

Tracking down Bell's turtle

By

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Chessman Ecology



In 1844, John Edward Gray, the Keeper of Zoology at the British Museum in London, published a catalogue of the Museum's collection of turtles and some other reptiles. It included a brief description of a juvenile, short-necked freshwater turtle that he named Bell's Phrynops (*Phrynops bellii*). The specimen had passed to the Museum from the collection of Gray's colleague Thomas Bell, who had published his own Monograph of the Testudinata in the 1830s. Not knowing its provenance, Gray tentatively assigned *P. bellii* as an inhabitant of the tropical Americas, and it was assumed for over a century to be a South American turtle, like other species of *Phrynops*. Finally, its correspondence with a turtle found in the upper Gwydir and Namoi river systems in north-eastern New South Wales was recognised by US zoologist Anders Rhodin, and confirmed by Australian naturalist John Cann. It is now classified as one of the four species of the wholly Australian genus *Myuchelys*.

I became interested in *Myuchelys bellii* a decade ago. Although a Ph.D. study by Darren Fielder had by then explored much of its biology, he had focussed on a small population in Queensland, and the distribution of the species in New South Wales was unclear. I was curious about its apparent confinement to streams at high elevations, and wondered whether it was especially cold-adapted and vulnerable to global warming.

From 2012 to 2015, I trapped turtles at 60 locations across New England to demarcate the species' range. It transpired that *M. bellii* occurred through much of the region, but only in west-flowing streams, where it was typically present only as far downstream as gorges where the gently flowing rivers of the tableland turn into plummeting cascades. And at the bottom of the cascades, I found a different short-necked species, the widespread Macquarie turtle (*Emydura macquarii*). It became apparent that *M. bellii* had once occurred much more widely, probably at least as far west as Walgett, and that its range had been fragmented as a result of competition with *E. macquarii*. *M. bellii* wasn't confined to high elevations because it needed cold conditions but instead because steep gorges had prevented *E. macquarii* from reaching those elevations.

My survey also showed that populations of *M. bellii* were dominated by large and apparently old adults, with scant juvenile recruitment. Through the work of UNE Ph.D. student Louise Streeting and others, we now know that the vast majority of *M. bellii* nests are raided by introduced red foxes – a major hazard to the long-term persistence of the species in its remaining range. Fortunately, Northern Tablelands Local Land Services obtained NSW and Federal government funding for a major conservation program that is reducing fox predation by protecting nests with cages and electric fences, as well as incubating eggs in captivity and produce hundreds of hatchlings for release. My focus is now on monitoring to see how this program is changing the species' populations.



Bruce Chessman is a freshwater ecologist and consultant who has undertaken research on freshwater chemistry, cyanobacteria, diatoms, plants, invertebrates, fish, turtles and ecosystem processes. He has a particular interest in the conservation of freshwater species, human impacts on fresh waters, and the use of macroinvertebrates and diatoms as ecological indicators for rivers and wetlands.

We appreciate Bruce taking the time to contribute to our blog!