Local Land Services

Manning River helmeted turtle

Myuchelys purvisi

Credit: Phil Spark

Unique to the Mid Coast

Within the Manning River catchment of New South Wales, Australia, resides a remarkable creature — the Manning River helmeted turtle (*Myuchelys purvisi*). Also known as the Manning River saw-shell turtle or the Manning River snapping turtle, this freshwater turtle is a unique piece of natural heritage found naturally nowhere else on Earth.

However, the Manning River helmeted turtle faces an uncertain future. Confined to the middle and upper reaches of the Manning River system, its population is potentially threatened and faces numerous challenges. Habitat degradation caused by pollution and unsympathetic land uses disrupts the delicate ecosystem the turtle depends on. Native animals such as goannas, domestic and wild dogs, foxes and pigs may prey on nests possibly further jeopardising their survival. Additionally, competition for resources with non-native turtle species adds another layer of pressure.

Concerted conservation efforts are underway to protect this irreplaceable part of the Manning Valley's biodiversity. Researchers are diligently studying the Manning River helmeted turtle's distribution and needs to develop effective conservation strategies. The education and awareness of landholders and the wider community about this species is essential to conserving it for the future.

The Manning River helmeted turtle is only found in the wild on the Mid Coast, making it unique to the region.

NSW GOVERNMENT

Are Manning River helmeted turtles found near you?

Surveys for the Manning River helmeted turtle found the species in the northern and western parts of the Manning Valley, including along the Barnard, Barrington, Cooplacurripa, Manning, Mummel, Nowendoc and Rowleys Rivers, and Bobin, Dingo and Myall Creeks. It has only been found in the Gloucester River at Faulkland and Bundook.

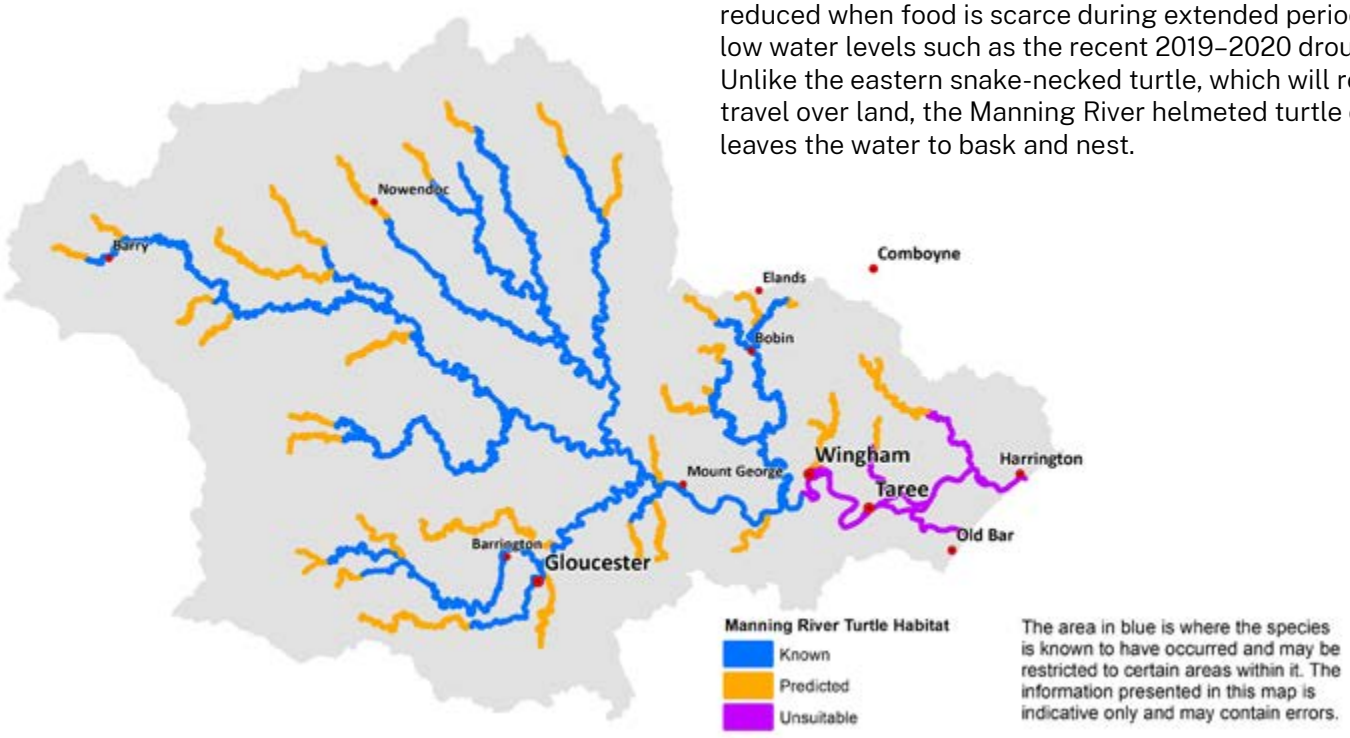
Why they are important?

The conservation status of Manning River helmeted turtle is currently listed as **Endangered** by both the New South Wales and Australian Governments.

Habitat and biology

Manning River helmeted turtles are a medium sized short necked freshwater turtle that can likely live more than 40 years. This species occupies a wide range of riverine environments and appears to have no established preference for water clarity, type of bed material or water depths. The only limitation on distribution within the Manning River system that has been established to date is the turtles apparent absence from smaller streams.

Manning River helmeted turtles are omnivorous, mainly feeding on small animals on or near the bottom of the waterway, fruit and other land plant material that has fallen into the water, algae and water plants. They lay eggs between October and December, but may extend throughout most of summer, and although 23 eggs have been laid in captivity in one clutch the average clutch size is 13 eggs. Nests are made in sandy loam or gravel and have been recorded up to 5 metres from the water edge. Females grow to be larger than males and it has been estimated that it takes 11 years for males to become sexually mature and 13 years for females. This indicates that they grow by about 10 mm a year, but this is likely to reduced when food is scarce during extended periods of low water levels such as the recent 2019–2020 drought. Unlike the eastern snake-necked turtle, which will readily travel over land, the Manning River helmeted turtle only leaves the water to bask and nest.



Below: Mummel River habitat (Darren Fielder)

Potential threats

The most persistent threat is posed by foxes raiding nests, and possibly even eating adult turtles particularly when nesting. It is possible other animals including goannas, pigs and dogs may raid nests as well. There is also a risk of rapid population decline due to viral infection as happened to the closely-related Bellinger River turtle in March 2015.

Other threats include:

- Changes in waterway vegetation and disturbance caused by clearing and grazing livestock.
- Sediment and nutrients associated with agriculture and other land uses flowing into waterways.
- High weed densities smothering gravel banks where nesting takes place.
- Removal of in-stream habitat such as logs.
- Illegal turtle and egg collection.
- Competition for resources and hybridisation with introduced Macquarie turtle (*Emydura macquarii*).
- Fragmentation of the population.
- Water extraction which may cause some waterways to stop flowing.
- Increased intensity of droughts and floods due to climate change. Widespread and intense bushfire causing declines in water quality and loss of waterway vegetation.

Top: Profile showing the distinctive yellow stripe and barbels under the chin (Bruce Chessman).

Above: Manning River helmeted turtle hatchlings (Darren Fielder).

Below: Adult Manning River helmeted turtle with identifiable 'helmet' on top of the head (Phil Spark).

Identification

The Manning River helmeted turtle is a medium-sized, short-necked, freshwater turtle, typically reaching around 20 cm in length. It's recognisable by its distinctive yellow stripe along the jaw and neckline. This stripe, however, can be confused with the introduced Macquarie turtle (*Emydura macquarii*), which is also a native turtle but not to the Manning River catchment and has a narrower stripe closer to the jaw. Like other freshwater turtles, the Manning River helmeted turtle has two short barbels (whisker-like protrusions) from the base of the lower jaw whose purpose is still unknown.

The turtle's common name comes from the hard, cap-like skin on its head. Adult turtles (when their top shell is greater than 10 cm) have a pointed head shape when viewed from above, with a prominent nose, particularly males. Males also have longer tails than females.

The Manning River helmeted turtle shares its habitat with the introduced Macquarie turtle and the eastern snake-necked turtle (*Chelodina longicollis*), which is naturally found in this area. To tell the two similar species apart, look at the underside of the shell (known as the plastron) — the Manning River helmeted turtle's shell is yellow to brown with dark blotches, while the Macquarie turtle's is generally a uniform grey or cream to brown. Additionally, the iris colour of the Manning River helmeted turtle's eyes are pale yellow to greenish, whereas the Macquarie turtle typically has bright yellow eyes.

This species is mainly active during the day, often basking on logs, rocks, or riverbanks, although they have been observed foraging in shallow areas at night. Unlike the eastern snake-necked turtle, the Manning River turtle does not inhabit dams and is unlikely to be seen crossing roads.

It is best not to handle turtles unless their saftey is at risk.

Nesting

With only one confirmed nest recorded in the wild, very little is known about the nesting behaviour of the Manning River helmeted turtle, which is why we are calling on the community for help. Any observation of a Manning River helmeted turtle nest will be an incredibly valuable step towards understanding more about their life history, and extremely important towards the conservation of the species.

The Manning River helmeted turtle is closely related to the Bell's turtle (*Myuchelys bellii*) and it is thought their nesting behaviour might be similar. Some of the following information on nest detection and protection is based on current knowledge informed by long-standing research as part of the Turtles Forever Program in the Northern Tablelands of NSW, Canines for Wildlife and information from 'Bell's Turtle Nest Protection Guidelines'.

What to look for

It is extremely difficult to find a nest intact but there are a few indicators to observe when searching:

- Test digs or small cleared depressions left in the soil.
- Little holes left from hatchlings leaving the nest.
- In clay soils where the turtle has packed down the top of the nest, there can be evidence of a soil 'plug' on top, as the soil has dried and cracked after the nest was laid.
- On a sandy or alluvial substrate, a nesting turtle might leave a body trail, with smooth plastron (shell) tracks and marks from claws where they have exited and entered the water.
- Look for an imprint left by nesting turtles — front leg claw marks and a bare flattened area are a very good indication that a female has nested.

Where to look

- On and near the banks of rivers and creeks, mostly within 10 m of the water and up to 2.5 m above normal water level.
- In deposits of silt, gravel and shingle beds and bars.
- Open areas with full sun where eggs can incubate.
- Turtle eggs can survive some inundation of nests.

Raided nests

Nests raided by native and introduced animals are easier to spot than intact nests. Foxes are known to be highly effective at preying on nesting freshwater turtles and their eggs, often within 24–48 hours of a nest being laid. In these situations, there will be:

- Small, broken bits of white shell and shell membrane.
- Disturbed soil, possibly a hole where the egg chamber has been dug open by the fox.
- Often a fox scat in the hole or around the site, where the fox has marked the site to deter other foxes.

Information on raided nests is very important as it indicates active breeding and can identify potential nesting hotspots to be protected. Sometimes discovered nests could be those of eastern snake-necked turtles or Macquarie turtles — not necessarily Manning River helmeted turtles.

When to look

- Egg-laying generally occurs from October to December but may extend throughout most of summer.
- Shortly after rain, and during rain in the late afternoon, seems to be a trigger for them to emerge from the water and begin nesting.
- Turtle eggs incubate in the riverbank for up to 100 days before the hatchlings emerge and make their way into the water.

Top: Female laying eggs (Dan Rumsey).

Right: Manning River helmeted turtle nest being excavated for the security population at Aussie Ark (Rye Gollan).

Indigenous significance

The Cultural significance of different species is varied for Indigenous Australians, however because this species is restricted in range there is some specific information that can be shared about the name of the Manning River helmeted turtle. Aboriginal people had names for everything long before other cultures arrived. Species that were 'discovered' and named were already named by the original inhabitants of the land. The Gathang language name for Manning River helmeted turtle is **Djarii** (Taree) **Bila** (river) **Guraa** (turtle — pronounced Goo-ra).

The Biripi people occupy the lands of the Manning River catchment and turtle eggs from freshwater rivers and lakes were collected as part of their diet. Turtles were roasted and their eggs eaten but the use of Manning River helmeted turtle by the Biripi people is not well documented.

The Manning River helmeted turtle may be considered as a totemic species for the Biripi people. Totemic species hold special Cultural, spiritual, and social significance with Indigenous communities, they often represent Ancestral connections, clan identity and are integral to the Lore and Traditions of the people.

For the Biripi people, the Manning River helmeted turtle embodies important aspects of their Cultural heritage and environmental knowledge. It serves as a symbol in their stories, ceremonies and practices reinforcing the deep connection they have with Country.

Protecting totemic species like the Manning River helmeted turtle is essential not only for biodiversity conservation but also for preserving the Cultural heritage and identity of Indigenous communities.

Monitoring and conservation

Since 2018, over 230 sites across the Manning Valley have been surveyed for freshwater turtles, with Manning River helmeted turtles found at 131 of those sites (55%). Permanent pools in the upper reaches of the rivers and larger creeks have been found to support higher numbers of Manning River helmeted turtles than the large pools in the lower and middle reaches.

Around 860 Manning River helmeted turtles have been caught to date and 765 have been permanently marked to help estimate population size and movement patterns. So far, around 70 Manning River helmeted turtles have been recaptured, with the total population estimated to be at least 10,000 across the Manning catchment. The average distance that recaptured Manning River helmeted turtles have moved is only 350-metres, with many re-caught in the same pool that they were first caught in. The largest movement distance recorded was over 6 km, with the next largest being 2.5 km

Encouragingly, around 24% of the captured Manning River helmeted turtles have been sexually immature turtles, indicating that there is ongoing recruitment into the population. To date, only one nest has been found when a female was discovered digging on a sandy gravel riverbank at dusk during drought-breaking rains in January 2020. The eggs from the nest were removed as the site was vulnerable to nest predation, trampling by cattle and from immersion once the river returned to its normal level. The eggs were incubated at the Australian Reptile Park facility at Somersby on the NSW Central Coast and ten hatchlings were born in March 2020, 48 days after the eggs were rescued. Three very young hatchlings, less than 3 cm long, were found at another location, indicating a nest was nearby.

The insurance population of 12 adult Manning River helmeted turtles (6 males and 6 females) is housed in specially designed ponds at the Australian Reptile Park. All the females have recently laid eggs and there are now over 40 hatchlings. Hatchlings will be grown to a size where they will be able to fend for themselves when released back into the wild at the place where their parents were captured.

Hunter Local Land Services has assisted private landowners in conducting feral pig control programs in the upper Manning River Catchment. The NSW National Parks and Wildlife Service has also conducted feral pig control programs on land they manage in the catchment.

Left: Manning River helmeted turtle researcher (Alex Pike).

You can help

Install nest guards around known nest sites to exclude foxes, pigs and dogs while allowing hatchlings to emerge safely — 90 mm chicken wire can be used effectively.

Protect sensitive waterway areas by excluding livestock with fencing and providing off-stream livestock watering points.

Undertake planting of native fruit-bearing plants, such as lilli pillis and figs along the edges of creeks and rivers.

Remove weeds along riverside gravel banks where Manning River helmeted turtles prefer to dig their nests.

Undertake coordinated control of feral animals such as foxes, wild dogs and pigs. Contact Local Land Services for further information.

Don't allow domestic dogs to roam or dig up turtle nests.

Support local efforts to maintain and improve natural waterways by joining a local community group such as Landcare and the Manning River Turtle Group.

Download the Turtle SAT app to your mobile phone to record turtle sightings.

Report sightings to Department of Climate Change, Energy, the Environment and Water – Biodiversity, Conservation and Science, Andrew Steed (see beside contact details).

For more information

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