

POPULATIONS AND POPULATION ECOLOGY

When Laurence Taplin came to work with us in Arnhem Land in 1979, he brought a technique he had learnt from Col Limpus in Queensland: catching 'small' crocodiles by jumping on them. This was a modification of the now familiar 'turtle rodeo' technique, in which marine turtles are captured by diving onto them out of a boat, steering them to the surface and hanging on until they can be brought on board. The first night out with us, Laurence showed us how to dive on crocs up to 1.5 m (about 5 feet). Protected (a bit) by a wetsuit, with the croc transfixed (hopefully) in the steady beam of a strong spotlight, he caught croc after croc, diving onto them from the boat, his arms outstretched in front, palms spread and thumbs locked, to descend onto and grasp the unsuspecting croc around its neck, then holding it aloft with its jaws snapping in mid air. We were very impressed! Before long, we were all employing this technique and I can clearly recall the rush of adrenaline before committing to the leap out of the boat.

*Why mention this at the start of a chapter on population ecology? Because, on a recent trip to Australia's Northern Territory, David and I recalled some of those adventures and remarked that it would no longer be a wise way to catch small crocs in those waters ... the populations have recovered, or nearly so. *C. porosus* was hunted so hard after WWII that, by the early 1970s, adults were few and far between and, also, very shy ... they were the survivors of the hunting days. In the 1970s, we were catching their naïve offspring and the old, experienced*

mommas and poppas were staying out of the way. With hunting stopped, numbers increased slowly in most river systems, young ones grew to adulthood and now they are not nearly as shy. Catching crocs by jumping on them was very effective, and loads of fun, but it is no longer to be recommended!

It is hard to know what is 'natural' in a crocodylian population and there are very few if any 'pristine' populations anywhere. In those populations recovering from hunting, the size and age structures are skewed by their history. Protection has ensured the recovery and security of some populations, but many have disappeared altogether as a result of human pressure (though no species yet, thankfully) and many are in decline. Studying the recovery has been very informative: two good examples being *C. porosus* (Webb *et al.* 2000, Fukuda *et al.* 2011) and *A. mississippiensis* (Elsey and Woodward 2010). The commercial value of their hides – the factor that was threatening their survival – has in the last 30 or so years become more of a stimulus for their conservation, for sustainable use and for increased levels of tolerance. These aspects will be discussed in Chapter 14. In this chapter, we will discuss populations and population ecology from a biological, rather than a management, perspective.

One thing well recognised about crocodylian populations is that their numbers can be reduced severely and quickly by substantial hunting of

*American crocodiles, *Crocodylus acutus*, in Costa Rica. Much like *C. porosus*, this species is associated with brackish or salt water and consequently has a wide distribution encompassing many islands and coastlines. (Photo Megan Higgie)*