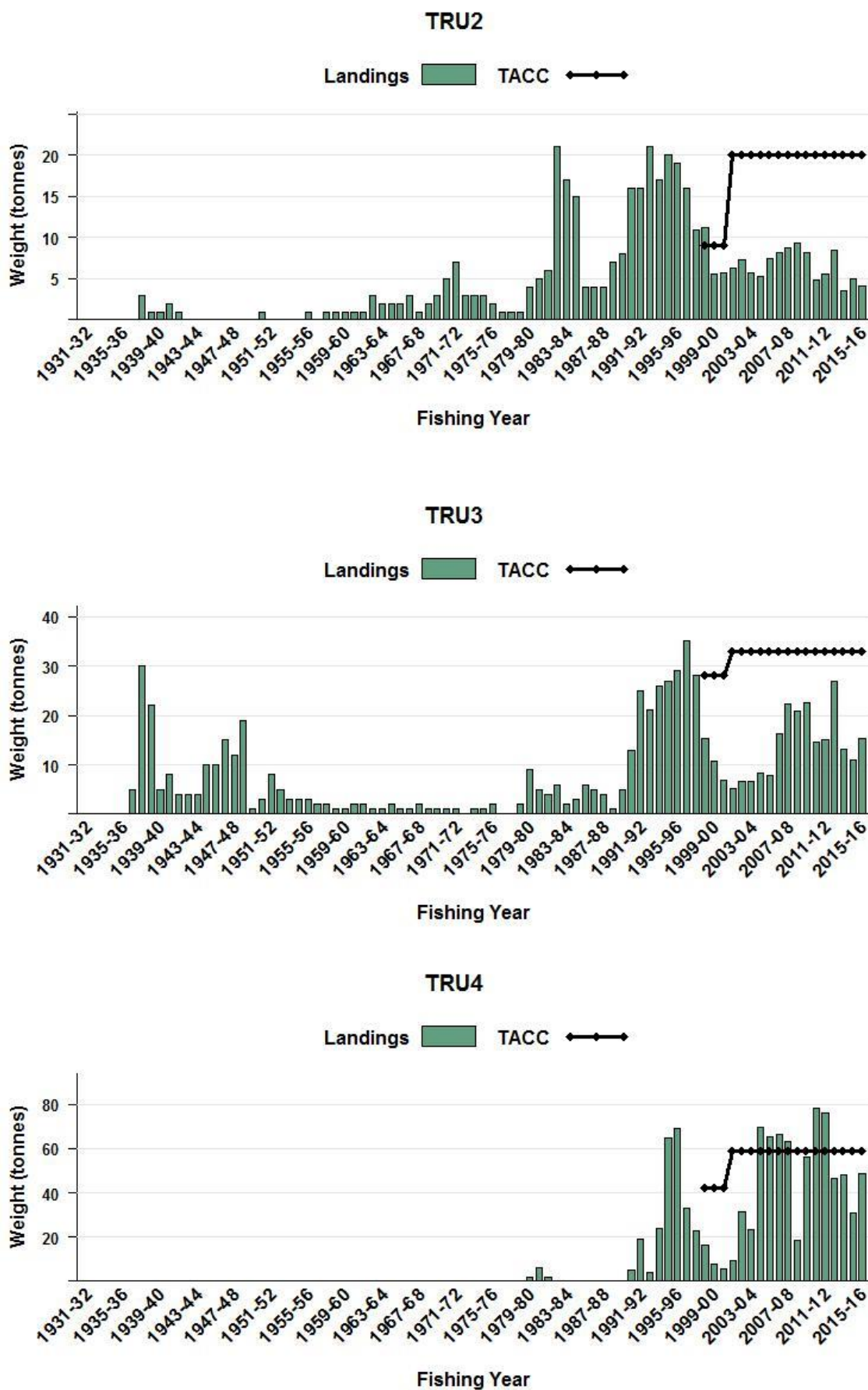


Figure 1: Reported commercial landings and TACCs for the four main TRU stocks. Top to bottom: TRU 2 (Central East), TRU 3 (South East Coast), TRU 4 (South East Chatham Rise), [Continued on next page]

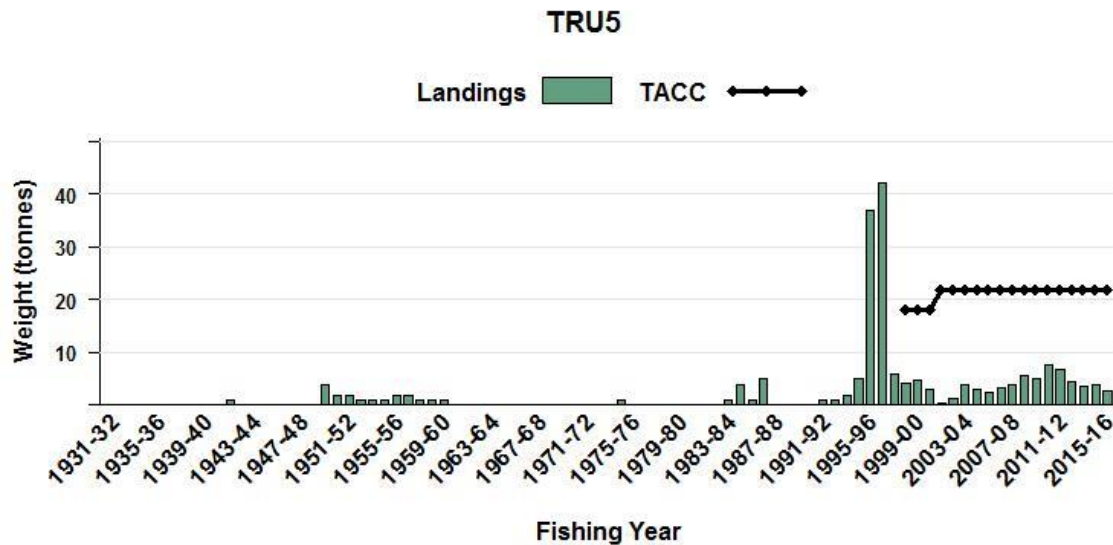


Figure 1: [Continued] Reported commercial landings and TACCs for the four main TRU stocks. TRU 5 (Southland).

Table 1: Reported landings (t) for the main QMAs from 1931 to 1982.

Year	TRU 1	TRU 2	TRU 3	TRU 4	Year	TRU 1	TRU 2	TRU 3	TRU 4
1931-32	0	0	0	0	1957	0	1	2	0
1932-33	0	0	0	0	1958	0	1	1	0
1933-34	0	0	0	0	1959	0	1	1	0
1934-35	0	0	0	0	1960	0	1	2	0
1935-36	0	0	0	0	1961	0	1	2	0
1936-37	0	0	5	0	1962	0	3	1	0
1937-38	0	3	30	0	1963	0	2	1	0
1938-39	0	1	22	0	1964	0	2	2	0
1939-40	0	1	5	0	1965	0	2	1	0
1940-41	0	2	8	0	1966	0	3	1	0
1941-42	0	1	4	0	1967	0	1	2	0
1942-43	0	0	4	0	1968	0	2	1	0
1943-44	0	0	4	0	1969	0	3	1	0
1944	0	0	10	0	1970	0	5	1	0
1945	0	0	10	0	1971	0	7	1	0
1946	0	0	15	0	1972	0	3	0	0
1947	0	0	12	0	1973	0	3	1	0
1948	0	0	19	0	1974	0	3	1	0
1949	0	0	1	0	1975	0	2	2	0
1950	0	1	3	0	1976	0	1	0	0
1951	0	0	8	0	1977	0	1	0	0
1952	0	0	5	0	1978	0	1	2	0
1953	0	0	3	0	1979	0	4	9	2
1954	0	0	3	0	1980	0	5	5	6
1955	0	1	3	0	1981	0	6	4	2
1956	0	0	2	0	1982	2	21	6	0

Notes:

1. The 1931-1943 years are April-March but from 1944 onwards are calendar years.
2. Data up to 1985 are from fishing returns: Data from 1986 to 1990 are from Quota Management Reports.
3. Data for the period 1931 to 1982 are based on reported landings by harbour and are likely to be underestimated as a result of under-reporting and discarding practices. Data includes both foreign and domestic landings.

Table 2: Reported total landings (t) of trumpeter from 1931 to 1982. Values for 1931 to 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						

TRUMPETER (TRU)

Table 3: Reported landings (t) of trumpeter by QMA and fishing year, 1983–84 to 2015–16*.

Fishstock FMA	TRU 1		TRU 2		TRU 3		TRU 4		TRU 5	
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
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
2009–10	<1	3	8	20	22	33	56	59	5	22
2010–11	<1	3	5	20	15	33	78	59	8	22
2011–12	<1	3	6	20	15	33	76	59	7	22
2012–13	<1	3	8	20	27	33	47	59	4	22
2013–14	<1	3	3	20	13	33	48	59	4	22
2014–15	0	3	5	20	11	33	31	59	4	22
2015–16	<1	3	4	20	15	33	49	59	3	22

Fishstock FMA	TRU 6		TRU 7		TRU 8		TRU 9		Total	
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
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
2009–10	0	0	3	6	<1	1	0	0	95	144
2010–11	<1	0	4	6	<1	1	<1	0	110	144
2011–12	<1	0	4	6	<1	1	<1	0	108	144
2012–13	<1	0	6	6	<1	1	<1	1	93	144
2013–14	0	0	5	6	<1	1	<1	0	74	144
2014–15	0	0	4	6	1	1	0	0	56	144
2015–16	0	0	4	6	<1	1	<1	0	76	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

Table 4 Estimated number of trumpeter caught by recreational fishers by FMA and survey. Surveys were carried out in different years in MAF Fisheries regions: South in 1991–92, Central in 1992–93, North in 1993–94 and National in 1996 (Bradford 1998).

FMA	Survey	Total	
		Number	CV (%)
1991–92			
FMA 3	South	6 000	29
FMA 5	South	6 000	33
FMA 7	South	8 000	-
FMA	Survey	Number	CV (%)
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	-

1.2 Recreational fisheries

Results from four separate recreational fishing surveys undertaken in the 1990s are shown in Table 4. 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, that 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.

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 Sub-Antarctic islands of the southern Indian and Atlantic oceans, the Foundation Seamount in the central South Pacific, and possibly off Chile (Roberts 2003, Tracey & 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 (TRU)

Trumpeter have an extended larval and post-larval duration of up to 9 months in surface waters (Tracey & 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 5800 km from Tasmania to St Paul Island in the southern Indian Ocean (Lyle & Murphy 2002). This suggests that 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.

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 & 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 1939b), and late winter to spring in Australia (peaking around September in Tasmania) (Ruwald et al 1991, Furlani & Last 1993, Morehead 1998, Morehead et al 1998, 2000, Furlani & 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 & 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 & 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 (although small sample sizes of fish older than 10 years meant that 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 & Davidson (2003) carried out underwater visual counts, and obtained comprehensive length-frequency distributions from 1065 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 & Lyle (2005)). Chadderton & 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 Yield estimates and projections

No estimate of *MCY* is available.

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

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

4.4 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 2015–16 fishing year are summarised in Table 5.

Table 5: Recreational and customary non-commercial allowances (t), Total Allowable Commercial Catches (TACC, t) and Total Allowable Catch (TAC, t), along with reported landings (t) of trumpeter for the most recent fishing year.

	FMA	TAC	TACC	Customary	Recreational	2015–16 Reported Landings
Fishstock						
TRU 1 Auckland (East)	1	5	3	1	1	< 1
TRU 2 Central (East)	2	22	20	1	1	4
TRU 3 South-east (Coast)	3	53	33	7	13	15
TRU 4 South-east (Chatham)	4	59	59	0	0	49
TRU 5 Southland	5	54	22	11	21	3
TRU 6 Sub-Antarctic	6	0	0	0	0	0
TRU 7 Challenger	7	11	6	2	3	4
TRU 8 Central (West)	8	1	1	0	0	<1
TRU 9 Auckland (West)	9	0	0	0	0	<1
TRU 10 Kermadec	10	0	0	0	0	0
Total		205	144	22	39	76

6. FOR FURTHER INFORMATION

- Bradford, E (1998) Harvest estimates from the 1996 national recreational fishing surveys. New Zealand Fisheries Assessment Research Document 1998/16. 27 p. (Unpublished document held in NIWA library, Wellington.)
- Chadderton, W L; Davidson, R J (2003) Baseline monitoring report on fish from the proposed Paterson Inlet (Waka a Te Wera) marine reserve, Stewart Island (Rakiura) 1994 to 1999. Prepared by Davidson Environmental Ltd for Department of Conservation, Southland. Research, survey and monitoring report 168. 47 p.
- Francis, M P (1996) Geographic distribution of marine reef fishes in the New Zealand region. *New Zealand Journal of Marine and Freshwater Research* 30: 35–55.
- Francis, M (2001) *Coastal fishes of New Zealand. An identification guide*. Third edition. Reed Publishing, Auckland. 103 p.
- Furlani, D; Last, P (1993) Trumpeter. In: Kailola *et al.* (Eds), Australian Fisheries Resources. Bureau of Resource Sciences, Canberra: 403.
- Furlani, D M; Ruwald, F P (1999) Egg and larval development of laboratory-reared striped trumpeter *Latris lineata* (Forster in Bloch and Schneider 1801) (Percoidae: Latridiidae) from Tasmanian waters. *New Zealand Journal of Marine and Freshwater Research* 33: 153–162.
- Gomon, M F; Glover, J C M; Kuitert, R H (eds) (1994) *The fishes of Australia's south coast*. State Print, Adelaide. 992 p.
- Graham, D H (1938) Fishes of Otago Harbour and adjacent seas, with additions to previous records. *Transactions and Proceedings of the Royal Society of New Zealand* 68(3): 399–419.
- Graham, D H (1939a) Food of the fishes of Otago Harbour and adjacent sea. *Transactions of the Royal Society of New Zealand* 68(4): 421–36.
- Graham, D H (1939b) Breeding habits of the fishes of Otago Harbour and adjacent seas. *Transactions and Proceedings of the Royal Society of New Zealand* 69(3): 361–372.
- Graham, D H (1956) *A Treasury of New Zealand Fishes*. Reed, Wellington. 424 p.
- Kingsford, M J; Schiel, D R; Battershill, C N (1989) Distribution and abundance of fish in a rocky reef environment at the subantarctic Auckland Islands, New Zealand. *Polar biology* 9: 179–186.
- Lyle, J; Murphy, R (2002) Long distance migration of striped trumpeter. *Fishing today* 14(6): 16.
- Morehead, D T (1998) Effect of capture, confinement and repeated sampling on plasma steroid concentrations and oocyte size in female striped trumpeter *Latris lineata* (Latridiidae). *Marine and freshwater research*, 49(5), 373–377.
- Morehead, D T; Pankhurst, N W; Ritar, A J (1998) Effect of treatment with LHRH analogue on oocyte maturation, plasma sex steroid levels and egg production in female striped trumpeter *Latris lineata* (Latridiidae). *Aquaculture* 169: 315–331.
- Morehead, D T; Ritar, A J; Pankhurst, N W (2000) Effect of consecutive 9- or 12-month photothermal cycles and handling on sex steroid levels, oocyte development, and reproductive performance in female striped trumpeter *Latris lineata* (Latridiidae), *Aquaculture:189 (3–4): 293–305*.
- Paul, L J (1999) A summary of biology and commercial landings, and a stock assessment of the trumpeter, *Latris lineata* (Bloch and Schneider 1801) (Latridiidae) in New Zealand waters. New Zealand Fisheries Assessment Research Document 1999/8. 20 p. (Unpublished document held by NIWA library, Wellington.)
- Ruwald, F P; Searle, L D; Oates, L A (1991) A preliminary investigation into the spawning and larval rearing of striped trumpeter, *Latris lineata*. Technical Report, Sea Fisheries Research Laboratory, Division of Sea Fisheries, Tasmania, No: 44. 17 p.
- Roberts, C D (2003) A new species of trumpeter (Teleostei; Percomorpha; Latridae) from the central South Pacific Ocean, with a taxonomic review of the striped trumpeter *Latris lineata*. *Journal of the Royal Society of New Zealand* 33. 731–754.
- Teirney, L D; Kilner, A R; Millar, R E; Bradford, E; Bell, J D (1997) Estimation of recreational catch from 1991/92 to 1993/94. New Zealand Fisheries Assessment Research Document 1997/15. 43 p. (Unpublished report held by NIWA library, Wellington.)
- Tracey, S R; Lyle, J M (2005) Age validation, growth modelling, and mortality estimates for striped trumpeter (*Latris lineata*) from southeastern Australia: making the most of patchy data. *Fishery Bulletin* 103: 169–182.
- Tracey, S R; Lyle, J M; Duhamel, G (2006) Application of elliptical Fourier analysis of otolith form as a tool for stock identification. *Fisheries Research* 77: 138–147.