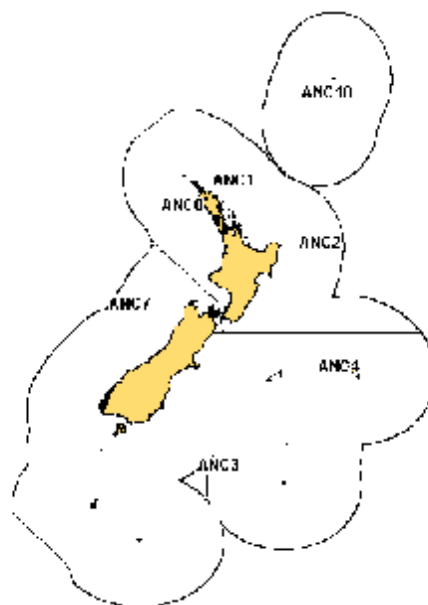


ANCHOVY (ANC)

(*Engraulis australis*)



1. FISHERY SUMMARY

Anchovy were introduced into the QMS on 1 October 2002, with allowances, TACCs and TACs as follows.

| <u>Fishstock</u> | <u>Recreational Allowance</u> | <u>Maori customary Allowance</u> | <u>TACC</u> | <u>TAC</u> |
|------------------|-------------------------------|----------------------------------|-------------|------------|
| ANC 1 | 10 | 5 | 200 | 215 |
| ANC 2 | 10 | 5 | 100 | 115 |
| ANC 3 | 2 | 1 | 50 | 53 |
| ANC 4 | 3 | 2 | 10 | 15 |
| ANC 7 | 10 | 5 | 100 | 115 |
| ANC 8 | 10 | 5 | 100 | 115 |
| ANC 10 | 0 | 0 | 0 | 0 |

(a) Commercial fisheries

There is no information on catches or landings of anchovy prior to 1990, although sporadic catches were made in some years during exploratory fishing projects for small pelagic species, in the 1960s and 1970s. It is thought that anchovy were caught in most years, but were either not reported, reported as “bait” or included in the category “mixed species”. In the last thirteen years, (fishing years 1992–93 to 2004–2005) reported landings have ranged from less than 1 t to 21 t, with discrepancies between different data sources (Table 1). Under reporting is likely to have occurred due to misidentification of anchovy in pilchard and other mixed catches and the low value of the species.

Historically most landings have been reported from northeastern New Zealand, ANC 1, with occasional small landings in ANC 3 and 7. Recently the largest landings have been reported from ANC 8.

The most consistent (though small) catches have been taken by purse seine. Very few catches have been reported as targeted; most anchovy appear to have been taken as non-target catch in the pilchard fishery. Up to four vessels reported a catch or landing in any one year.

Table 1: Reported catches or landings (t) of anchovy by fishstock from 1990–91 to 2004–05 (prior to 2002-03 reported by FMA).

| Fishstock FMA | ANC 1 | ANC 2 | ANC 3 3,5&6 | ANC 7 | ANC 8 8&9 | ANC 10 | Total |
|------------------|-------|-------|----------------|-------|--------------|--------|-------|
| 1990–91† | < 1 | 0 | 0 | < 1 | 0 | 0 | < 1 |
| 1991–92† | 1 | 0 | 1 | < 1 | 0 | 0 | 2 |
| 1992–93† | 21 | 0 | 0 | 0 | 0 | 0 | 21 |
| 1993–94† | < 1 | 0 | 0 | 0 | 0 | 0 | < 1 |
| 1994–95† | < 1 | 0 | 0 | < 1 | 0 | 0 | < 1 |
| 1995–96† | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1996–97† | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1997–98† | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1998–99† | 4 | 0 | 2 | 0 | 0 | 0 | 6 |
| 1999–00† | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| 2000–01† | 10 | 0 | 0 | 0 | 0 | 0 | 10 |
| 2001–02* | 7 | 0 | 0 | 0 | 0 | 0 | 7 |
| 2002–03* | 8.3 | 0 | 0 | 0 | 0 | 0 | 8.3 |
| 2003-04* | 4.3 | 0 | 0 | 0 | 10.2 | 0 | 14.5 |
| 2004-05* | < 1 | 0 | 0 | 0 | 11.6 | 0 | 11.6 |

† CELR + CLR data.

* QMS data.

(b) Recreational fisheries

There is no known recreational fishery, but small numbers are caught in small-mesh setnets and beach seines. An estimate of the recreational harvest is not available.

(c) Maori customary fisheries

An estimate of the current customary catch is not available.

(d) Illegal catch

There is no known illegal catch of anchovies.

(e) Other sources of mortality

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

2. BIOLOGY

The single New Zealand anchovy species, *Engraulis australis*, also occurs around much of the Australian coast. In New Zealand, it occurs around most of the coastline, but is absent between Banks Peninsula and Foveaux Strait. It is found mostly inshore, particularly in gulfs, bays, harbours, and some large estuaries. In Australia it tends to move seaward in winter, returning closer inshore during spring, and the same pattern is likely to occur in New Zealand. Its vertical distribution in the water column is not known, but it seems likely that it occurs at all depths between the surface and the coastal seafloor.

Anchovy are planktonic feeders, mainly on copepods. They form compact schools, particularly during the warmer months, and larger fishes, seabirds, and marine mammals prey heavily upon these schools. Although they generally form single-species schools, anchovies are closely associated with other small pelagic fishes, particularly pilchard and sprats.

The reproductive cycle is not well known. The main spawning season appears to be spring-summer, but in northern regions spawning may occur through much of the year. Spawning grounds extend from shallow water out to mid-shelf. The eggs are pelagic.

No reliable ageing work has been undertaken in New Zealand, but some information is available for this species in Australia where it reaches 16 cm, at age 6, and matures at age 1. In northeastern New Zealand, the main size range of anchovy is 8–14 cm, which are likely to be 2–5 year old fish.

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 extensive international literature on similar species of anchovy, but the relevance of this to the New Zealand species is unknown.

3. STOCKS AND AREAS

No biological information is available on which to make an assessment on whether separate anchovy stocks exist in New Zealand. If spawning is as widespread as the fragmentary accounts suggest, and if there is limited migration between regions, there is potential for localised depletion.

Anchovy and pilchard are often caught together. Anchovy fishstock boundaries are fully aligned with those for pilchard.

4. STOCK ASSESSMENT

There have been no stock assessments of New Zealand anchovy.

(a) Estimates of fishery parameters and abundance

No fishery parameters are available.

(b) Biomass estimates

No estimates of biomass are available.

(c) Estimation of Maximum Constant Yield (MCY)

MCY cannot be determined.

(d) Estimation of Current Annual Yield (CAY)

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

(e) Other yield estimates and stock assessment results

No information is available.

(f) Other factors

Ichthyoplankton surveys show anchovy to be locally abundant. However, it is unlikely that the biomass is comparable to the very large stocks of anchovy in some oceans where strong upwelling promotes high productivity. It is more likely that New Zealand anchovy comprise abundant but localised coastal populations.

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

In some localities anchovy are a major food source for many fish, seabirds, and marine mammals (e.g. a major component of fur seal diet in May-August at Cape Foulwind). 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 not currently possible to estimate a long-term sustainable yield for anchovy, or to determine if recent catch levels will allow the stock(s) to move towards a size that would support the maximum sustainable yield.

Summary of TACCs (t) and reported landings (t) of anchovy for the most recent fishing year.

| Fishstock | | FMA | 2004-05 | 2004-05 |
|-----------|--|----------|---------|----------|
| | | | Actual | Reported |
| | | | TACC | landings |
| ANC 1 | Auckland (East) | 1 | 200 | < 1 |
| ANC 2 | Central (East) | 2 | 100 | 0 |
| ANC 3 | South-east (Coast), Southland & Sub-antarctic | 3, 5 & 6 | 50 | 0 |
| ANC 4 | South-east (Chatham) | 4 | 10 | 0 |
| ANC 7 | Challenger | 7 | 100 | 0 |
| ANC 8 | Central (West), Auckland (West) | 8 & 9 | 100 | 11.6 |
| ANC 10 | Kermadec | 10 | 0 | 0 |
| Total | | | 560 | 11.6 |

6. FOR FURTHER INFORMATION

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