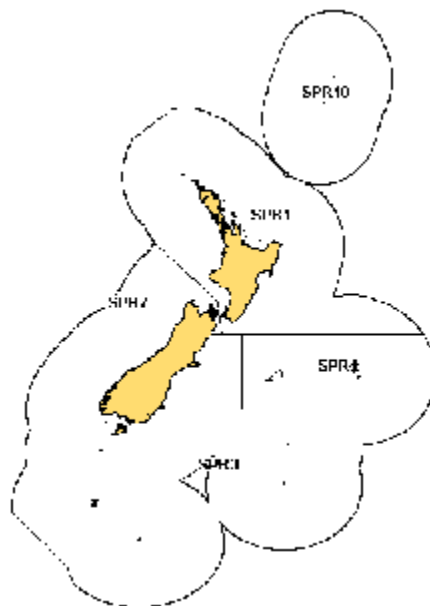


## SPRAT (SPR)

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



### 1. FISHERY SUMMARY

There are two species 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.

#### (a) 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 1). The most consistent (but small) catches have been by bottom trawl. Reported catches by set net 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 2003.

**Table 1: 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

† CELR + CLR data.

(b) **Recreational fisheries**

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

(c) **Maori customary fisheries**

Quantitative information on the current level of Maori customary take is not available.

(d) **Illegal catch**

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

(e) **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 Is, and are present at the Auckland Is. 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 the anchovy is 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 and 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: 50000 t (Robertson 1978), and 60000 t (Colman 1979), with a possible yield of 10000 t. No information on biomass variability is available.

(a) **Estimates of fishery parameters and abundance**

No fishery parameters are available.

**(b) Biomass estimates**

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

**(c) Estimation of Maximum Constant Yield (MCY)**

Cannot be determined.

**(d) Estimation of Current Annual Yield (CAY)**

Current biomass cannot be estimated, so CAY cannot be determined.  
Yield estimates are summarised in Table 2.

**(e) Other yield estimates and stock assessment results**

No information is available.

**(f) 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 an MSY.

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

Fishstock	FMA	MCY	2004/05 Actual TACC	2004/05 Reported Landings
SPR 1 North Island	1, 2, 8, 9	–	70	<1
SPR 3 South-east + Southland/Subantarctic	3, 5, 6	–	285	0
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, A.N. (1973). Spawning and development of the New Zealand sprat, *Sprattus antipodum* (Hector). *Zoology Publications from Victoria University of Wellington No. 62*. 12 p.
- Colman, J.A. (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, J.M.; Bagley, N.W. (1981). *W.J. Scott* New Zealand trawling survey: South Island east coast. *Fisheries Technical Report No. 157*. 224 p.
- Morgans, J.F.C. (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, D.A. (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, P.J.; Robertson, D.A. (1981). Genetic evidence for two species of sprat (*Sprattus*) in New Zealand waters. *Marine Biology 62*(4): 227–233.
- Taylor, P.R., Marriot, P.M. (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, P.J.P.; Smith, P.J.; Robertson, D.A. (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.