

Shellfish Identification Guide



Hauraki Gulf Forum
Tikapa Moana

What is this guide for?

This guide is to help communities and schools carry out shellfish surveys as part of the Hauraki Gulf Forum's Community Shellfish Monitoring Project. It has pictures of some of the most common animals and plants found living in sheltered beaches, harbours and estuaries in Auckland's Hauraki Gulf.

The plants and animals you find on a beach will differ from beach to beach depending on the location and whether it is sandy or muddy, flat or steep, is sheltered or is exposed to waves.

The animals and plants you find on any day will also depend on the tide and temperature and where on the beach you are (e.g. near high tide or low tide).

You might not find all of the marine life in this guide on your beach. If you cannot identify something and it is not in this guide, ask your survey coordinator.

Remember scientists don't know everything so you might have discovered something new!

Acknowledgements:

Photos

All photos by **Dr Richard Taylor** and **Pam Brown** except for:

- Mudsnail feeding track, whelk feeding pack, seagrass: **Dr Megan Stewart**
- Wedgeshell feeding marks: **Dr John Walsby**
- Whelk moving: **Tony and Jenny Enderby**

Drawings

Dr John Walsby

Text

Dr John Walsby and **Dr Megan Stewart**

Tuangi Cockle

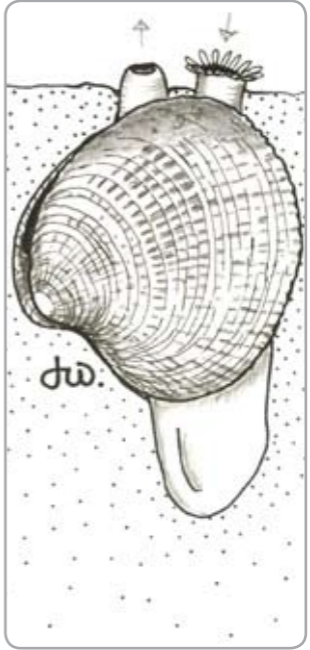
Austrovenus stutchburyi BIVALVE

BIOLOGY

Cockles burrow under the sand using their tongue-like foot, usually with the top of the shell only just below the surface.

Dense beds of cockles (up to 1000 /m²) may be like a cobblestone pavement beneath the sand surface.

When the tide is in, the cockle extends its two short siphon tubes just above the sand to feed. Water is sucked in through one siphon, and strained through gills which filter microscopic plants (phytoplankton) from the water. Filtered water passes out of the other siphon.



DESCRIPTION

A rounded shell.

Surface is rough like a file with a criss-cross pattern of ridges.

Shell is coloured creamy-white to biscuit brown. May be tainted green with algal growth.

SIZE

Commonly grow up to 35mm and rarely over 50mm in length.



Cockle Tuangi

BIVALVE *Austrovenus stutchburyi*

On a sandy or muddy beach, the hard shells of cockles are a very good place for other animals to attach to, such as chitons, limpets and anemones.

How many different animals can you see living on cockles?

Many animals feed on cockles, like birds, fish and sting-rays. Can you see any birds out feeding today?

Anemone

Anthopleura aureoradiata



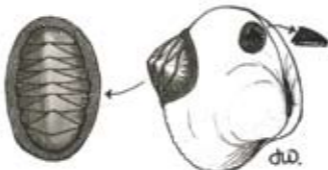
Tide out



Tide in

Chiton

Chiton glaucus



Pipi Pipi

Paphies australis BIVALVE

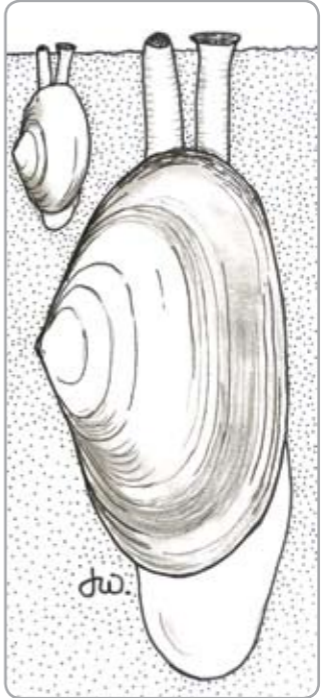
BIOLOGY

Pipi usually burrow 2 or 3 cm below the surface.

When the tide is in, a pair of siphon tubes protrudes above the sand. It draws water in through one to strain out microscopic plants (phytoplankton) before pushing the filtered water out through the other siphon.

Pipi prefer sand to mud, and are often found where there is water movement, eg beside a stream or channel.

Adult pipi are usually found at the low tide mark and deeper (subtidal). Juvenile or young pipi are often found higher on the beach and move down the beach as they grow.



DESCRIPTION

Has a triangular/ oval shaped shell with a smooth surface.

Shell is coloured creamy white sometimes patchily stained with orange, brown or black from the sediment.

SIZE

Commonly grows up to 75 mm long by 40 mm wide on sandy exposed beaches. Likely to be smaller on sheltered sand/ mud flats (less than 40mm).



Pipi and Tuatua Comparison



Tuatua

Paphies subtriangulata



Pipi

Paphies australis

Tuatua may be confused with pipi. On a pipi the hinge is nearer the centre of the shell than a tuatua, which is more sharply angled.

Tuatua are buried just under the sand and are found on open coast beaches from low tide to about 4cm deep.

Hanikura Wedge shell

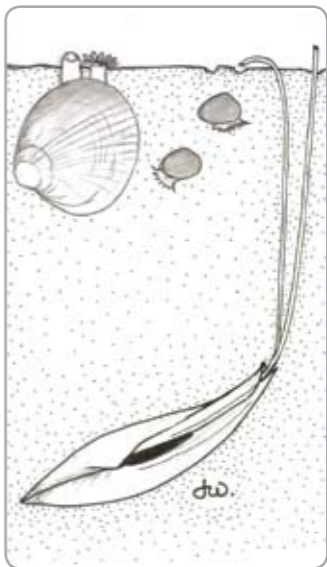
Macomona liliana BIVALVE

BIOLOGY

Wedge shells are deep burrowers, usually found at least 5cm down in the sand and sometimes more than 15cm deep.

Their slender shape makes deep burial easier. They turn their shell to lie on the side and the bent shell edge allows their siphons to curve upward smoothly.

They have long siphons to feed. When feeding, one siphon curls over to suck up food particles from the surface like a vacuum cleaner. This makes a pattern of grooves in the sand that looks like a bird's foot print.



DESCRIPTION

A thin, smooth, delicate white shell, sometimes stained with black lines.

The shell is rounded at one end and has a straight side tapering to a point at the other end.

The pointed end of the shell is bent over to one side.

SIZE

Commonly grow to 40mm in length, and sometimes up to 70mm.



Wedge shell Hanikura

BIVALVE *Macomona liliana*



Can you see any wedge shell feeding marks on the surface where you are surveying?

Nut shell

Nucula hartvigiana BIVALVE

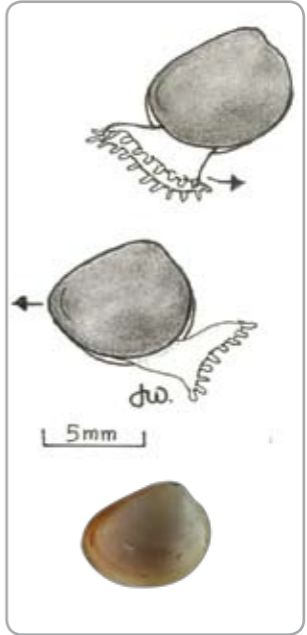
BIOLOGY

Nut shells are often found together with cockles.

They frequently occur in high numbers, often in densities of several hundred per m^2 and sometimes as many as $2000/m^2$.

Nut shells live near the surface, in the top 3cm, where they sort microscopic life from among the sand grains.

Nut shells do not feed in one place like most buried shellfish but instead move through the sand while feeding. Unlike most bivalves, they do not have siphons but eat food particles from the sand/mud using special enlarged 'lips'.



DESCRIPTION

A tiny shell, round in shape and fat like a little cherry stone.

The shell is shiny smooth and light brown in colour.

Empty shells are glossy white inside, like mother of pearl.

SIZE

Usually grow up to about 7mm long, but sometimes up to 10mm.



Nut shell

BIVALVE *Nucula hartvigiana*



Nut shell



Cockle

Nut shells could be confused with small cockles, but the shell is smooth with no ridges or lines like a cockle.

Ruheruhe Trough shell

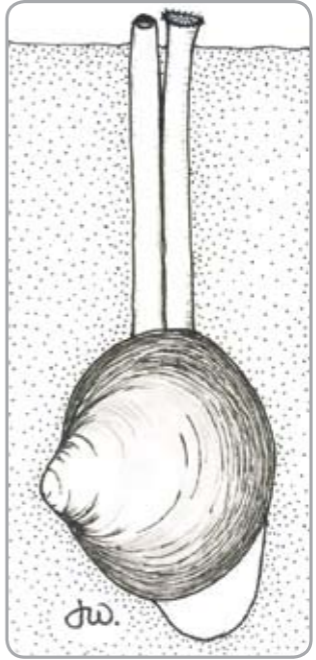
Cyclomactra ovata BIVALVE

BIOLOGY

Trough shells are generally found low on the shore where the sediment is silty or muddy.

Mature specimens burrow deep, often up to 4 shell lengths below the surface.

A pair of long, joined together siphons reach up above the surface to draw in water for feeding and respiration (breathing).



DESCRIPTION

Has a rounded triangular shell with a smooth surface marked only by fine growth lines.

Live shells are white to yellowish-brown but may be stained with black from being deeply buried in black airless sediment.

SIZE

Often grow up to 60mm long by 45mm wide.



Bivalves quick guide

It is easy to confuse different types of shellfish, especially when they are small.



Nut shell

Nut shells are smooth with no ridges or lines like a cockle has.



Cockle

Cockles have very distinctive criss-cross lines like a file.



Trough shell

Compared with a pipi the trough shell is wider and plumper and the shell is thinner.



Pipi

Pipi have an elongated shape.



Wedge shell

Wedge shells have one rounded and one pointed end.

Mud whelk

Cominella glandiformis GASTROPOD

BIOLOGY

The mud whelk is a scavenger which feeds on sick or injured or dead marine life.

It tracks down food, by taking in water through its siphon and uses a special scent gland to detect the source of smell. It crawls towards the source of smell.

Whelks can smell food from over 10 metres away.

Often 10 to 50 or even more whelks are found tightly clustered around a dead animal.

The whelk feeds by mincing up the flesh and sucking it up, like a milkshake through a long, tubular proboscis (feeding tube).



DESCRIPTION

Has a bullet shaped shell, bluntly pointed at the spire, with small knobby lumps along the ridges.

Often coloured light grey with darker, purplish to brown markings (colours vary). Inner shell beside notch is purple.

SIZE

Commonly grow up to 20mm in size, occasionally up to 30mm.



Mud whelk

GASTROPOD *Cominella glandiformis*



Can you see any whelk feeding packs today?

What are they feeding on?



Can you see any whelks moving along waving their siphons?

Other types of Whelks you may see:

Red mouthed

Cominella virgata



Spotted

Cominella maculosa



Speckled

Cominella adspersa



Harbour Top shell

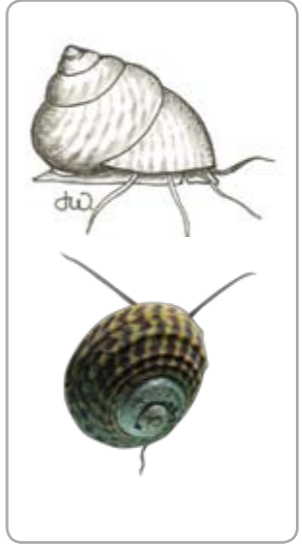
Whētiko

Diloma subrostrata GASTROPOD

BIOLOGY

The harbour top shell is a grazer that feeds by scraping off algae growing on the shells of other shellfish with its sandpaper-like feeding tongue.

Wherever cockles are common there is always plenty of food for this snail growing on the cockle shells.



DESCRIPTION

A small round snail, which has a shell shaped like a spinning top when turned upside down.

Its grey black shell is flecked with yellow marks and the inner rim of the opening is yellow.

SIZE

Most topshells found on sand or mud flats are smaller than 10mm but some as large as 20mm may be found.



Harbour Top shell

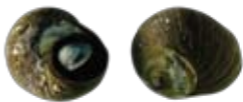
GASTROPOD *Diloma subrostrata*

Whētiko

Top shells are not cats eyes. Cats eyes live on the rocky shore and have a distinctive circular green and white operculum or 'door' on the underside of the shell.

Pūpū Cats Eye

Turbo smaragdus



Whētiko Top shell

Diloma subrostrata



Nerita

Top shell

Cats eye



In this photo you can see the pattern the cats eye has left with its rasp-like tongue (radula) where it has scraped algae from the surface. Top shells leave a similar trail. The radula is the toothed ribbon in the mouth of gastropods used for cutting and chewing food.

Koeti Horn shell

Zeacumantus lutulentus GASTROPOD

BIOLOGY

Horn shells prefer moist or wet muddy sand.

They crawl across the surface eating large amounts of wet sediment that contains large numbers of microscopic plants and animals.

Horn shells may be found in very high numbers in hollows in the sand where there can be so much microscopic life that the surface turns a yellow-green colour.

A smaller species of horn shell, *Zeacumantus subcarinatus*, which has a black shell is sometimes found nearby, usually in wet or moist muddy hollows on rock platforms.



DESCRIPTION

This snail has a horn-shaped corkscrew shell which lies on the mud flat surface.

Shells are usually grey brown like the muddy sand they lie on.

Young horn shells are often darker (brownish black) than older horn shells.

SIZE

Commonly about 25mm in size. Large specimens may be over 30mm in size.



Other Gastropods

Other snails (gastropods) you might find include the following:

Karahu, Tītiko Mud snail

Amphibola crenata



These snails often like to bury in the mud when the tide is in and then unbury and come out to feed when the tide goes out. They feed on small animals and organic material in the surface layer of sediment.

Tikoaka Southern olive shell

Amalda australis



This shiny brown and blue shell lives buried just below the surface of fine, silty sand or mud. When alive, its shell is usually surrounded by its pale grey foot. It is a carnivore.

Kaikai tio Oyster borer

Haustrum scobina



Generally very abundant on rocky inter-tidal shores, the oyster borer can also be found on beaches where it attaches to the shells of shellfish like cockles. It can bore its way into shellfish using chemicals and the mechanical action of its radula.

Other Sealife

Echinoderms

On some beaches you may see some echinoderms (Greek for spiny skins), which include starfish, urchins, sea cucumbers and brittlestars. Some echinoderms you might see are the sand dollar or 'snapper biscuit' (*Fel-laster zelandiae*) and the heart urchin (*Echinocardium cordatum*).

Heart urchin



Sand dollar



Cushion starfish

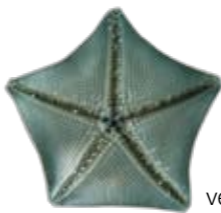
There are two species of cushion starfish. *Patiriella regularis* is granular in appearance when wet. It is olive green in colour and sometimes has yellow, orange and brown mottling. *Meridiastra mortenseni* (not shown) has a smooth to glossy appearance when wet. It is variable in colour and may be dark red, grey or blue.

Cushion starfish usually have five arms, but animals with four to eight arms are also common.

Patiriella regularis



dorsal



ventral

These scavengers may feed by pushing their stomach out through their mouth and turning their stomachs inside-out over rocks and absorbing nutrients coating the rocks directly into the stomach lining. Cushion stars also feed by trapping pieces of food in mucous and passing them into their mouth using tentacle-like cilia on their underside. Turn the starfish over to see their cilia moving.



Crabs

There are lots of different crabs you might see, depending if you are on a sandy beach, a mudflat beach or in an estuary. Some that you might see are:

Tunnelling mud crab

Helice crassa



Hairy handed crab

Hemigrapsus crenulatus



Stalk eyed crab

Macrothalamus hirtipes



Pillbox crab

Halicarcinus whitei



Paddle crab

Ovalipes catharus



Other Sealife

Seagrass

Zostera capricorni



This grass like plant absorbs nutrients through its leaves. The tangled root systems help anchor the plant and trap sediment. Seagrass beds can provide shelter for small fish, shellfish, crabs and gastropods and are an important part of a healthy marine ecosystem.

Shrimp

You may get some shrimp in your samples like the Snapping shrimp (*Alpheus euphrosyne richarsoni*) or the mantis shrimp (*Heterosquilla tricarinata*). You may hear the distinctive snapping sound of these shrimp which is made by them clicking their enlarged left chelae (pincer or claw of a crab).

Snapping shrimp



Mantis shrimp



Worms

You may find a range of different marine worms. Look carefully incase any are tangled around the mesh of the sieve.



Sand-mason worm

Pectinaria australis



Introduced species

Clubbed Tunicate (a type of seasquirt)

Styela clava



This introduced sea squirt is now widely distributed throughout the Hauraki Gulf in Auckland. It is considered a pest species because it smothers other native and more desirable marine life.

Individuals are usually club-shaped with a tough leathery skin (brownish-white, yellow-brown or reddish-brown). The body is cylindrical tapering to a stalk with a hold-fast that anchors it to the surface. Adults grow up to 16cm long. *Styela* prefers sheltered areas such as bays and harbours away from wave action and is generally found below the low tide mark attached to hard surfaces.

Styela clava can be mistaken for a native New Zealand species, *Pyura pachydermatina*, as they both have a stalk. However, the stalk of *Pyura pachydermatina* is much longer – 2/3 to 3/4 the overall length of the animal and it is white/purple in colour.

Asian date mussel

Musculista senhousia



This is one of many introduced bivalve species found in the Hauraki Gulf. The Asian date mussel can form very dense beds of mussels on the seafloor but the effects tend to be localised and short-lived.

The shells have distinctive zigzag stripes on them.