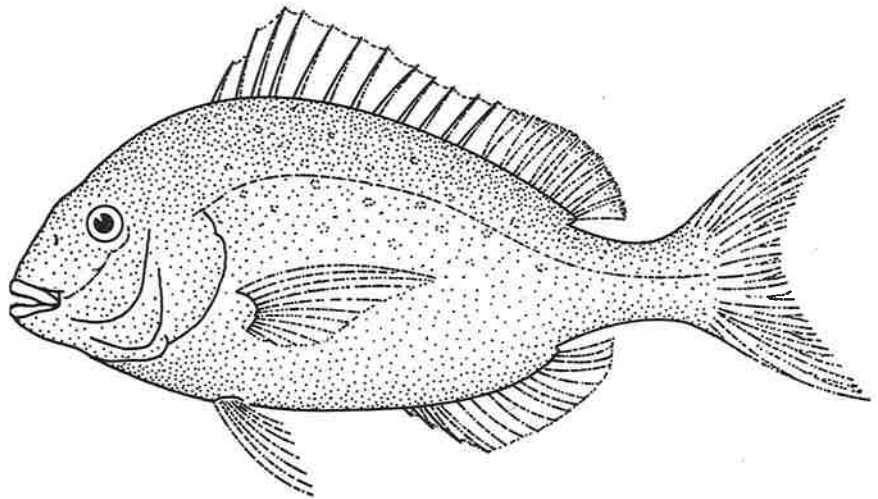


# Snapper *Chrysophrys auratus* Family Sparidae: Sea Breams

The New Zealand snapper is a relatively common inshore species, particularly in northern waters where it is a dominant member of the coastal fish community.

It forms a significant proportion of New Zealand's commercial fish catch, being the principal species landed into many northern ports, and contributing substantially to the export trade. It is also popular with sports fishermen, being easily taken by a variety of methods. A fine table fish, it is suitable for cooking and presentation in a variety of ways.



## Identification

Sea breams  
Family Sparidae

The many species of sea breams (also known as porgies) are widely distributed in tropical and warm temperate coastal regions, particularly the Indo-Pacific.

They are typical perch-like fishes with large scales and well-developed fins, the anal having 3 and the dorsal 10-13 spines. A single lateral line is present. The teeth at the sides of the jaws are low and rounded, acting as crushers. The largest sea breams grow to about 1.2 m in length.

Snapper is the only species of sea bream found in the New Zealand region.

*Chrysophrys auratus*  
(Forster, 1801)  
Snapper

### Relationships

*Chrysophrys auratus* is very similar to the Australian species *C. unicolor* Quoy and Gaimard, 1824 and *C. guttulatus* Valenciennes, 1830. The relationships of these three forms to each other and to the Japanese red sea bream, *Pagrus major* (Temminck and Schlegel, 1842) are uncertain; the last named is probably a distinct species but the others could be races or subspecies of a single

species. The generic name is given as *Pagrus* by some authors, but the validity of this name has yet to be established.

A North Atlantic-Mediterranean species, the daurade or gilt-head, is variously listed as *Sparus auratus*, *Pagrus auratus* and *Chrysophrys aurata* but is clearly different to the New Zealand species.

### Distinctive characters

The snapper is a typical sea bream, with a deep body, moderately compressed laterally, and an arched dorsal profile and a large, bony head. It has strong jaws with several rows of prominent teeth, conical in front and bluntly rounded at the sides of the jaws.

The dorsal fin is continuous and the pectoral fins are relatively large, the uppermost rays being the longest. Fin ray counts; dorsal XII, 10; anal III, 8.

Large snapper are relatively elongate with a fairly straight head profile and often an enlarged bony crest to the skull.

### Colour

Back and sides are generally reddish pink with a fine golden sheen, shading to a silvery-white on the belly. There are several rows of blue-green spots on the back and sides, most conspicuous

in live fish, and a similar colouring behind each eye. The hind margin of the tail is black.

Small snapper have five or six dark vertical bands spaced along the body, and spawning males develop black patches under the chin.

The basic colour varies with habitat: fish from soft muddy bottoms tend to be a pale silvery pink, whereas those from rocky areas may be a dark reddish bronze.

### Other names

In some areas small snapper are known as *bream* or *brim*, whereas the term *school snapper* is often applied to brightly coloured, medium-sized fish caught during the spring spawning season.

Other names sometimes used include the Maori *tamure*, *New Zealand snapper*, *red snapper* and *golden snapper*.

The origin of the spelling *schnapper*, widely used in the retail fish trade, is unknown. The name *snapper* is usually applied to the family Lutjanidae, and the New Zealand usage results from an early confusion with this group.

### Recognition

Being the only New Zealand sparid, the snapper is a clearly recognisable species. The red or golden snapper *Trachichthodes affinis* (Family Trachichthyidae) may be confused by name but is an obviously different fish.

## Distribution

Snapper are most abundant along the west and north-east coasts of the North Island where there are several spawning grounds.

The greatest concentration of adults is found in the Hauraki Gulf, which also has the most important known spawning area and the largest nursery ground.

Juveniles are most common in 40 m depth in the inner Gulf, but do extend out to 60 m. They are also abundant in shallow bays and estuaries along the Bay of Plenty and east Northland coastline and, on the west coast, south to New Plymouth. Juveniles are found less regularly and in

smaller numbers, in Hawkes Bay, the South Taranaki Bight and Tasman Bay.

Adult snapper occupy a wider depth range, extending out to about 200 m although they are uncommon beyond 100 m and rare beyond 150 m. They also decrease in numbers southwards; they occur sparsely down to Jackson Bay in South Westland and are uncommon along the east coast of the South Island and the Wairarapa coast.

## Two stocks

Although snapper are distributed almost continuously around New Zealand's northern coastline, there is

evidence of at least two stocks, separated by North Cape. These are similar in shape and colouring, but differ in body chemistry, indicating little interbreeding between the two groups. They also differ in growth rate, west coast snapper growing faster and larger.

## Size and age

Because of regional differences in growth rate and population structure, it is not possible to list a simple size range and an average size. In general, snapper on the west coast of New Zealand, and particularly in Tasman Bay, grow faster and hence reach a larger size. On the east coast the slowest growing snapper, and hence the smallest adults, occur in Hauraki Gulf.

Growth rates can also vary within a locality like the Hauraki Gulf, fish from shallow sheltered areas growing faster than those in open water. Long warm summers can produce better than average growth. Stunted adult growth has been observed, probably caused by overcrowding and/or poor food supplies.

Weight increases rapidly with length as follows:

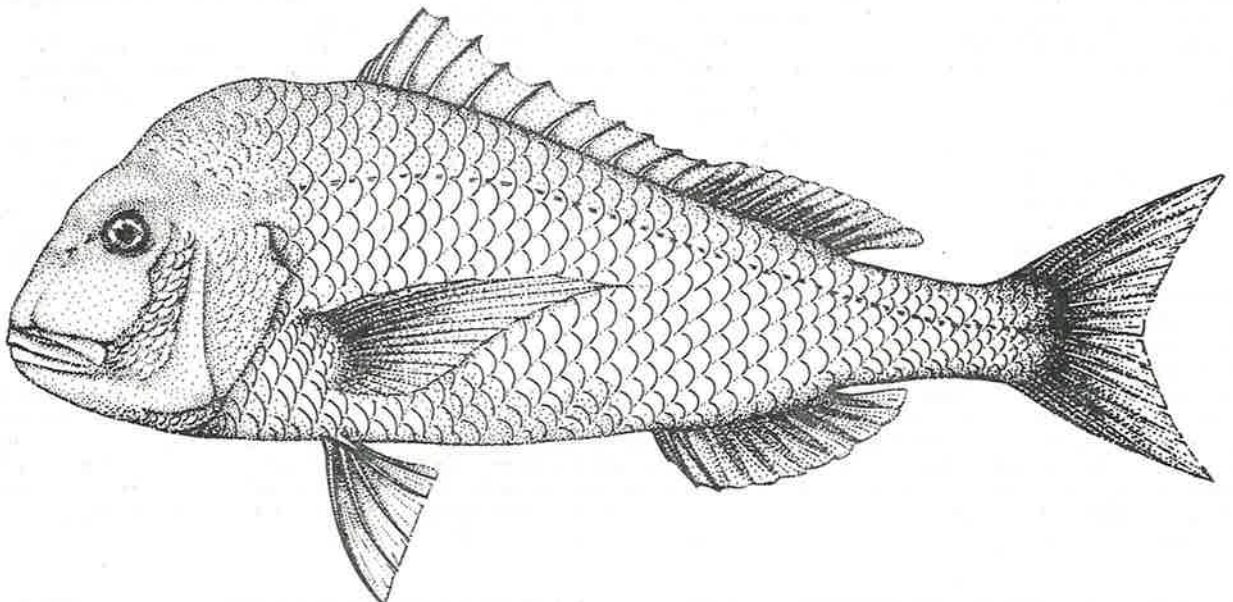
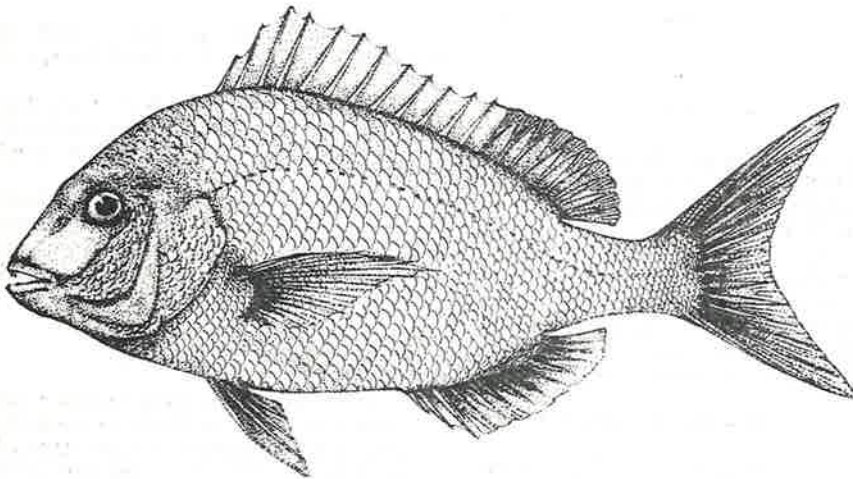
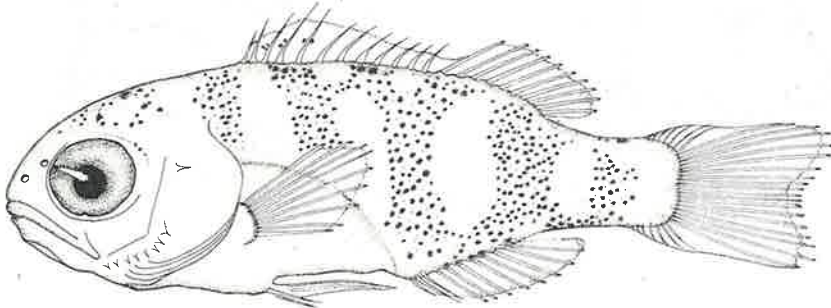
length (cm)	weight (kg)
10	0.03
20	0.20
30	0.60
40	1.33
50	2.49
60	4.13
70	6.36
80	9.23

The largest snapper reliably recorded in New Zealand have been about 1 m long and about 16 kg (36 lb) in weight; such fish would be 50-60 years old.

## Habitat

Snapper are coastal fish living on or near the bottom in shallow water.

Changing body proportions with size. Top: a post-larval planktonic snapper, about 1.3 cm long. Centre: a small, deep-bodied adult, about 30 cm long. Bottom: a large adult about 75 cm long, showing the heavy head and elongated body typical of old snapper.



Although most common in depths of 20-100 m, they frequently venture into water little deeper than themselves. Known also to inhabit depths of about 200 m, they sometimes form schools in midwater, chiefly in spring and summer. Sometimes, as in inner Tasman Bay, such schools may extend to the surface.

They occupy a variety of habitats ranging from sandy or muddy sea floor to coastal reefs and weed beds and to shallow harbours and muddy creeks.

In northern coastal waters they are a dominant member of the fish community, being associated with gumard, trevally and jack mackerel in shallow waters, and with tarakihi when further out.

#### Food

Snapper feed on a wide range of marine animals.

Small fish feed mainly on the smaller varieties of crustaceans, worms, gastropod and bivalve shellfish, brittlestars, and some small fish. Larger snapper seem to take whatever is most plentiful locally or seasonally, from soft planktonic salps to hard-shelled molluscs.

#### Early life

Snapper spawn during spring and early summer (October-January), usually in moderately sheltered water in the centre of gulfs, or offshore from bays or estuaries. However, spawning can occur along the open coast.

The 1-mm eggs float at or near the surface for 1 or 2 days before hatching.

Larvae (10-20 mm long) are not often found in the plankton, and are thought to descend to the bottom early and move inshore. At 25 mm, a month or so old, they are exact miniatures of adult fish.

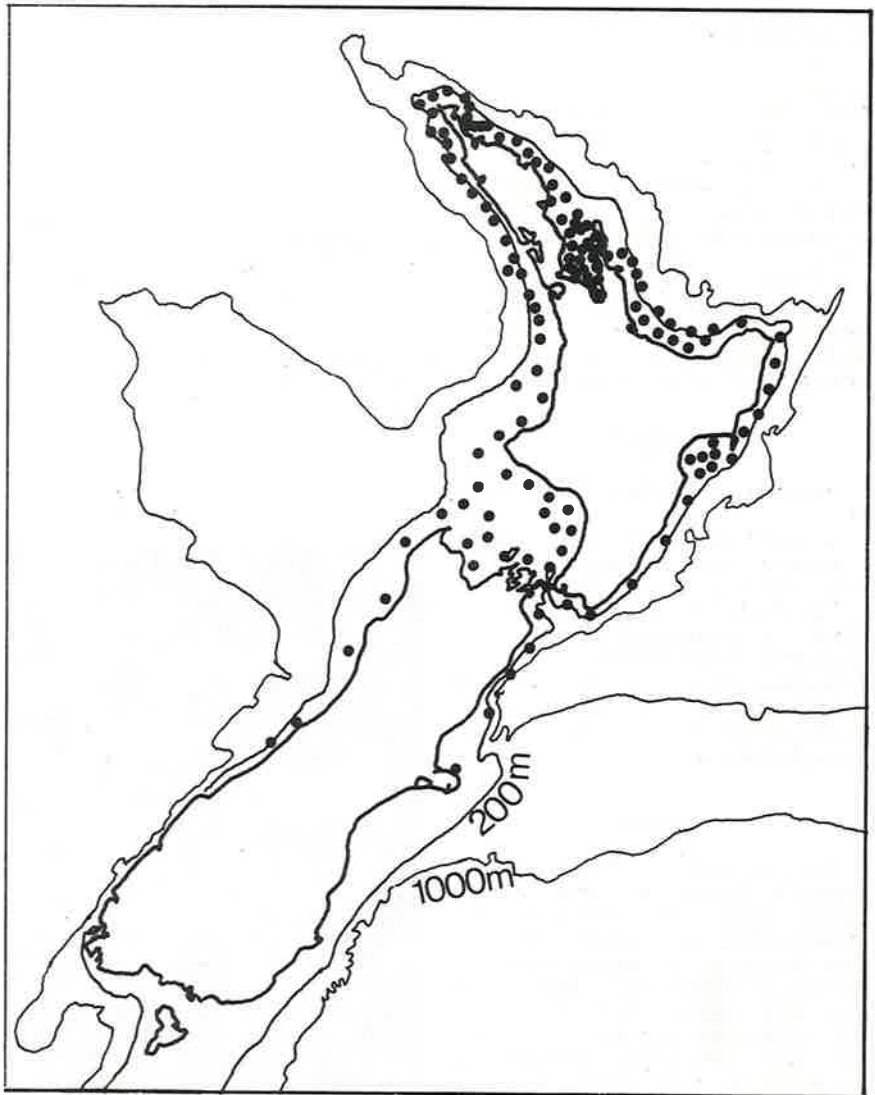
Together with juveniles of other species — kahawai, trevally, parore, mullets, flatfish, etc. — they inhabit channels between mudbanks and sandbars in shallow tidal harbours and bays. They concentrate where food and shelter are offering, e.g., near a seaweed zone or reef, and in deeper (10-20 m) sheltered water.

#### Migration patterns

Winter cooling drives most of these small fish out into more open water, but they return inshore the next spring.

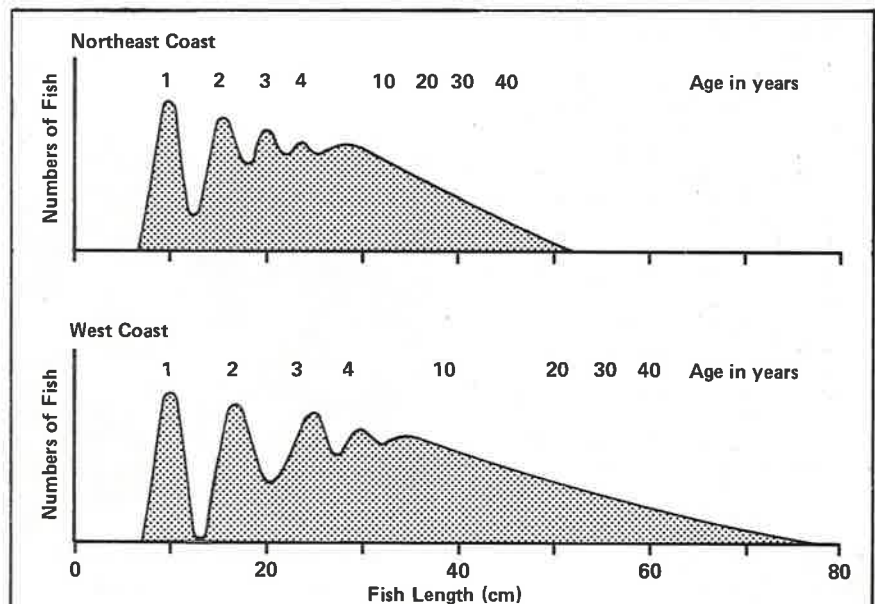
These seasonal inshore-offshore movements become stronger in successive years, but are modified by a spawning migration when the snapper mature in their third or fourth year. Large groups of adult "school snapper" assemble near the centre of gulfs and bays before and during spawning. Snapper from the open coastal grounds move inshore to the spawning area, while snapper which have wintered nearer the shoreline move offshore.

After spawning, snapper disperse, first to their inshore feeding grounds



Distribution of snapper. The relative spacing of dots shows abundance.

Size and age distribution of snapper, north-east and west coasts showing the larger average and maximum size reached by west coast fish. From one to four years snapper can often be aged by size alone; subsequently age groups overlap and each fish must be aged by scale or otolith.



**Right: Depth range of snapper, and summary of seasonal movements.**

in summer and autumn, and later to their offshore winter grounds. Large snapper may remain near the coast during winter.

As mature adults, some snapper gradually move away from the principal northern spawning areas, and range permanently southwards into cooler water. Other snapper remain locally.

Within these broad migration patterns, snapper make small movements, depending on locality, tides, weather, and feeding behaviour.

**Year-classes**

Breeding success varies from year to year.

In warm years many larvae survive to produce strong year-classes, whereas cold years produce weak year-classes.

Variations in year-class strength affect the commercial fishery several years later. Some prediction of trends in landings can be made by measuring annual variations in juvenile abundance, or by monitoring temperature through climatic records.

**Research**

The general outlines of the snapper's biology are now known. Future work will concentrate on understanding and predicting year-class strengths, on tagging adults to understand migrations, measure stock sizes and estimate mortality rates, and on determining just how resilient this long-lived, slow-growing species is to high fishing pressure.

In Japan the similar red sea bream is successfully "farmed", and research will one day be required to determine whether the NZ snapper can be raised in captivity with equal success.

**Further reading**

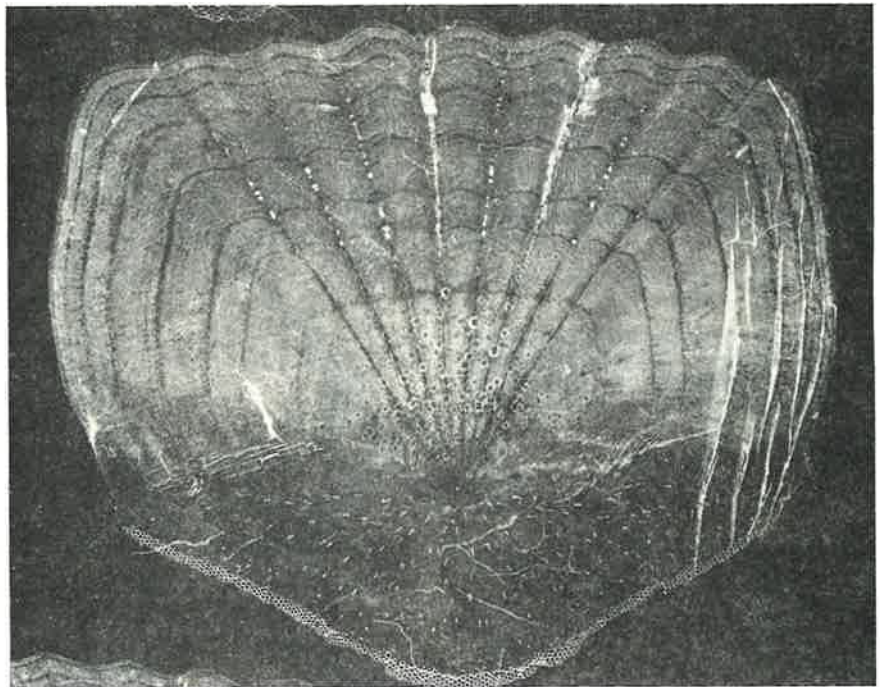
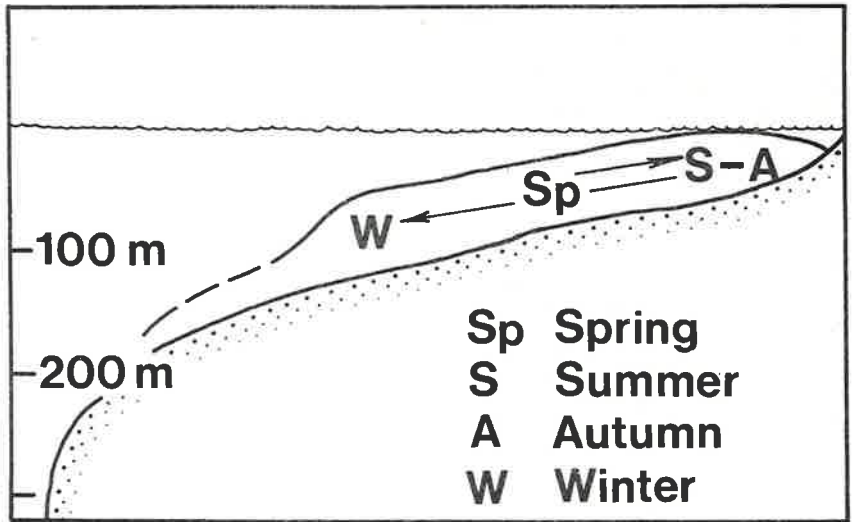
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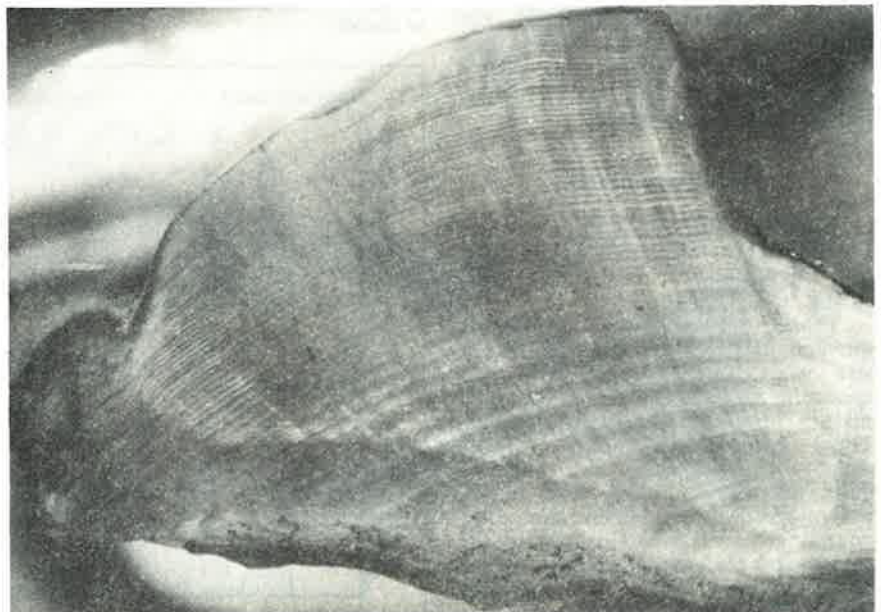
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Snapper scale from a 46 cm Tasman Bay snapper, showing nine annual growth rings. In older fish, rings at the scale edge become too closely crowded for accurate counting.



Burned cross-section of an otolith from a 58 cm Kapiti Island snapper, showing about 50 annual growth rings.



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