



# **What's in That Whitebait Net?**

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# WHAT'S IN THAT WHITEBAIT NET?

Over the years there has been great controversy about the identity of whitebait, about where they come from and what they grow into.

Whitebait fishermen have varying opinions on the number of different types of whitebait — from one to many types are recognised — and the problem is compounded by the appearance of other whitebait-like fishes in the catches during spring. Some of the questions that fishermen are asking about the identity of their catches are discussed in this leaflet.

## What are Whitebait?

Whitebait are juveniles of some of our freshwater fishes. They have spent the winter in the sea since hatching from eggs in the previous autumn; so they are about 6 months old when they run into the rivers. When they hatch from the eggs they are about 1/3 in. long, and they have grown to about 2 in. during winter. Little is known about their life in the sea, but they have been found in the surface waters many miles off shore.

## What do Whitebait Grow into?

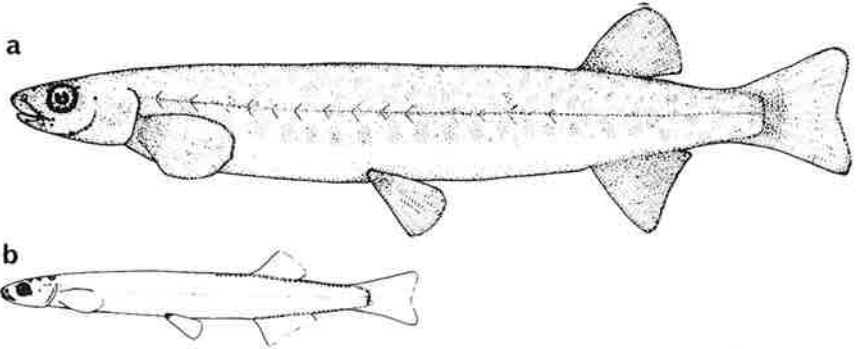
This is a question that has been argued vehemently for a long time. Studies have shown conclusively that they grow into five different species of fish belonging to the genus *Galaxias*. So there are five different sorts of whitebait. These occur in varying numbers at different times

of the year and in different types of rivers, but all five are found throughout New Zealand.

The commonest whitebait grows into the inanga, *Galaxias maculatus*, a small fish common in estuaries, swamps, and rivers near the sea. The adult, or inanga, is usually only 3 to 4 in. long, though sometimes it is as long as 6 in. It is a slender fish without scales (none of the whitebait adults have scales), silvery on the belly and greenish on the back.

The whitebait of this species makes up nearly the whole catch in many rivers, especially warmer rivers draining coastal hills, for example, the Waita or Maori River. However, it is accompanied by several of the other species in colder rivers, particularly those rivers fed by glaciers, such as the Haast or Arawata Rivers. The whitebait of *Galaxias maculatus* is one of the largest whitebait, up to 2 or even 2½ in. long. It is also the most transparent whitebait, having the glassy-green colour most favoured by whitebait buyers.

The second most common whitebait is the young of a fish known to science as *Galaxias brevipinnis*, and usually called native mountain trout by fishermen and others familiar with it. The adult is a secretive fish found in swiftly flowing rocky streams still enclosed by native forest and is a larger fish than the inanga, reaching about 8 in. or more.



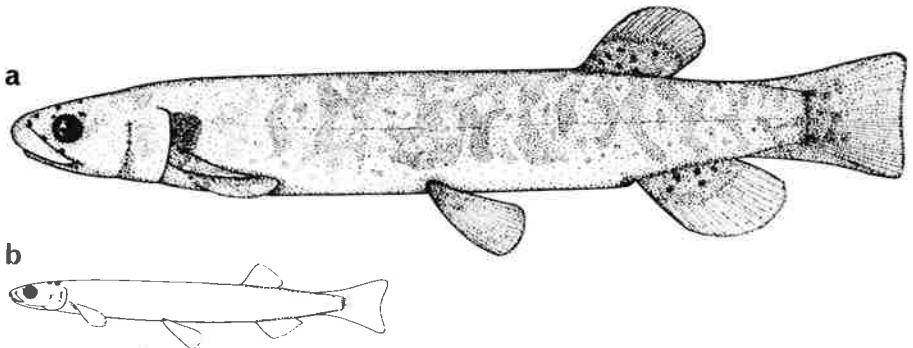
***Galaxias maculatus* — inanga. a: Adult. b: Whitebait.**

It is elongate, of almost eel-like proportions, with thick leathery fins, a rather flattened head, and a receding lower jaw. It is olive-green to brown, with greenish gold speckling or blotching on the sides.

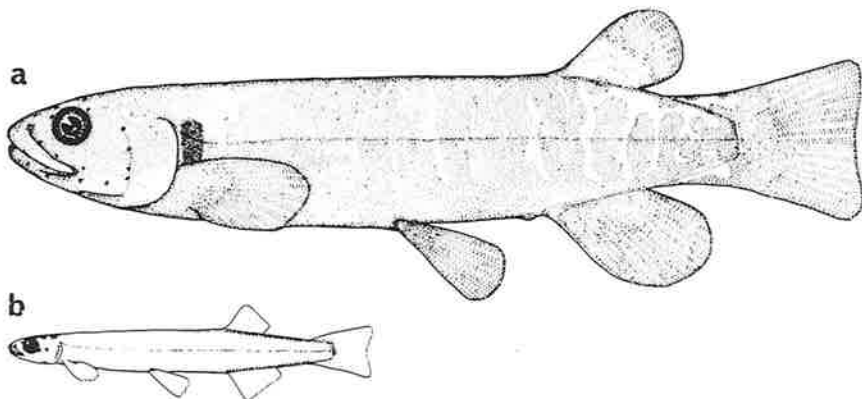
The whitebait of this species is commonest in the snow-fed rivers, like the Haast or Arawata, where it may make up as much as half the catch. This whitebait is also large, reaching about 2 in. long, but it has a milky appearance even when freshly caught. The fins just behind the head, the pectoral fins, are prominent, sticking out from the head and provoking the name "elephant

ears" among some fishermen.

A less common whitebait is the young of *Galaxias fasciatus*, the banded kokopu, which is sometimes called native trout or Maori trout. It is common in small, quiet, rocky streams in the forest and may be found also in forest swamps. It is a stout and thick-bodied fish, with a conspicuous mouth and thick, fleshy fins, and reaches a length of about 10 in. It is usually a dull bluish grey, with pale vertical bands along the body, from behind the head to the tail in small fishes, but only on the rear half of the body in very large ones.



***Galaxias brevipinnis* — native mountain trout. a: Adult. b: Whitebait.**

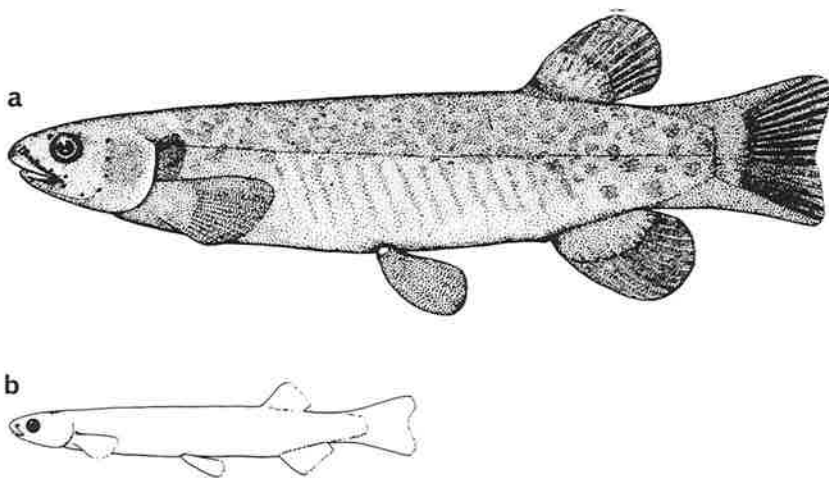


***Galaxias fasciatus* — banded kokopu. a: Adult. b: Whitebait.**

The whitebait of *Galaxias fasciatus* is the smallest of the whitebait — often 1½ to 1¾ in. long and is slender. Though it is transparent, it often has a pale amber colour which is somewhat distinctive and which gives rise to the name “golden bait.” Like those of the *Galaxias brevipinnis* whitebait, the pec-

toral fins are held out from the body and so appear prominent.

Another, rarer whitebait is the juvenile of *Galaxias postvectis*, a kokopu-like fish that is rare and has no common name. When it is found, the adult is among rocks, boulders, and logs in small streams in the forest. It grows to about 10 in. and is a



***Galaxias postvectis*. a: Adult. b: Whitebait.**

stout fish, with a rounded body and tapering slender snout. The lower jaw is distinctly shorter than the upper and the fins are thick and fleshy. This fish is usually a dark blue-grey to grey-brown and rather uniform in colour, though there may be a faint marbling pattern on the sides of the body.

The whitebait of *Galaxias postvectis* is almost identical in size and appearance to that of *Galaxias brevipinnis*, but it is probably so rare as to be unimportant in the catch.

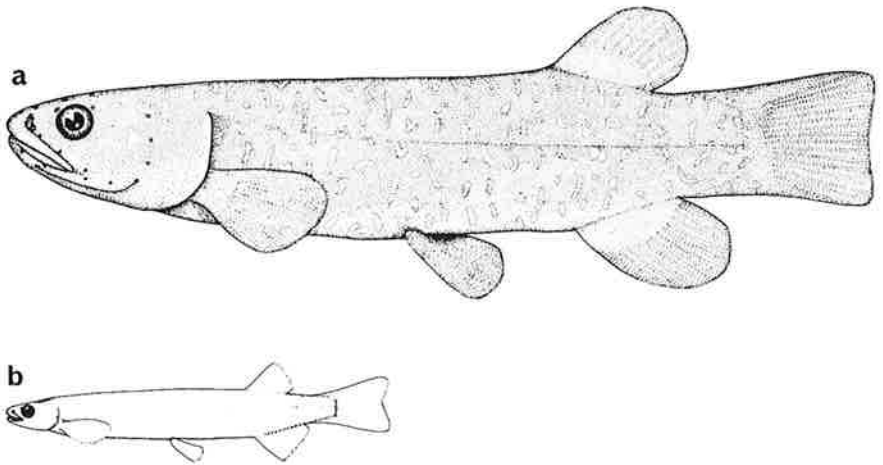
The fifth species of whitebait is also rare and is the juvenile of *Galaxias argenteus* or giant kokopu, again commonly known as Maori trout or native trout. The adults live in small swampy streams, swamps, and lakes near the coast. It is much the largest species, growing up to 2 ft long, though commonly only 10 to 15 in. long. People, understandably, often find it hard to believe that this

large, stout, heavily built fish is in fact an adult whitebait. It is usually a dark- to buff-brown colour, and the body is liberally covered with fine gold spots, rings, crescents, and lines. The whitebait stage is about 1¾ in. long and is stout.

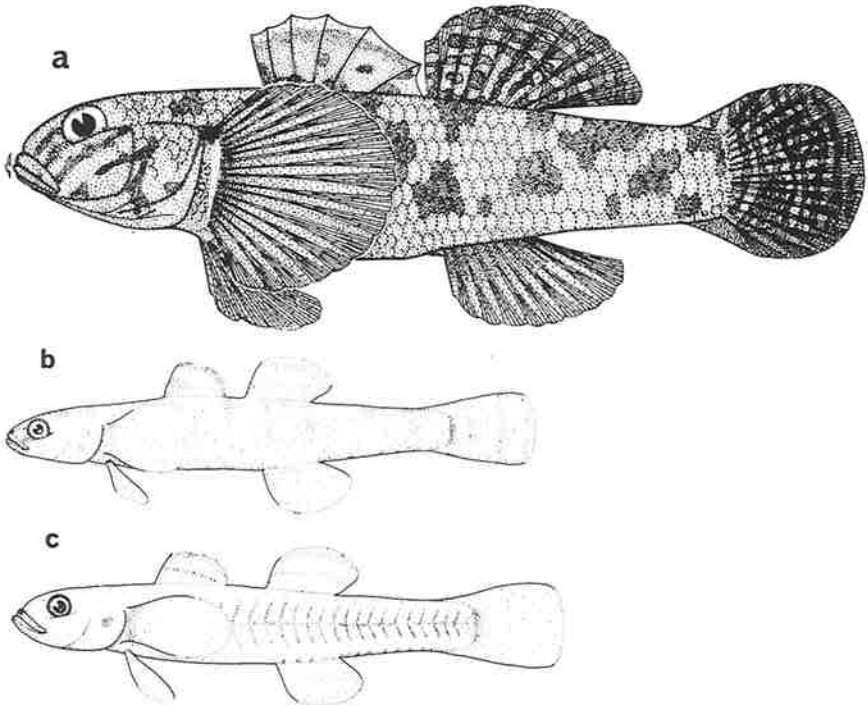
The giant kokopu seems to be caught only toward the end of the fishing season, usually appearing in very small numbers some time during the first 10 to 15 days of November. It, too, has prominent pectoral fins and, like the whitebait of *Galaxias fasciatus*, has a slight amber colour, but, like *Galaxias postvectis*, it is so rare that it is unimportant in the commercial whitebait catch.

#### Gutty Whitebait

Gutty whitebait — fish so called because the gut has become filled with food and because dark grey-brown coloration has developed on the head and trunk — are whitebait that have spent a few days or more



***Galaxias argenteus* — giant kokopu. a: Adult. b: Whitebait.**



***Gobiomorphus huttoni* — red-finned bully. a: Adult. b: Juvenile. c: Juvenile of *Philypnodon hubbsi*.**

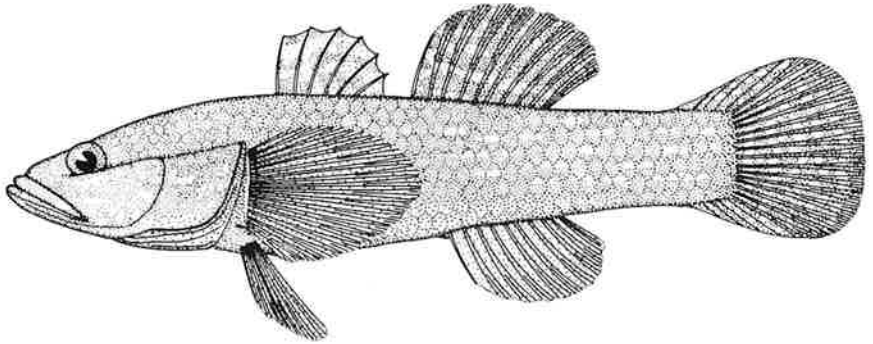
in the rivers feeding and growing. Gutty whitebait of all the five whitebait species are caught by whitebaiters, especially late in the season. Obviously they are not another type of whitebait, but, rather, a later stage in their growth to maturity.

#### **Other Fishes Caught with Whitebait**

The five species described above are the true whitebait of the commercial fishery, but they are by no means the only fish caught by whitebaiters. Notes on the other fishes known to have been caught in whitebait nets are given below.

Whitebait fishermen often catch what look like very tiny whitebait, about an inch long. Sometimes they are so abundant that they are a pest. These are juvenile bullies coming out stream out of the sea.

The red-finned bully, *Gobiomorphus huttoni*, which lives in tumbling rocky streams, and the common bully, *Gobiomorphus bassalis*, which lives in more gently flowing streams and often on gravel or sandy bottoms, have similar juveniles. They are transparent, but sometimes have a few dark blotches on the head and trunk.



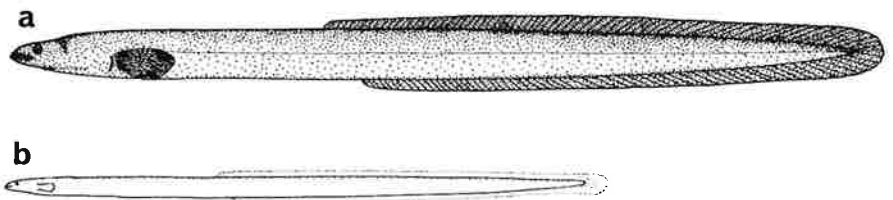
***Gobiomorphus gobioides* — giant bully. Adult.**

The third species is the young of the blue-gilled bully, *Philypnodon hubbsi*, which lives in the very swiftest water of river rapids. Its juvenile may have a series of V-shaped bands across the trunk, giving a distinctive herring-bone pattern. Its lower jaw projects forward beyond the upper jaw, which clearly distinguishes it from the red-finned bully and the common bully.

These fish are known to some whitebaiters as "spawn", "Dan Doolin spawn", or "whale feed". The adults of these three species, which may be 3 or 4 in. long, are also sometimes caught by whitebait fishermen.

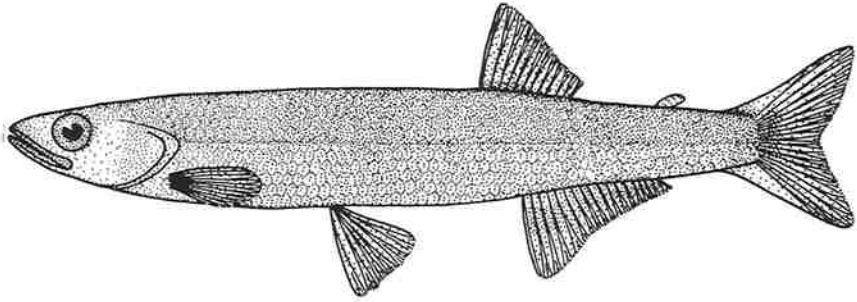
Another bully, caught only as an adult by some whitebaiters, is the so-called giant bully or *Gobiomorphus gobioides*. This is a large, stout, rather groper-like fish which may be 6 or 7 in. long. Usually it is dark grey-black.

Glass eels, the young of the long-finned eel, *Anguilla dieffenbachii*, and the short-finned eel, *Anguilla australis*, often migrate at the same time as whitebait and so are caught by whitebait fishermen. Like the whitebait, the glass eels have spent their early life in the sea and are migrating up rivers to begin their long freshwater life. When they come out of the sea they are transparent, but



***Anguilla australis* — short-finned eel. a: Adult. b: Glass eel.**



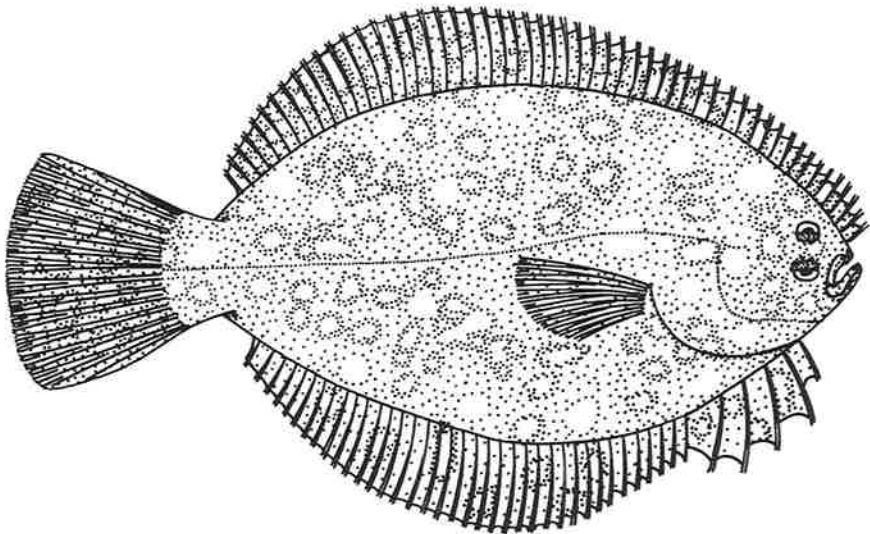


***Retropinna retropinna* — common coastal smelt. Adult.**

soon become a dusky grey-brown like the larger adults.

“Silveries”, “cucumbers”, or smelt are another fish that white-baiters catch, often in large numbers. They enter the river mouths in big shoals. In some North Island rivers they migrate when about a year old at a length of about 2 to 2½ in. and look rather like stout white-bait. In most rivers they come in when they are about 3 to 4 in. long

and a year older. At this stage they are mature adults, not juveniles like the whitebait, and they are entering the rivers to spawn. Though they have a strong and unpleasant cucumber-like odour, they are good eating once boiling water has been poured over them. They look rather like slender trout, with large scales which dislodge very easily, and are a bright silvery colour.



***Rhombosolea retiardia* — black or river flounder. Adult.**



*Geotria australis* — lamprey. Adult.

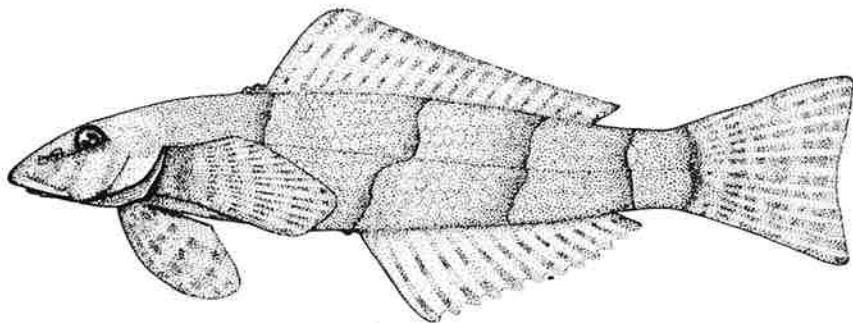
There are two species, one found only on the east coast of the South Island — Stokell's smelt, *Stokellia anisodon* — and one found throughout New Zealand — the common smelt, *Retropinna retropinna*. The whitebait caught in Te Whanga Lagoon, Chatham Islands, and in the Waikato River, is mostly the common smelt.

Several larger fishes are also caught by whitebaiters, in ones and twos. The well-known, introduced brown trout, *Salmo trutta*, is a common occupant of whitebait nets, as is the freshwater or black flounder, *Rhombosolea retiaria*. The yellow-eyed mullet (or so-called herring), *Aldrichetta forsteri*, runs into river estuaries on the rising tide and is often caught in whitebait nets. The yellow-eyed mullet often has whitebait in its mouth when removed from whitebait nets. But unlike trout, eels, and black flounders,

which certainly feed on whitebait, the mullet feeds mostly on detritus — rotting organic matter on the bottom — and on seaweeds. The whitebait are probably taken incidentally by the mullet in whitebait traps.

Two peculiar fishes are very occasionally caught in whitebait nets. The lamprey, *Geotria australis*, migrates into fresh water to spawn in spring and is an elongate eel-like fish, but it has no pectoral and pelvic fins and no jaws, only a circular mouth rather like a suction cup. When it first leaves the sea it is a handsome silvery fish with a deep blue band along the back, but after a while in fresh water it becomes a dull grey. It is reputedly very good to eat.

The torrent fish or shark bully, *Cheimarrichthys fosteri*, is a rather bully-like fish with a tapering flattened head and a small mouth placed beneath the head to give it a



*Cheimarrichthys fosteri* — torrent fish. Adult.

rather shark-like appearance. It looks very like a greyish coloured blue cod. It grows to about 6 or 7 in. long and lives in the very swiftest rapids of gravelly rivers.

These fishes, all of them native except the brown trout, are the fishes that whitebaiters catch from time

to time in their whitebait nets. Some of them are good as food; all of them have interesting habits that make them worth studying. Much remains to be learnt about all these fishes, but what information exists can be obtained from the Fisheries Research Division.

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Information about the regulations governing white-bait fishing may be obtained from the head office of the Ministry of Agriculture and Fisheries, P.O. Box 2298, Wellington, or from district offices of the Ministry.

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