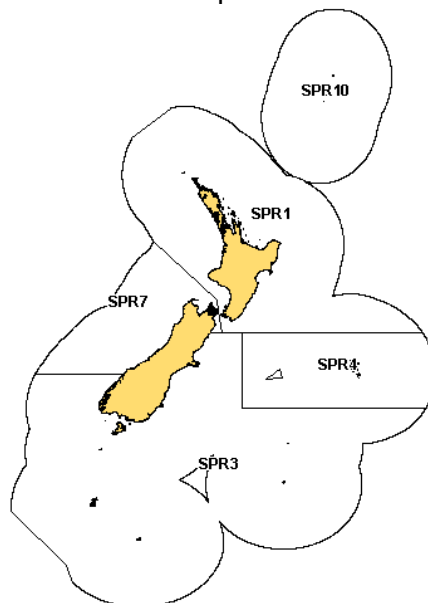


SPRAT (SPR)

(*Sprattus antipodum*, *S. muelleri*)
Kupae



1. FISHERY SUMMARY

There are two species of sprats in New Zealand, *Sprattus antipodum* (slender sprat) and *S. muelleri* (stout sprat). They can be distinguished by body shape, colour, and some morphological features, but are very similar and it is impractical to separate them in large catches.

Sprats were introduced into the QMS on 1 October 2002, with allowances, TACCs and TACs in Table 1 and have not been changed since.

Table 1: Recreational and customary non-commercial allowances, TACCs and TACs for sprats by Fishstock.

Fishstock	Recreational Allowance	Customary non-commercial Allowance	Other mortality	TACC	TAC
SPR 1	20	10	0	70	100
SPR 3	10	5	0	285	300
SPR 4	3	2	0	10	15
SPR 7	10	5	0	85	100
SPR 10	0	0	0	0	0
Total	43	22	0	450	515

1.1 Commercial fisheries

The sprat “fishery” is minor and intermittent. There is no information on catches or landings of sprats prior to 1990, although occasional catches were made during exploratory fishing projects on small pelagic species, mainly in the 1960s and 1970s. Sprats have undoubtedly been caught in most years, but were either not reported, reported as “bait” or included in the category “mixed species”. The name “sprat” is used in a general sense for several unrelated small fishes, and the juveniles of some larger species. This may have introduced errors into catch records. Reported catches and landings since 1990 have ranged from less than 1 t to 7 t (Table 2). The most consistent (but small) catches have been by bottom trawl. Reported catches by setnet and beach seine could be of true sprats, but may also be of yellow-eyed mullet (*Aldrichetta forsteri*), known colloquially as sprats. This is particularly likely in the upper North Island where the presence of sprats is considerably reduced or non-existent. Sprat was introduced into the QMS in October 2002.

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Table 2: Reported landings (t) of Sprat by fishstock and fishing year. No catches reported for SPR 10, which has a TACC of 0.

FMA	SPR 1		SPR3		SPR 4		SPR 7		Total	
	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC	Landings	TACC
1990–91†	3	-	<1	-	0	-	<1	-	3	
1991–92†	1	-	0	-	0	-	0	-	1	
1992–93†	<1	-	<1	-	0	-	0	-	<1	
1993–94†	<1	-	<1	-	0	-	<1	-	1	
1994–95†	<1	-	<1	-	0	-	<1	-	1	
1995–96†	<1	-	6	-	0	-	<1	-	7	
1996–97†	<1	-	1	-	0	-	<1	-	1	
1997–98†	<1	-	<1	-	0	-	<1	-	<1	
1998–99†	2	-	<1	-	0	-	<1	-	4	
1999–00†	<1	-	<1	-	0	-	1	-	2	
2000–01†	<1	-	<1	-	0	-	<1	-	<1	
2001–02	<1	-	<1	-	0	-	<1	-	<1	
2002–03	<1	70	<1	285	0	10	0	85	<1	450
2003–04	<1	70	3	285	0	10	0	85	3	450
2004–05	<1	70	0	285	0	10	0	85	<1	450
2005–06	<1	70	0	285	0	10	0	85	<1	450
2006–07	<1	70	<1	285	0	10	0	85	<1	450

† CELR + CLR data.

1.2 Recreational fisheries

There is no known recreational fishery, but small numbers are caught in small-mesh setnets and beach seines.

1.3 Customary non-commercial fisheries

Quantitative information on the current level of customary non-commercial take is not available.

1.4 Illegal catch

Estimates of illegal catch are not available, but this is probably insignificant or nil.

1.5 Other sources of mortality

Some accidental captures of sprats by vessels purse seining for other small pelagic species may be discarded if no market is available.

2. BIOLOGY

Sprats occur in coastal waters from the Bay of Islands to Stewart Island, and are present at the Auckland Islands. It is not known whether the two species have different distributions. Sprats appear to be most abundant off the southeastern coast of the South Island, where anchovies are absent. Their vertical distribution within the water column is not known.

Spawning occurs in areas of reduced salinity when water temperatures are coolest 9–10.5 °C; there are consequently regional differences in spawning season with spawning peaks occurring between June and November (Taylor & Marriott 2004). The eggs are pelagic.

No reliable ageing work has been undertaken. Sprats are assumed to feed on zooplankton, and are preyed upon by larger fishes, seabirds, and marine mammals.

There have been no biological studies that are directly relevant to the recognition of separate stocks, or to yield estimates. Consequently no estimates of biological parameters are available. There is an extensive international literature base on sprats, mainly *Sprattus sprattus*, but the relevance of this to the New Zealand species is unknown.

3. STOCKS AND AREAS

There is no biological information on which to make an assessment on whether separate stocks exist. However, there are two species, and their relative distributions are unknown. As presently understood, both species are more common around southern New Zealand. If their distributions do differ, and the biomass of each species fluctuates independently, there are unknown implications for localised stock depletion.

4. STOCK ASSESSMENT

There have been no previous stock assessments of sprats. There have been two very general estimates of biomass in the Canterbury Bight region: 50 000 t (Robertson 1978), and 60 000 t (Colman 1979), with a possible yield of 10 000 t. No information on biomass variability is available.

4.1 Estimates of fishery parameters and abundance

No fishery parameters are available.

4.2 Biomass estimates

No estimates of biomass (B_0 , B_{MSY} , or $B_{CURRENT}$) are available.

4.3 Estimation of Maximum Constant Yield (MCY)

Cannot be determined.

4.4 Estimation of Current Annual Yield (CAY)

Current biomass cannot be estimated, so CAY cannot be determined.

Yield estimates are summarised in Table 2.

4.5 Other yield estimates and stock assessment results

No information is available.

4.6 Other factors

Data from some ichthyoplankton surveys show one or both sprat species to be locally abundant. However, it is unlikely that the biomass is comparable to the very large stocks in the northern hemisphere where there are large sprat fisheries.

It is not known whether the biomass of sprats is stable or variable, but the latter is considered more likely.

In some localities around the South Island, sprats are a major food source for many fishes, seabirds, and marine mammals. Excessive localised harvesting may disrupt ecosystems.

5. STATUS OF THE STOCKS

No estimates of current biomass are available. At the present level of minimal catches, stocks are at or close to their natural level. This is nominally a virgin biomass, but not necessarily a stable one. It is probably not possible to estimate a long-term sustainable yield for sprats, or to determine if recent catch levels will allow the stock(s) to move towards a size that would support the MSY.

Yield estimates, reported landings, and TACCs for the 2006–07 fishing year are summarised in Table 2.

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Table 2: Summary of yield estimates (t), TACCs (t), and reported landings (t) for the most recent fishing year.

Fishstock		FMA	MCY	2006–07 Actual TACC	2006–07 Reported Landings
SPR 1	North Island	1, 2, 8, 9	–	70	< 1
SPR 3	South-east + Southland/Subantarctic	3, 5, 6	–	285	< 1
SPR 4	Chatham	4	–	10	0
SPR 7	Challenger	7	–	85	0
SPR 10	Kermadec	10	–	0	0
Total				450	< 1

6. FOR FURTHER INFORMATION

- Baker AN. 1973. Spawning and development of the New Zealand sprat, *Sprattus antipodum* (Hector). Zoology Publications from Victoria University of Wellington No. 62. 12 p.
- Colman JA. 1979. Spawning of the sprat, *Sprattus antipodum* (Hector), round the South Island of New Zealand. N.Z. Journal of Marine and Freshwater Research 13(2): 263–272.
- Fenaughty JM., Bagley NW. 1981. *W.J. Scott* New Zealand trawling survey: South Island east coast. Fisheries Technical Report No. 157. 224 p.
- Morgans JFC. 1966. Possibilities raised by a study of the size distribution in a sample of a shoal of sprats, *Sprattus antipodum* (Hector). Transactions of the Royal Society of N.Z., Zoology 8(13): 141–147.
- Robertson DA. 1978. Blue mackerel, pilchard, anchovy, sprat, saury, and lanternfish. In Habib, G., and Roberts, P.E. (Comps.) Proceedings of the Pelagic Fisheries Conference July 1977. p. 85–89.
- Smith PJ., Robertson DA. 1981. Genetic evidence for two species of sprat (*Sprattus*) in New Zealand waters. Marine Biology 62(4): 227–233.
- Taylor PR., Marriot PM. 2004. A summary of information on spawning of the small inshore pelagic species, anchovy (*Engraulis australis*), garfish (*Hyporhamphus ihi*), pilchard (*Sardinops sagax*), and sprat (*Sprattus antipodum* and *S. muelleri*), with a series of stock boundaries proposed for future testing. New Zealand Fisheries Assessment Report 2004/xx. 33 p.
- Whitehead PJP., Smith PJ., Robertson DA. 1985. The two species of sprat in New Zealand waters (*Sprattus antipodum* and *S. muelleri*). N.Z. Journal of Marine and Freshwater Research 19(2): 261–271.