

# ESTUARIES

## SOME COMMON ANIMALS AND PLANTS OF BATEMANS MARINE PARK ESTUARIES AND COASTAL LAKES



Prepared by Jenny Edwards.

**There are numerous coastal lakes, saltmarshes and tidal estuaries along the Eurobodalla coast – Eurobodalla means land of many waters. The coastal lakes are often closed to the sea. Like saltmarshes they can become excessively salty during droughts and almost freshwater in rainy times. Fewer species can survive these extreme conditions.**

Animals and plants of tidal estuaries also face difficulties. For example, the sandy or muddy bottom habitats can be moved by currents, floods bring fresh muddy water, and fine mud beneath mangroves lacks oxygen.



You can get a closer look at examples of tidal estuarine habitats at Cullendulla Nature Reserve, Batemans Bay; foreshore reserves near the mouths of Tomaga and Moruya Rivers; and Narooma boardwalk and foreshore reserves.

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## SOME COMMON PLANTS OF OUR TIDAL ESTUARIES

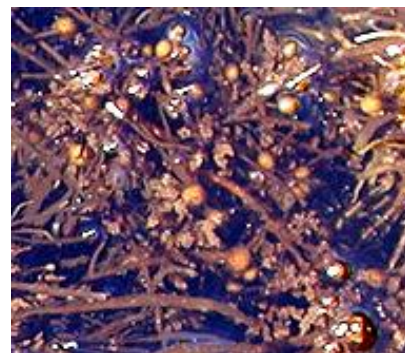
**ALGAE** Some of the common algae of nearby coastal waters also occur in the lower reaches of tidal estuaries.



### **Neptune's Necklace**

*Hormosira banksii*

A form of this alga that grows near mangroves does not attach itself. It can tolerate wide changes in salinity and exposure at low tide.



### **Sargassum**

*Sargassum* species

Several species are common on coastal rocky reefs. Some also grow attached to hard surfaces near the mouths of open estuaries. Their floats are small round balls.

**SEAGRASSES** are flowering plants with leaves and roots rising from horizontal buried stems (rhizomes). They help hold the bottom sediment in place. The leaves support growths of epiphytic algae and microorganisms and are very important habitats for juvenile fish and invertebrates.



**Zostera species**  
Eel Grass leaves are up to 5mm wide. It occurs in shallow waters in most estuaries and lakes and in some sheltered bays. It is able to withstand some exposure at low tide.



**Strap Weed**  
*Posidonia australis*  
Strap Weed has a broader, longer leaf than Zostera and prefers deeper, clearer water. It is widespread in Wagonga Inlet, parts of the Clyde estuary and is also found on the northern side of Broulee Island.



**Paddlegrass**  
*Halophila ovalis*  
Paddlegrass has a small oval leaf. It is often found near Zostera.

**MANGROVES** occur in most of Eurobodalla's estuaries, often in waterlogged mud. They stabilise river banks, provide shelter for many juvenile fish and their decaying leaves form the basis of most estuarine food webs. Their seeds are dispersed by the tides



Mangroves are protected in NSW and a permit is required from NSW DPI to undertake works or activities that may harm them.



**Grey Mangrove**  
*Avicennia marina*  
This is the main mangrove in Eurobodalla's estuaries. Its aerial roots take oxygen below the surface.

**Grey Mangrove Fruit**  
The round seed pods begin growing before dropping from the tree.



**River Mangrove**  
*Aegiceras corniculatum*  
 The River Mangrove is not as common as the Grey Mangrove, lacks aerial roots, and is usually found further upstream.



**River Mangrove Flower**  
 Its leaves are brighter green, rounder and shinier than the Grey Mangrove's and its fruits are crescent shaped.

## SALT MARSHES

**SALTMARSHES** are covered by very high tides and the plants are adapted to resist high salt levels and drying out. The surface of the mud is stabilized by a film of algae and bacteria – food for many small invertebrates. Conditions are harsh and saltmarshes are slow to recover from damage such as trampling. Coastal saltmarshes have been listed as an Endangered Ecological Community under the *Threatened Species Conservation Act*, of NSW



**Beaded Glasswort or Samphire**  
*Salicornia / Sarcocornia quinqueflora*  
 Samphire is a common saltmarsh plant. It has no leaves but the stems have swollen segments that hold water. In colder months Samphire and other succulent saltmarsh plants are often coloured red or orange.



**Austral seablite**  
*Sueda australis*  
 A small shrub with succulent, almost-cylindrical leaves found in patches in saltmarshes and along the edges of estuaries.



**Swamp weed**  
*Goodenia / Selliera radicans*  
 A creeping plant with fleshy oval leaves and small white fan flowers in the warmer months.



**Sea lavender**  
*Limonium australe*  
 The long dark leaves grow in rosettes and in summer the plant has clusters of small yellow flowers held higher on branched stems.



**Creeping Brookweed**  
*Samolus repens*  
 A low-growing plant often found in moist salty locations. Its small white to pale pink flowers have 5 petals.



**Reeds and Rushes**  
*Juncus and Baumea* species  
 Reeds and rushes often grow in the water if it is not too salty.



**Common Reed**  
*Phragmites australis*  
 Found in less salty conditions. Its leaves often turn yellow in winter.

## SOME COMMON ANIMALS OF SALTMARSHES AND MANGROVES

**Air breathing snails** of the saltmarshes graze on microscopic algae. They are hermaphrodites, alternating between male and female with the changes in the phases of the moon. Egg laying is timed for spring tides to carry eggs to the estuary and settling larvae back.



*Phallomedusa / Salinator solida*  
 < 18mm

*Ophicardelus* snails  
 < 13mm  
 Can survive 80% dehydration.



**“Shipworms”** These are molluscs that use their reduced shells to grind a tube in decaying wood. They digest the wood and grow to fill the tube, lining it with a thin hard white lining but remain connected to the surface to obtain oxygen and to release their larvae.



**Teredo species**  
 Here shown out of its tube with reduced shells at one end and breathing siphon at the other.

The hard white tube lining



**Gold-mouth Conniwink**  
*Bembicium auratum* <20mm  
 This Conniwink is a grazing snail that lays eggs mainly from Aug to Jan in small "jelly beans".



**Black Nerite**  
*Nerita melanotragus* <30mm  
 Another grazer that is also common on rock platforms. It lays eggs in white capsules.



### Zebra Top Shell

*Austrocochlea porcata* <25mm  
Found near the mouths of open estuaries, it is also common on rock platforms. It scrapes microscopic algae from hard surfaces.



### Small limpet

*Patelloida mimula*  
Usually found on oyster shells where it grazes on microscopic algae.



### Estuary slug

*Onchidella nigricans*  
A small air-breathing mollusc without a shell that lives under rocks and wood, especially near oyster beds. It grazes on microscopic algae.



### Sydney Rock Oyster

*Saccostrea glomerata* < 100mm  
Is cultivated locally. Although valued for its better taste, it grows more slowly than the Pacific Oyster.



### Pacific Oyster

*Magallana / Crassostrea gigas*  
< 250mm Has a flakier shell. Attempts were being made to eradicate it from local estuaries.



### Barnacles - crustaceans

Several species of barnacles are found in Eurobodalla's waters. They attach to rocks, mangroves, piers and other firm surfaces.



### Pill Bugs

*Sphaeroma* sp  
Are crustaceans related to garden slaters. They bore into wood. Eggs are held under the female and brooded until hatched. Here shown curled up (left), and boring into wood.



**Crabs** are the most noticeable invertebrates in saltmarshes and mangroves. Most spend part of their lives as larvae in the lower reaches of their estuary.

### Haswells Shore Crab

*Helograpsus haswellianus*  
< 30mm across carapace  
Lives highest on the shore in burrows or under rocks or wood.



**Red-nippered marsh Crab**  
*Parasesarma erythroclatum*  
 < 25mm across carapace  
 Is a predator and scavenger that lives under rocks or wood nearer the water. It will use burrows if they are available. Females and juveniles are less colourful.



**Semaphore crab**  
*Heloecius cordiformis*  
 < 25mm across carapace  
 Eats decaying matter. It burrows in saltmarsh and mangrove zones and seals its hole with mud at high tide. Males signal to attract females to the burrow to mate. Adult males have larger mauve claws.



**Shore Crabs**  
*Cyclograpsus* species  
 < 40mm across carapace  
 Are omnivores that live under wood or rocks. This one is a male.



**Female Shore Crab**  
 Like most crabs, females hold the eggs under their abdomen until they are ready to be released.

**Mud Crab**  
*Scylla serrata*  
 < 300mm across carapace  
 Adults live in burrows near mangroves where they mate and moult. The egg-bearing females go to sea to release them.



**Pistol Shrimp**  
*Alpheus* species  
 Is a predator on small animals. It lives hidden near the low tide mark but is heard more often than seen. It makes loud clicks by snapping the finger of its large claw into a socket.

## MUDFLATS AND SAND FLATS

These areas of sand and mud have no visible vegetation but are rich in microalgae, bacteria and decaying organic matter. They support large numbers of animals, many buried in the sediment, and are important feeding areas for fish and molluscs.



### Sydney Mud Whelk (left)

*Pyrazus ebeninus* < 110mm

Is the larger and more common mud whelk and can spend long periods out of water at low tide getting oxygen from the air.

### Little Mud Whelk (right)

*Batillaria australis* < 45mm

Both mud whelks digest edible material from the mud. This one hosts a parasitic fluke that normally affects sea birds but can cause an itch in swimmers.



### Estuarine Bubble Shell

*Bulla quoyii* < 45mm

The live animal is rarely seen as it hides in the sediment during the day and comes out at night to feed on algae. Fleshy lobes extend beyond the animal's shell and help it move through the mud.

### Moon or Sand Snail (right)

*Conuber / Polinices* species < 40m

Is a predator on bivalves, drilling a hole in the shell by softening it with acid, then rasping with its tongue-like radula. It lays its eggs in a large kidney shaped jelly



### Small bivalves

There are many species of bivalve that live hidden in the sediment of our estuaries. The photo shows a sample of some washed up in Batemans Bay. Those with a round hole in the shell have been eaten by Moon Snails.





### Sydney Cockle

*Anadara trapezia* <60mm  
Just one of the numerous bivalves that bury in the sediment. Most use siphons to filter out food and obtain oxygen from the water. The shell is common in middens.



### Hairy Mussel

*Trichomya hirsuta* < 60mm  
Often found attached in dense clumps to rocks and other hard surfaces.



### Mud / Flat Oyster

*Ostrea angasi* < 180mm  
Juveniles of this large flat oyster attach to stones or shells but adults live free on soft sediment. It is the most common shell found in middens around Wagonga Inlet.



### Soldier Crabs

*Mictyris* species  
<15mm across the carapace  
Sift edible particles from the sediment. They can walk forward and spiral into the sand if threatened.

*Mictyris longicarpus* (left)  
has dark coloured knee joints.

*Mictyris platycheles* (right)  
has purplish gill covers



### School Prawn

eg *Metapenaeus* species  
Young school prawns grow rapidly in seagrass beds. Adults go to sea to spawn and the larval stages develop there before re-entering the estuaries as minute prawns.



### Blue Swimmer Crab

*Portunus pelagicus* < 210mm across carapace  
Found in sheltered sand or seagrass beds. Their hind legs are modified as flippers. Like mud crabs, after mating the females travel to sea to release their eggs.



### Ghost Nipper or Yabby

*Trypaea australiensis* <65mm  
Lives in a branching burrow down to 30cm or more. It makes a current through the burrow with its tail and traps microscopic food with bristles. Males have a large claw.

**Polychaete or Bristle worms**

eg Bait Worms

There are many estuarine species and together they are the most numerous bottom dwelling animals. They vary in size and feeding methods. Some build tubes. All release eggs or sperm into the water and have planktonic larval stages.



**FISH NURSERIES**

**Estuaries are essential nurseries for many fish species including ones that are recreationally fished and spend their adult life at sea. 70% of coastal fish species in south-eastern Australia need to move through estuaries to complete their life cycle.**



**Yellow-finned Bream**  
*Acanthopagrus australis*  
Spawns at the mouth of estuaries and juveniles move upstream to grow.



**Smooth Toadfish**  
*Tetractenos glaber*  
<160mm  
One of the most common fish species in local estuaries. Its flesh is toxic to humans.



**Bigbelly Seahorse**  
*Hippocampus abdominalis* <180mm  
Can often be found in tidal channels of estuaries but is not as common in estuaries as other seahorse and pipefish (pictured left) that prefer seagrass habitats.



All seahorses, pipefish and seadragons are protected.



See [www.ncmg.org.au/learningportal](http://www.ncmg.org.au/learningportal) for kids activities and articles about some of these creatures.