



PETE OXFORD

# strike force

**G**annets are supremely adapted for plunge-diving. They lack external nostrils and have air sacs under their skin to cushion the impact of striking the water. The full force of the strike is further minimised by their streamlined body form, and miniature accelerometers attached to gannets reveal that there is little effect on the birds as they hit the water, allowing them to maintain their momentum beneath its surface. Indeed, gannets typically slow their descent when they reach their prey by flaring their wings and feet.

The depth to which gannets plunge depends on the speed at which they

*above Cape Gannets and common dolphins targeting a school of sardines. The trails of bubbles track the gannets' plunge-dives.*

enter the water and this is related to the height from which they dive. When feeding on prey that is well below the sea surface, gannets climb to some 40 metres above the water and then rely on gravity to accelerate up to 90 kilometres an hour and penetrate the water almost vertically. However, they can also dive at shallow angles, speeding up by flapping until just before they enter the water, when they extend their necks and stretch their wings back to smoothly break the surface.

The gannet's head has a greater cross-section than its neck, which produces an air cavity around the neck until the breast hits the water surface. This cavity creates the possibility of the neck buckling on impact, but the risk is minimised by strong neck muscles and maintaining a straight neck. Although

on occasion juveniles probably damage themselves while learning to dive, gannets have not been confirmed as suffering from impact trauma. However, they do risk injury or even death if they collide with other predators. Nearly one per cent of dives by gannets feeding in large flocks on the sardine run off the Eastern Cape result in underwater collisions, mainly with other gannets, but also with sharks and cetaceans.

Gannets often call at sea, both while in flight and when resting on the surface. Recordings made by miniature recorders attached to the birds reveal consistent differences in call structure that relate to context. Most of the calls given in flight occur during dives, typically in the last second before the birds hit the water, and appear to function as a warning to others of the risk of collision.



LLOYD EDWARDS

Gannets are visual foragers that feed only by day. Their eyes are positioned to allow binocular vision when scanning the sea for fish and as they zero in on their prey. Like all diving birds, they learn to compensate for the refraction of light at the water surface and are able to change the shape of their eye lens to focus underwater.

Most fish are caught during the gannets' initial descent, when they rely on their speed to catch unsuspecting fish to depths of about 10 metres. However, gannets can also pursue their prey underwater, propelling themselves with their large webbed feet and partly closed wings to depths of up to 30 metres. They can use this technique from the surface too, forgoing a plunge-dive entirely.

Compared to many other seabirds, gannets have fairly energy-expensive flapping flight. They reduce the cost of commuting by flying in long lines, drafting behind the bird in front of them like cyclists in a peloton. They also tend

to remain low over the sea to further reduce drag using the ground effect and to gain lift along the front of waves. However, groups sometimes rise above the sea, possibly to look for feeding groups or maybe as a strategy by the lead bird to encourage someone else to do the hard work at the front of the line! Once they encounter a school of fish it's every gannet for itself and the cost of flight increases substantially as they work hard to position themselves for a plunge-dive.

Cape Gannets eat a variety of fish and the occasional squid, sometimes scavenging from trawlers, but sardines and other oil-rich pelagic fish are their preferred prey. These schooling fish are patchily distributed at sea, which makes them challenging to locate reliably. Gannets increase their chances of detecting schools by looking for other predators. The adults' bold black-and-white plumage makes them conspicuous at sea, especially when feeding. If gannets leaving their colony to feed can see any foraging birds, they mostly fly to where the

*Adult and immature Cape Gannets plummet out of the sky to attack a school of pelagic fish.*

action is. Failing that, they gather in rafts on the water near the colony, then head off in the direction from which returning birds come. After a while, if they fail to encounter a feeding group, they may land again and wait for passing birds to provide fresh cues as to where to go.

Unless they have a chick to provision, after a successful foraging bout gannets typically rest on the water for a few hours at sea overnight, gathering in flocks for safety. This allows them to travel far from their colonies, especially outside the breeding season, when some birds disperse north in coastal waters as far as West Africa and Mozambique.

PETER RYAN

