Gurnards Family Triglidae

The gurnards or searobins are mostly shallow-water, bottom-dwelling fishes widely distributed in warm seas throughout the world, with a few species inhabiting deep water. Many are brightly coloured, particularly the more tropical species. Many species produce underwater sounds and grunts when captured.

Five species are known from New Zealand waters. One is abundant and of comercial interest, and two others are relatively common but of no commercial value. A further (Australian) species is known from one specimen only, while a few speciments of a fifth, as yet unidentified, species have recently been caught in deep water.

Distinctive characters

Large head completely encased in a bony armour, usually with spines projecting forwards and backwards. Tapering body with scales, and sometimes additional bony plates. Two dorsal fins. Pectoral fins usually large, with the three lowest rays detached and modified into feelers.

Key to New Zealand gurnards

1 Lateral-line scales very large and noticeable, occupying about a quarter of depth of the body at the second dorsal orign . . . . . *Lepidotrigla brachyoptera,* Scaly gurnard

Lateral-line scales small and barely noticeable, occupying much less than a quarter of the body depth at the second dorsal origin. 2

2 The bony scutes on each side of the dorsal fin bases approximately constant in size along the length of the fins . . . . . *Chelidonichthys kumu,* Red gurnard

The bony scutes on each side of the dorsal fin bases decreasing rapidly in size from anterior to posterior 3

3 Body and most fins with a number of circular or oval dark spots . . . . . *Pterygotrigla picta,* Spotted gurnard

Body and fins without any circular or oval dark spots 4

4 Upper body reddish, without spots of any colour . . . . . *Peterygotrigla polyommata,* Sharp-beaked gurnard

Upper body reddish, with numerous bright yellow spots . . . . . *Pterygotrigla* sp.

Chelidonichthys kumu (Lesson and Garnot, 1826) Red Gurnard

Other names

NZ Latchet, kumukumu.

Distinctive characters

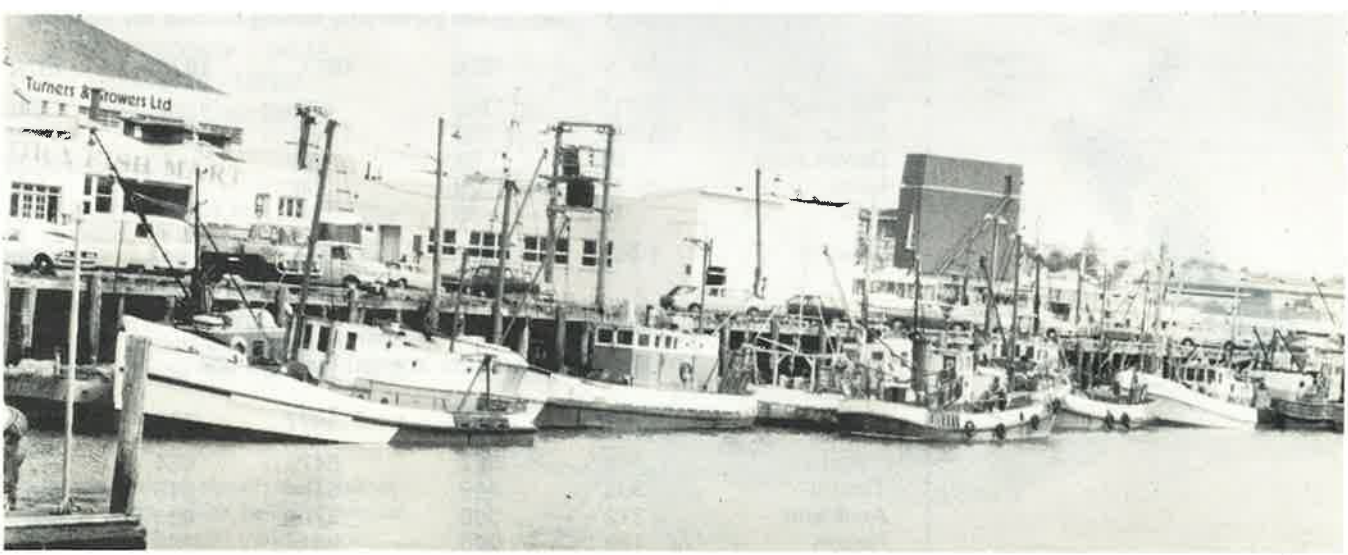
Body slender, tapering, round in section, with small scales. Head with bony armour, some low ridges but only small spines. Pectoral fin large, reaching beyond vent when folded back, with lower three rays detached and thickened as feelers. Fin ray counts: dorsal IX, 16; anal 15.

Colour

Generally reddish above, brighter in large fish, browner to olive in small fish; white below. Pectoral fin dark bluish green with pale blue margin, one large dark spot and several small white spots.

Relationships

This species also occurs off southern Australia and South Africa. There is a very similar, possibly identical, species off Japan.



The trawler fleet at Auckland, where considerable quantities of red gurnard are landed.

Distribution

Red gurnard are coastal fish living on the bottom in relatively shallow water. They are most abundant in 20–60 m, but are present in all depths down to 180 m. They occur right around New Zealand but are apparently absent on the narrow Fiordland shelf.

They inhabit virtually all bottom types (e.g. mud, sand and sandy shell) except for rocky areas. On many grounds they occur in association with flounders and soles.

Size and age

Adult red gurnard average 25–45 cm in length, reaching 60 cm. Studies have revealed considerable differences in growth rate between the sexes. The expected length of a two-year-old female is about 24 cm while that of a two-year-old male is about 22 cm.

As age increases, the difference between the size of each sex also increases, so that by age four females are about 33 cm and males about 26 cm. Growth rates are also known to differ with latitude, fish from southern waters being larger for their age than fish from northern waters. Growth is rapid to about age four or five, then slows markedly. Few red gurnard live beyond 10 years.

Spawning

The spawning season extends through spring and summer, spawning reaching a peak during early summer in the north and being progressively later further south.

In northern New Zealand waters it is known that there is spawning migration, involving the movement of sexually mature fish from sheltered inshore grounds to an offshore spawning ground. There is a subsequent movement of spent fish in the opposite direction.

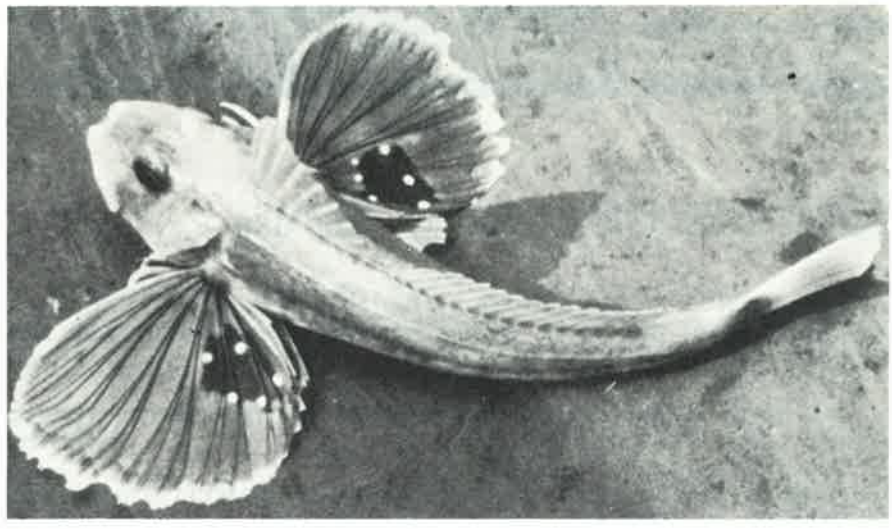
This migration is principally undertaken by females, the sexually mature males being more resident on the offshore spawning ground.

For this reason, female red gurnard are more likely to be taken in the shallower waters, and males in the deeper water, of the species range. This separation of sexes has been observed at many localities around New Zealand.

The offshore spawning grounds are associated with inshore nursery grounds through tide and current systems.

Red gurnard eggs are planktonic, spherical, 1.3 1.5 mm in diameter, with one 0.275 mm oil droplet. The advanced embryo and yolk is spotted with regularly spaced melanophores.

Some red gurnard become sexually mature as two-year-olds, and most are sexually mature as three-year-olds; all are mature by age four.



Red gurnard

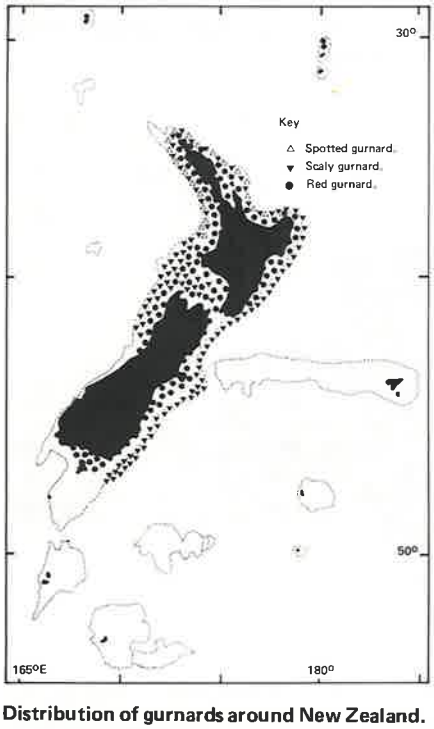
Behaviour

Small red gurnard in aquaria have been observed to bury themselves in the sand with only the top of the head, including the nostrils, eyes, and soft gill flaps exposed. Scuba divers have reported that adult fish do the same.

Although generally moving only slowly about the bottom on the modified pectoral rays, by flexing their powerful bodies red gurnard are capable of very rapid movement over short distances to take prey. The pectoral rays or feelers are also used to examine food material and other objects.

Food

Crustaceans (especially small crabs and shrimps) are the principal food of red gurnard, comprising about three-quarters of the diet. Polychaete worms and small fish make up a further 10%, with the remainder in miscellaneous food items.



Distribution of gurnards around New Zealand.

The New Zealand catch (tonnes) of red gurnard by fishing method for 1975-79

	1975	1976	1977	1978	1979
Pair trawl	317	762	951	1 205	1 548
Single trawl	1 539	1 986	2 180	2 531	1 766
Danish seine	67	67	86	71	23
Lines	17	28	36	88	86
Nets	18	36	54	48	65
Total (t)	**1 958**	**2 879**	**3 307**	**3 943**	**3 488**

The six major ports for red gurnard landings, and the landing weights (tonnes) for 1975–79

	1975	1976	1977	1978	1979
Manukau	345	562	547	654	917
Timaru	305	549	512	515	356
Auckland	212	305	370	436	486
Nelson	149	246	231	189	115
Greymouth	167	227	210	143	124

Note: These figures are provisional only.

Fishery for red gurnard

Red gurnard is a major commercial species, with landings of some three to four thousand tonnes in recent years. It has declined from fourth in importance in 1973 (behind snapper, trevally, and tarakihi) to seventh in 1979 (behind snapper, barracouta, trevally, red cod, tarakihi, and mackerels) only as the landings of hitherto "less-preferred" species increased.

They are caught commercially throughout their range, principally by bottom trawl. Single trawlers have traditionally taken the largest quantities, but the catch by pair trawlers has recently increased.

Red gurnard are usually associated with snapper and trevally in catches from northern waters, and with flatfishes, red cod, and spiny dogfish in southern catches. However, in some shallow localities they may form the bulk of the catch.

The only significant catches taken by foreign vessels in New Zealand waters have been from Japanese trawlers, reporting 146, 147, and 268 tonnes in 1975–77.

Product and markets

The flesh is firm, medium to low in fat content, and with good flavour and excellent eating quality. Red gurnard are sold as gutted whole fresh fish or fillets within New Zealand. Moderate quantities are exported chilled or frozen, mainly to Australia.

Research

There is no recent or current detailed research on New Zealand gurnards, but data on their distribution, abundance, and sometimes their size range, are collected during research vessel trawling surveys of coastal fishing grounds.

Pterygotrigla picta
(Gunther, 1880)
Spotted Gurnard

Distinctive characters

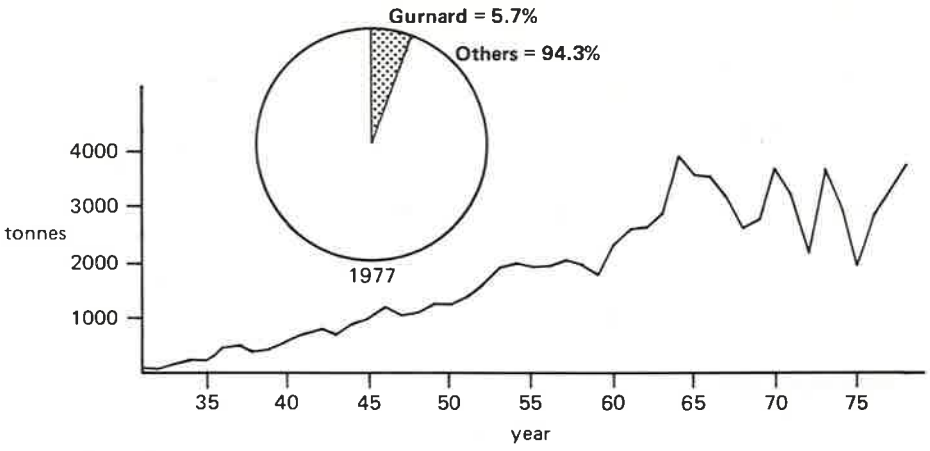
Body tapering but less slender than red gurnard, round in section with very small scales. Head with bony armour, including several prominent spines. Pectoral fin large, with lower three rays detached as feelers. Fin ray counts: dorsal VII–VIII, 12; anal I, 11.

Colour

Pink and yellow above, with numerous black spots; white below. Pectoral fin brown with lines of yellow spots.

Size

Average 20–30 cm, reaching 40 cm.



NZ landings of red gurnard, and proportion of NZ wetfish catch in 1977

Relationships

This species also occurs off southern Australia.

General

Spotted gurnard are most common in waters greater than 80 m, and are seldom found in less than 60 m. Their deeper limits are not known, but they appear to inhabit the outer continental shelf and shelf edge. They occur northwards from New Plymouth on the west coast and the Bay of Plenty on the east.

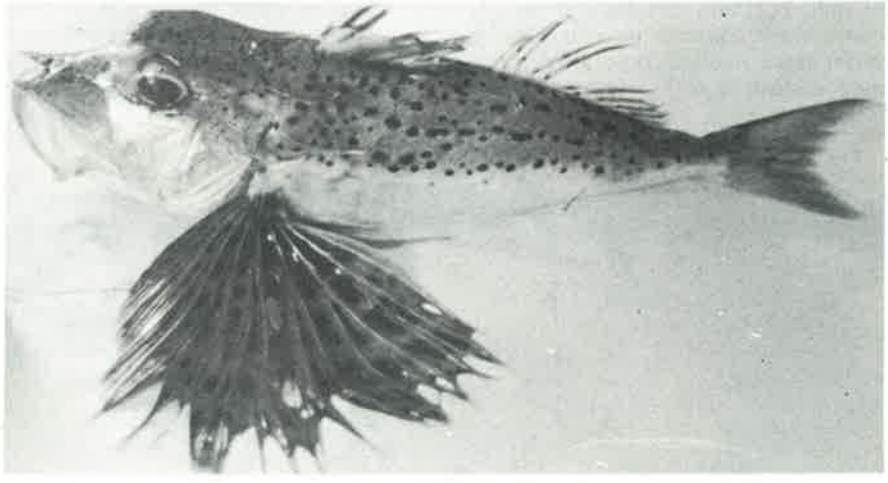
Virtually nothing is known of the biology of this species.

There is no commercial fishery for the spotted gurnard. It does occur as a minor by-catch in the northern trawl fishery for tarakihi and snapper, but is not marketed.

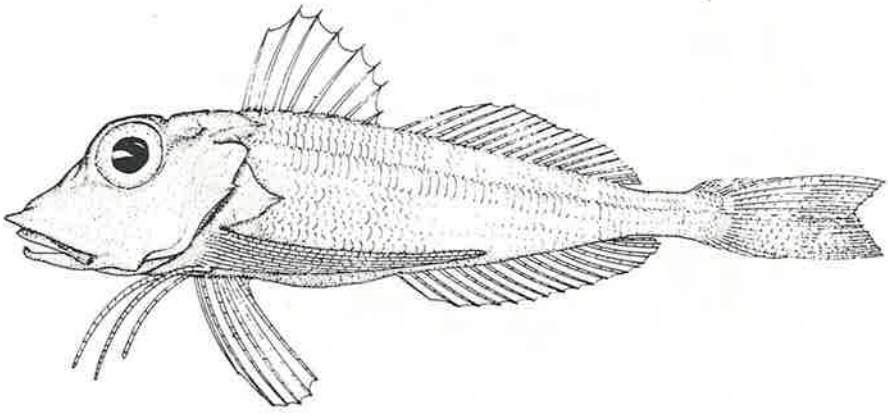
Lepidotrigla brachyoptera
(Hutton 1872)
Scaly Gurnard

Distinctive characters

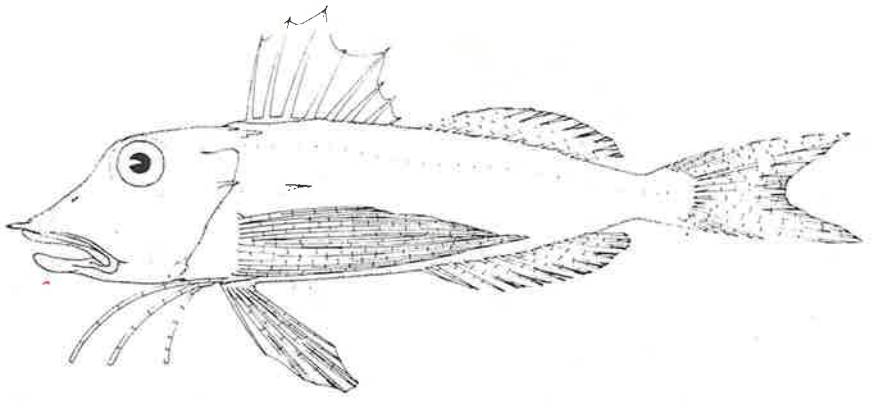
Body tapering, roundish in section but almost square anteriorly; scales conspicuous, those on lateral line near midbody equalling a quarter the body depth. Head armoured, with some short spines. Pectoral fin only moderate



Spotted gurnard



Scaly gurnard



Sharp-beaked gurnard

in size. Fin ray counts: dorsal VIII, 16; anal 16.

Colour

Reddish above, white below. Pectoral fin grey.

Size

Average 10–15 cm.

Relationships

This species is restricted to New Zealand, but there are very similar species elsewhere.

General

Scaly gurnard are widely distributed around New Zealand, generally deeper than 80 m. They occur on clear sand or mud bottoms, but their small size makes them common only in research vessel trawl hauls incorporating a fine mesh codend liner.

No biological information is available.

They are not involved in a commercial fishery. However, they overlap the outer distribution of red gurnard and must be distinguished from juveniles of this commercial species should questions of mesh size, nursery grounds, etc. arise.

Pterygotrigla polyommata (Richardson, 1839) Sharp-beaked Gurnard

General

An Australian species. One specimen recorded from northern New Zealand. Very similar in body shape and size of head spines to the spotted gurnard, but the colour of the body (red above, white below) and pectoral fins (greenish with white-edged dark spots) is quite similar to the red gurnard.

A small trawler of the type generally working in the red gurnard fishery.

General

Five specimens of a species new to New Zealand were caught in deep water on the Challenger Plateau in January 1981. Very similar in body shape and head spines to the spotted and sharp-beaked gurnards described above, but distinguished by numerous yellow (but no black) spots over the upper body.

Further reading

Elder, R. D. 1976: Studies on age and growth, reproduction, and population dynamics of red gurnard, *Chelidonichthys kumu* (Lesson and Garnot), in the Hauraki Gulf, New Zealand. Fisheries Research Bulletin 12, NZ Ministry of Agriculture and Fisheries.

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R. D. Elder and L. J. Paul,
Fisheries Research Division,
MAF, Wellington

A. J. Bass,
National Museum of NZ,
Wellington