



FISHERIES FACT SHEET

MUD CRAB



Brown mud crab
Scylla olivacea

Green mud crab
Scylla serrata

The magnificent ‘muddy’

Mud crabs are prized by recreational fishers for their impressive size and delicious taste. Their powerful claws can be dangerous and mud crabs need to be handled with care. Females are often called ‘jennies’ and males, ‘bucks’. In Western Australia there are two species of mud crab.

Mud crabs are found in Western Australia’s north-west from Shark Bay to the Northern Territory border.

The mud crab species *Scylla serrata* can grow up to 300 millimetres in shell width and 2.5 kilograms. The species *Scylla olivacea* can grow up to 150 millimetres in shell width and 1.5 kilograms.

Known for their big claws, mud crabs belong to a group of crabs that have the last pair of legs flattened for swimming. They have a smooth carapace (outer shell).

The fishery

The commercial mud crab fishery is only small in Western Australia, producing up to five tonnes annually. However, mud crabs are popular with recreational fishers. For bag and size limits visit www.fish.wa.gov.au.



■ Distribution of mud crabs in Western Australia

Shedding its shell

A crab’s growth isn’t continuous, but results from a series of moults that happen when it reaches the size of its current shell. Moulting is triggered by hormones. A new ‘cuticle’ (hard protective layer) is secreted under the old shell. The crab rapidly absorbs water, splitting its shell along suture lines, then backs out of the old shell. Substances stored within the crab’s body are rapidly redeposited to harden the new cuticle into a larger shell. The fluid in the body is replaced with meat during a period when the crab feeds voraciously.



The width of a mud crab’s carapace can reach 100 millimetres in about a year.

Brown or green?

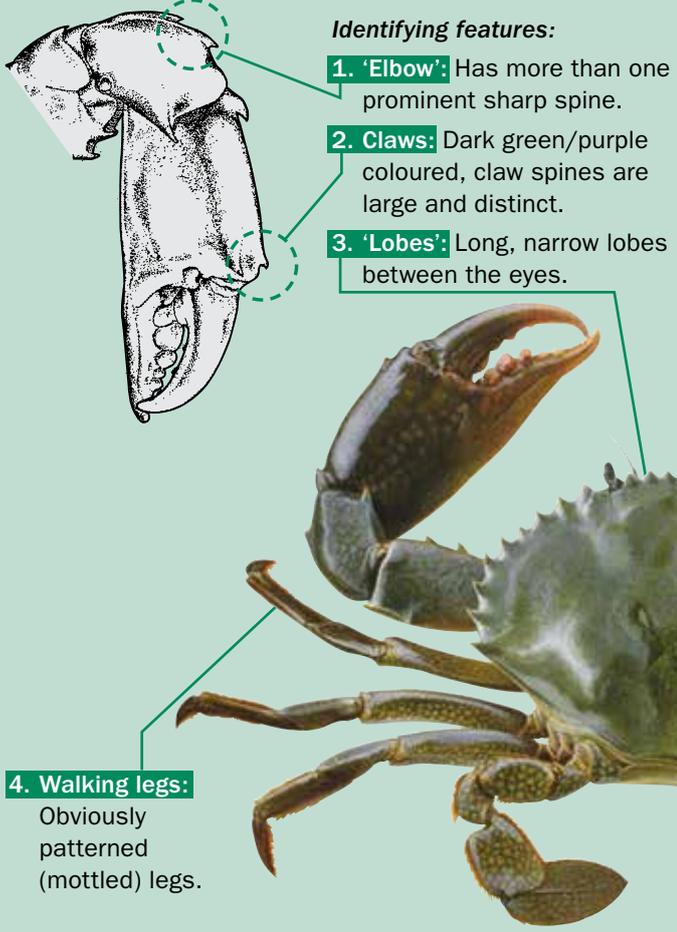
In total there are four species of mud crab, but only two are found in WA: *Scylla serrata* (the green mud crab) and *Scylla olivacea* (the brown mud crab).

They don't actually look green and brown, despite their names. The names were originally used to reflect the types of environments they were thought to prefer.

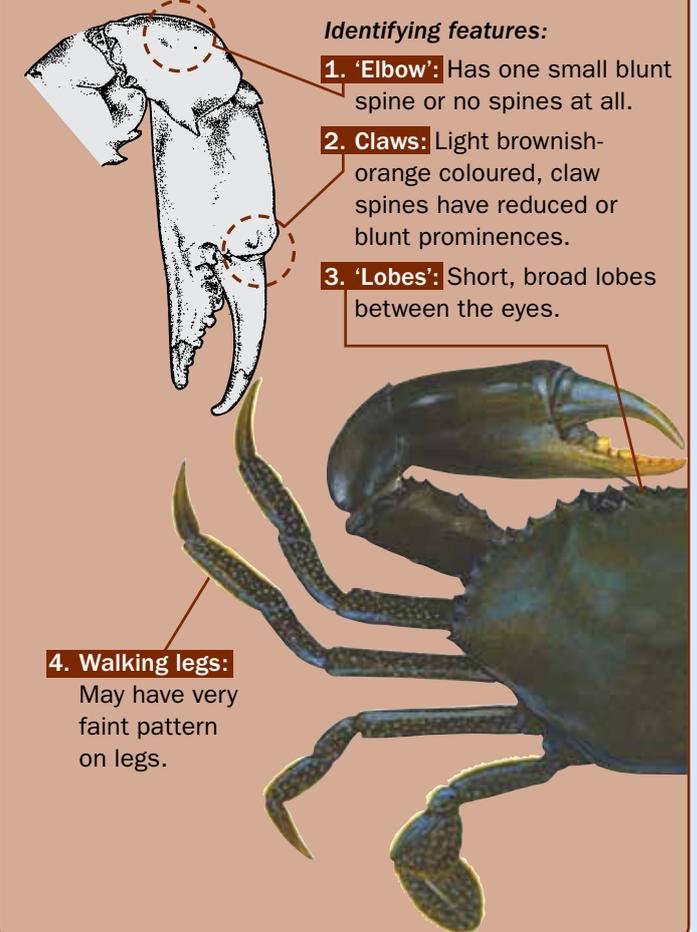
The minimum size you're allowed to keep differs. For this reason, fishers need to be able to tell them apart. Green mud crabs have a larger size limit because they mature at a larger size. If browns were to have the same size limit, they would never be taken as they rarely grow that large.

Although similar in appearance, there are some key differences:

Green mud crab (*Scylla serrata*)



Brown mud crab (*Scylla olivacea*)



Where they live

Mud crabs prefer sheltered waters such as estuaries and mangrove areas. They are highly tolerant of variations in water salinity and temperature. Although many occupy burrows in the intertidal zone (where the land is exposed at low tide), most adults live in areas that are below the low-tide mark but are still shallow, where they bury themselves in the mud during the day.



The Leeuwin Current flows south – when the current is strong, short-lived populations of mud crabs have been found as far south as Wilson Inlet, near Denmark.

Catching them

Crabs are caught using a baited drop net or by hooking them out of their burrows. Most recreational fishers focus on creeks and rivers although many crabs can be found on coastal flats, usually next to a creek mouth.

A vice-like grip

Mud crabs can be fast and strong and their big claws can make catching them extremely dangerous. Once locked on, a claw will remain in a vice-like grip even if it's been detached from the animal. Take precautions when handling a mud crab; wear a heavy-duty glove, use tongs or distract the claws with a stick.



Mud crabs use their claws to defend themselves and will even shed a claw to escape. In many cases, a new, fully functional claw will grow back.



A green mud crab

Lifecycle

- 1. Zoea:** A mud crab begins life as a larva called a 'zoea', which hatches from an egg. It is about one millimetre long with undeveloped limbs and looks a little like a tadpole. The zoea floats in the water with plankton – microscopic organisms that drift in clusters.
- 2. Megalopa:** A zoea grows by moulting four times during a period of 12 to 15 days. As it moults for the fifth time, it transforms into a megalopa, which has functional claws. After a week or so, it moves inshore and settles on the seabed. After a few days, it moults into a juvenile crab.
- 3. Juvenile crab:** The juvenile crab is a miniature version of the adult, about four millimetres wide. About a month after hatching, when 10 – 20 millimetres wide, it moves to an estuary and settles in a sheltered area.
- 4. Young adult:** The crab reaches sexual maturity at 18 to 24 months. A green mud crab matures at about 110 millimetres (carapace width) and a brown at about 90 millimetres.
- 5. Mating:** Mud crabs mate in warmer months. Mature females release a 'pheromone' (chemical attractant) into the water to attract males. Once paired, the successful male climbs on top of the female, clasps her with his hind legs, picks her up and carries her around for up to four days. He releases her when she begins to moult. After she has shed her shell, he turns her upside down to mate.

The male deposits a capsule of sperm inside the female's reproductive opening, where it's stored for months until the developing 'ova' (eggs) are ready to be fertilised. After mating, the male flips the female upright and holds her under him for a few more days while her shell hardens.

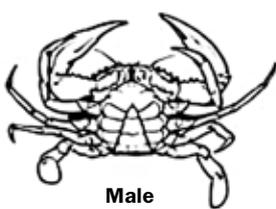
- 6. Spawning and hatching:** The female migrates offshore to spawn. In Australian waters, the exact progress isn't known, however in some parts of the world crabs travel up to 50 kilometres offshore, sinking to a depth of 300 metres.

The fertilised eggs are released in batches of two to five million.

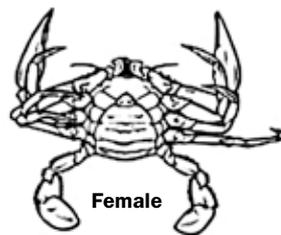
i Eggs are about 0.3 millimetres in diameter.

(The mortality rate of eggs, zoeae and juveniles is high, partly due to fish and birds preying on them). After digging a hole in the sand or mud with her abdominal flap, the female releases her eggs into it. Using her 'pleopods' (swimming legs), she gathers all her eggs up to carry them under her abdomen. They look like a spongy mass.

The eggs hatch in two to four weeks. During hatching, the female stands on the tips of her legs and moves her abdominal flap to help free the zoeae. The lifecycle then begins again.



Male



Female

Boys and girls

As juveniles, male and female mud crabs are difficult to tell apart but it gets easier as they mature. The abdominal flap of females is much broader than that of males and becomes heavily pigmented when the female reaches maturity. Another difference is the claws, which are much larger in males.

Love bites

Male mud crabs sometimes have dark spots or abrasions on their underside and first walking leg. These are caused by their shell rubbing against the female's while they are coupled together. These 'mating scars' indicate the male has recently mated and can provide information about the health of the fishery. The mating scars are more common in larger crabs. This is probably because larger males fend off smaller males when fighting over a female.

i If caught, 'berried' (egg-carrying) females should be immediately returned to the water. The eggs look like a spongy mass underneath the abdomen.

Empty shells

Recreational fishers who take home a crab that has recently moulted may be disappointed because it won't have had a chance to fill its body cavity with flesh. It will probably contain mostly liquid or a jelly mass with little edible flesh. Commercial fishers report that when crabs with little flesh are returned to the water, they become full of meat in a few weeks.

If you want a meaty crab, don't take one with:

1. A clean shell and sharp teeth on the claws.
2. Any movement when you gently press the top of the shell.
3. Any movement when you turn a (male) crab over and press the underside next to the second walking leg.

Diet

Mud crabs emerge from their burrows at night to forage for food; they eat almost anything. However, they mainly eat slow-moving or stationary bottom-dwelling animals such as molluscs, smaller crabs and worms. They also eat plant material.

They use a range of senses to find food. Their eyes are set on stalks to give them 360 degree vision, in and out of the water. They also have a pair of antennae between their eyes that can detect minute changes in water movement and chemistry. In addition, the tips of the legs (known as dactyls) are covered in tiny hairs that are highly sensitive to touch and taste.

When they feed depends on temperature and physiological factors, such as if they are moulting. When clutching food, mud crabs use their large claw to crush and the smaller claw to cut. Both claws are extremely powerful; an 80 millimetre crab can crush shells that require up to 40 kilograms of force to break.



Mud crabs come out at night to feed and can travel up to 500 metres looking for food.

Protecting the habitat

Hooking crabs out from underneath rocks, tree roots and burrows or scoop-netting for them in shallow water can harm the environment. If you use either method, remember:

- Tread carefully on mud flats and stay on a single path if possible.
- Keep away from mangrove roots. They are critical for the mangroves' health.
- Avoid stepping on and destroying burrows when trying to extract crabs.



Photo: Shannon Conway

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Websites:

Department of Resources – Fisheries, Northern Territory Government
www.nt.gov.au/d/Fisheries

Food and Agriculture Organization of the United Nations
www.fao.org

Glossary

Antennae

A pair of mobile appendages on the head that are often whip-like and respond to touch and taste.

Berried

An egg-bearing female crab.

Carapace

The thick hard shield, made of chitin (a protein) or bone, that covers part of the body.

Cuticle

The hard protective layer covering the epidermis (outer skin layer) of many invertebrates.

Larvae

The plural of larva. A larva is the newly hatched immature form of the crab.

Leeuwin Current

A warm ocean current that flows southwards near the coast of Western Australia.

Megalopa

The last larval stage of a crab's life when it develops functioning claws.

Ova

Unfertilised female egg cells.

Pheromone

A chemical substance secreted by some animals that affects the behaviour or physiology of other animals of the same species.

Pleopods

Appendages used primarily to carry eggs in females but also adapted for swimming.

Zoeae

The plural of zoea. A zoea is a free-swimming larva – the immature form of some crustaceans. It has one or more spines on the carapace and undeveloped limbs.

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FURTHER INFORMATION

www.fish.wa.gov.au

DEPARTMENT OF FISHERIES – HEAD OFFICE

3rd Floor, The Atrium,
168 St Georges Terrace, Perth 6000
T: (08) 9482 7333 F: (08) 9482 7389
E: headoffice@fish.wa.gov.au
ABN: 55 689 794 771