

Turtle surveys of the Hunter River Catchment 2020/21

Outcome: Hunter River short-neck turtle population status = HEALTHY

Freshwater turtle populations have generally been in decline around Australia. During the 2019 drought concern was raised about the Hunter River Short-neck turtle population status due to mass mortality events.

Hunter Local Land Services engaged North West Ecological Services to undertake surveys in the Hunter River and its tributaries with the aim of determining the abundance and distribution of the turtle populations within the Hunter catchment. This is the first official turtle survey ever conducted in the Hunter catchment.

Hunter Catchment

The catchment covers approximately 21,500 sq km. The Goulburn River is the largest tributary. The upper/western catchment is characterised by clear flowing gravel bed streams that are highly ephemeral. In the west, the catchment runs through the Goulburn River National Park where the river changes dramatically to a broad shallow sandy stream. The eastern half of the catchment has streams with gravel beds some of which have spring fed sections with the sandy Wollombi Brook system to the south.



How was the survey completed?

Twenty-five locations were surveyed along the Goulburn, Krui, Merriwa, Munmurra, and Hunter Rivers, Wybong and Halls Creeks and Wollombi Brook. The western half of the catchment was surveyed in September/October 2020 and the eastern half in January 2021. Survey effort was greater in the upper catchment with limited surveys in the lower catchment.

Traps at the survey locations were set in permanent waterholes 1.5 metres deep.



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Each survey location had on average 8-9 traps set for one night. Turtles captured were examined and then released.

Information recorded included: weight, sex, carapace (shell) length and width, plastron (underbelly) length, visual health assessment and adult females were examined to determine if carrying eggs. A sample was taken from 2-3 turtles per location for viral analysis to screen for Bellingen River virus. Bellingen River virus is a serious disease causing high mortality in freshwater turtles. Of the 38 swabs tested all were negative for the virus.

Species facts

Hunter River Short-neck turtle (*Emydura macquarii gunabarra*)

This turtle is a sub species of the Macquarie Short-necked turtle (*Emydura macquarii*) which occurs throughout the Murray Darling Basin. The Hunter River Short-neck turtle is only found in the Hunter River catchment.

It is smaller in size than the related Macquarie Short-necked turtle and has more obvious parallel striations and midline furrow or depression on the oval shaped carapace (shell), no upturned edge of the carapace, a single cream, yellow stripe on the neck, and a dark throat.

Females lay between 7-18 eggs in loamy soil on river banks between October and January. Diet is omnivorous.

Eastern Long-neck turtle (*Chelodina longicollis*)

This turtle has a long neck which is usually

about half the length of its carapace (shell). Eastern Long-neck turtles are found in Eastern Australia from Queensland down to South-Eastern South Australia.

These turtles lay eggs in summer. They also exude a pungent liquid secretion from their armpits and groin when threatened.

Their diet is carnivorous feeding mostly on small invertebrates.

Study Results

In total, 1261 Hunter River Short-neck turtles and 35 Eastern Long-neck turtles were trapped across the 25 locations. The trapping effort equates to 146 trap nights.

One suspected hybrid (Hunter River Short-neck crossed with Macquarie Short-neck turtle) was found.

The breakdown of sexes in the captured Hunter River Short-neck turtle was: More than double the number of females (652) to males (269) were found with 340 juveniles unable to be confidently sexed.

The largest turtle captured was a female (full of eggs) weighing in at 2.1kg.

The four



Eastern Long-neck Turtle.

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smallest turtles weighed less than 40 grams. This indicated that they hatched around February 2020.

There was a higher proportion of juveniles associated with sandy streams and few juveniles in degraded gravel bed streams. This is likely to be due to sandy stream providing more suitable nesting habitat. Dart Brook had fewer turtles, possibly due to less drought refuge holes.

The highest capture success was at Site 16 (Merriwa River) with 9 traps catching 235 Hunter Short-neck turtles and 5 Eastern Long-neck turtles. At this point, the river was a gravel bed but degraded by intensive agriculture, a short distance upstream it was clear and clean.

The Hunter River Short-neck turtle was most common in mid elevation streams between 174m – 350 m above sea level.

Health Results

Turtles captured showed overall good health. Only a few had eye problems such as cataracts or eye damage. There were a few turtles with

shell damage
and/or



Hunter River Short-neck Turtle

deformity most likely inflicted by predators.

One turtle had a serious wound which required treatment before successful rehabilitation over several months leading to its release back into the wild.

Conclusions

Very high survey success rate.

Hunter River Short neck turtle dominates in the streams.

Eastern Long-necks were found in the smaller creeks and in dams suggesting post-drought movement and/or some competition with the Short-neck turtle.

Hunter River Short-neck population is abundant, healthy and breeding sufficiently to maintain the population.

Surveyed population has a good mix of age classes but is dominantly immature. As the juveniles mature and begin to breed the population should increase significantly depending on rainfall conditions.

The extreme 2019 drought did have an impact.

Abundant juveniles showed good recruitment and hatchling survival rates suggesting insignificant egg predation.

No evidence of nest predation by foxes or pigs was found (NB: survey timing did not coincide with laying period).

Results show that the Hunter River turtle is very resilient.

Platypus and water rats appeared to be in low abundance.

Halls Creek was the only stream surveyed where the Eastern Long-neck turtle would be considered common.

Photos: Phil Spark

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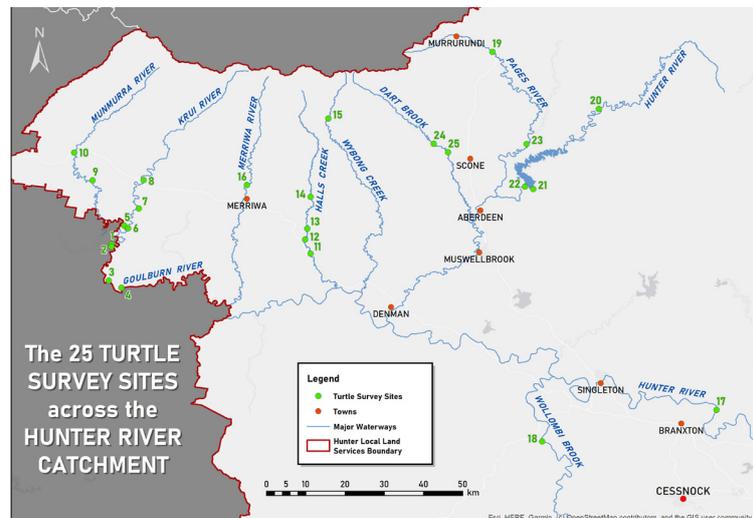
Threats to turtles

- Drought
- Climate change
- Sedimentation of permanent water holes within streams due to erosion and prolonged low flows
- Overgrazing
- Pollution
- Disease
- Loss of protective riparian vegetation
- Predation
- Hybridisation between closely related turtle species from release of unwanted pets could impact population genetics

Landholder management actions

- Control soil erosion by fencing off rivers, gullies and eroded areas to exclude stock and encourage re-establishment of groundcover.
- Increase river bank ground and native vegetation cover to help stabilise banks, reduce erosion and improve water quality.
- Cease to pump from permanent refuge waterholes during droughts to ensure holes last as long as possible.
- Spring fed and permanent waterholes should be protected (fenced to exclude stock) as they have the highest conservation value.

- Reduce agricultural chemical use and runoff to prevent pollution of aquatic ecosystems.
- Manage pest animals and weeds.



For more information on this survey or for river management advice to help our Hunter River turtle populations contact Hunter Local Land Services:

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River Management Advice:

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The full turtle survey report can be accessed here:

https://www.lls.nsw.gov.au/_data/assets/pdf_file/0006/1392090/PUBLIC-Final-Report-for-HUNTER-RIVER-CATCHMENT-TURTLE-SURVEY-26th-Sept-7th-Oct-2020-and-Jan-2021-1.pdf