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LOCOMOTION, BUOYANCY AND TRAVEL

It is an impressive and memorable sight to see a very large crocodile travelling so fast that it is 'up on the plane', surfing on its chest, driven by the powerful tail and leaving a wake of roiled water! If it is surfing straight at you when you are thigh deep in tannin-stained water, it is even more impressive! The occasion was in 1977. Bill Magnusson, Janet Taylor and I were on an aerial survey for crocodile nesting habitat and were staying with the legendary Northern Territory wildlife ranger Dave Lindner on Coburg Peninsula. Dave wanted to capture and mark a 4 m C. porosus *whose tracks he had seen crossing back and forth between the sea and this shallow freshwater lagoon behind the dunes. His plan was to put a net across the seaward end and we, being naïve in those days, would walk down the lagoon in a line, prodding the bottom with sticks and spears in the hope of driving the croc ahead of us towards possible escape into the sea, so entangling itself in the net.*

The plan was put into action. We walked in a line. We prodded. The dark water hid anything it might contain. Bubbles rose from the soft bottom as we walked. We were now well down the lagoon. I doubted there was any croc there at all, until suddenly – there was! Dave threw his spear. But instead of escaping to the sea, the croc headed for us, specifically at me! I had a couple of seconds' view of an enormous head and teeth coming straight at me, right up out of the water, surfing on a froth-laden, hissing bow wave, the front third of his enormous body being powered over the surface by his tail. And then he veered slightly, sped past me, and sank into the dark water behind us, out of sight.

A more colourful account of this has been written (Magnusson 1990), but I cannot agree with the description that I 'appeared to be running on the surface of the water'. My recollection is that I was frozen to the spot, and it all happened far too quickly for me to even think about running!

Good locomotor skills are very important for crocodylians. They affect the capacity to escape predation, to find and capture food, to choose a place to live and to find a mate. They are most at home in the water, yet they also have a wide range of terrestrial gaits. Their original body design evolved for life on land (Parrish 1987; Reilly and Elias 1998), one sign of which is the way the vertebral column is braced in a way that is better suited for locomotion on land (Chapter 3). Their ancestors were long legged, loping, cursorial (running) land animals (Chapter 2), which might even have been endothermic (Chapter 10) and from which they evolved into ectothermic, aquatic vertebrates whose body shape is much more efficient for swimming. In adapting to aquatic life, they came to rely on an eel-like tail instead of limbs to provide the main propulsive force, and the limbs became much reduced. The shift involved a large change in musculature too: much aquatic propulsion depends on the axial musculature, whereas terrestrial

Nile crocodiles, Crocodylus niloticus, *demonstrating the control crocodylians have over their buoyancy. (Illustration DSK, courtesy Weldon Owen Publishing)*