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Turtles in trouble

Bruce Chessman

Imagine a world without turtles and tortoises. Unfortunately, many of the world's turtle and tortoise species are at risk of extinction within a few decades, as more of their habitats are lost or degraded and they are killed for their meat or shells, or their eggs are dug up and eaten.

Credit: R-J Spencer

Australia's turtles, though better protected than those in many countries, are not free from hazards – in fact, the signs are that introduced predators, drought and the new threat of climate change add up to an uncertain future for our unique turtle species.

Turtles and tortoises are great survivors. They first appear in the fossil record some 220 million years ago, about the same time as the first dinosaurs. But today, turtles rank among the most endangered of animals, with nearly half of the world's species now regarded as threatened, largely by excessive harvesting and habitat loss or degradation.

Australia lacks the land tortoises found on most other continents, but has a rich variety of marine and freshwater turtles. Most of Australia's freshwater turtles occur nowhere else in the world, and those few that extend beyond our borders range only as far as Papua New Guinea and eastern Indonesia.

Our 24 or so freshwater species include the critically endangered western swamp turtle, which is restricted to a few wetlands near Perth (see ECOS article on relocating endangered species in response to climate change). We also have much more widespread and abundant species like the eastern long-necked turtle, a frequent victim of motor vehicles when it crosses roads after rain in pursuit of new habitat.

We have little idea of their conservation status or population trends of many of our turtle species. Spending most of their time on the bottom of rivers and lakes, freshwater turtles are usually out of the public eye, and they are rarely included in long-term monitoring programs.

There are, however, good reasons for concern about the future of our freshwater turtles. Research has shown that most turtle eggs, which nesting females bury in shallow sand or soil, are dug out and eaten by predators – mainly introduced species, such as foxes and feral pigs.

Still, adult turtles can live for decades and lay hundreds of eggs in a lifetime, so even if only a few eggs survive, the resulting hatchlings may be enough to sustain turtle populations.

Credit: John O'Neill

But if hatchlings, juvenile turtles and adults also suffer a heavy mortality, turtle populations may slowly wither away. And turtles are assailed by many hazards in today's Australia. In addition to road kills, turtles are drowned in fishing nets and struck by boats. They are eaten by dogs, cats, foxes, pigs and some native animals.

During the recent 'millennium drought' in south-eastern Australia, some dry lake beds were littered with the remains of dead turtles. And in the lakes at the mouth of the Murray River in South Australia, where salinity rose during the drought, many turtles perished after becoming weighed down by massive growths of estuarine tubeworms on their shells.

In the last few years I have been re-visiting turtle populations on the Murray River near Yarrawonga that I first studied as a PhD student in the 1970s. [1]

Changes in catch rates suggest that one of the three species inhabiting this area, the eastern long-necked turtle, has declined in abundance by about 90 per cent over the past 30 years. The Murray turtle appears to have declined by about 70 per cent. The broad-shelled turtle, does not seem to have become less abundant, but was scarce in the 1970s and remains so today.

Credit: Bruce Chessman

The population structures of the first two species – the eastern long-necked and the Murray turtles – have also changed. They are now dominated by older turtles, with a small proportion of juveniles. Such population structures are also seen elsewhere, suggesting that population ageing may be widespread.

Turtles are an integral part of our natural heritage and widely recognised in Indigenous culture. Only through a sound understanding of their population trends and the threats that they face, gained through adequate monitoring and research, can we plan effective conservation actions to ensure their future.

Dr Bruce Chessman is a Principal Research Scientist in the New South Wales Office of Environment and Heritage. He has particular interests in the ecology of rivers and wetlands and the conservation of freshwater biodiversity.

1 Chessman, Bruce C (2011) Declines of freshwater turtles associated with climatic drying in Australia's Murray–Darling Basin. *Wildlife Research* **38**, 664–671. http://dx.doi.org/10.1071/WR11108

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