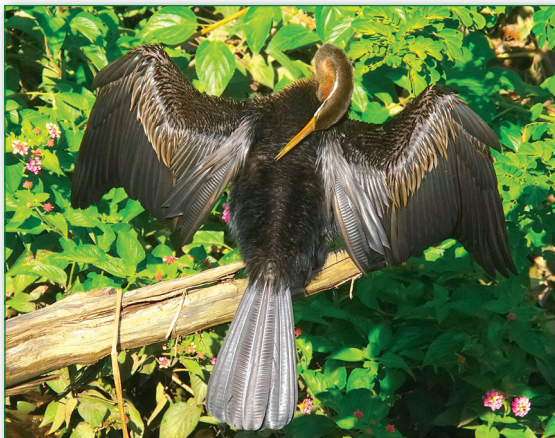# Feather Fascination!

with local Birdwatcher, Jim Butler

The Australasian Darter

THE astonishing Australasian Darter (88cm) is a large nomadic water-bird with a long snake-like neck and a spear-pointed, serrated and elongated bill with no external nostrils.

Darters are occasionally seen swimming in water more than half a metre deep with only their heads and necks visible, but more often seen perched on a branch drying their wings. Darters dive from the water surface with barely a ripple and swim underwater for 30 meters or more in search of fish around submerged vegetation. Darters are stealthy foot-propelled divers which spear fish with a swift strike of their sharp-pointed bills. When they surface, it's only to get enough air for the next dive or to ingest impaled fish by flipping them head-first into their throat. Remarkably, they can also use thermals to soar gracefully to great heights in search of suitable water with fish.

The high-flying, air-breathing Darters have evolved to go underwater to prey on fish through morphological and physiological adaptations to diving. The efficiency of divers depends on their net buoyancy (+, -, o) which is the difference between the upward force of buoyancy and the downward force of gravity. Buoyancy depends on the amount of air carried in plumage, bones and air-sacks. Swimming against a strong positive buoyancy during the downward phase of the dive and the all-important hunting phase means a large amount of oxygen is unavailable for prey searching and capturing. Try holding a balloon under water and you will experience the work a bird must do to stay submerged.

Darters swim lower in the water than many other water-birds due to their morphologically reduced buoyancy—a result of wettable plumage, smaller air-sacs and denser bones. A unique structural characteristic of their feathers allows water to penetrate the plumage thus reducing air-induced buoyancy. Darters benefit greatly from wettable plumage but they suffer the cost of needing to dry their feathers afterwards (see photo).

~ Jim