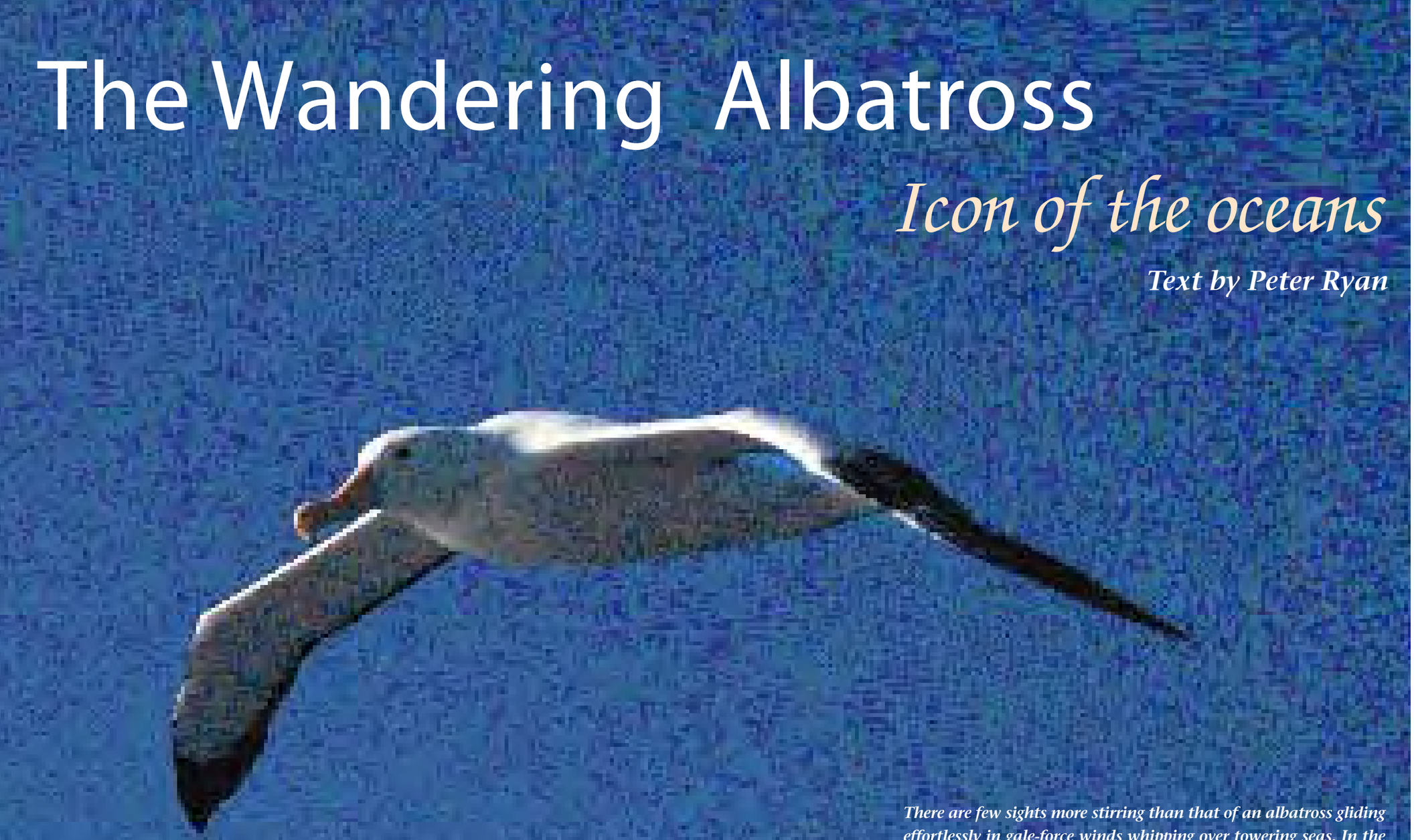
The Wandering Albatross

Icon of the oceans

Text by Peter Ryan



A Wandering Albatross hangs in the updraft next to a ship. Inveterate ship-followers, the Wandering and other 'great' albatrosses are distinguished from all other albatrosses by having black only on the trailing edge of the underwing.
PHIL KAHL/FITZPATRICK INSTITUTE

There are few sights more stirring than that of an albatross gliding effortlessly in gale-force winds whipping over towering seas. In the days of sailing ships, albatrosses were seen as harbingers of good fortune, because their presence implied strong winds. More recently they have become a symbol of freedom and wide-open spaces in an ever-shrinking, over-peopled world. Like the whale, the albatross is an icon of the deep ocean, encapsulating the mystique of this most-alien of habitats to humans.

In this feature, Peter Ryan explores the biology of the Wandering Albatross Diomedea exulans, ***the largest species, which has been studied for more than 30 years at its breeding islands in the Southern Ocean.***

Albatrosses are an ancient lineage, with fossils dating back to the Eocene, 50 million years ago. Despite being relatively well studied, albatross taxonomy is in a state of flux, with anything from 14 to 24 recognized species (see page 35). Although four species breed in the tropical Pacific Ocean, and fossil remains from Florida and England show they used to occur in the North Atlantic, most species are found in the Southern Ocean. Between 40 ˚S and 65 ˚S there is an almost unbroken expanse of ocean circling the globe, characterized by some of the most persistent winds in the world. It is here that the great albatrosses – the Wandering and Royal – ply their trade.

With a wingspan of up to 3.5 metres, the Wandering Albatross is renowned as having the longest wings of any living bird. Weighing up to 12 kilograms (although most weigh 7–10 kilograms), they are also among the heaviest of flying birds. Wandering Albatrosses range throughout the Southern Ocean, using their long, slender wings to obtain a free ride from the prevailing westerly winds. In a technique known as dynamic soaring, the albatrosses and their cousins, the petrels, use differences in wind speed between wave troughs and crests to generate lift and speed without flapping. In this way they can cover vast distances in search of prey, but they pay a price in that they are restricted to only feeding within a metre or two of the sea surface. Their long wings trap a large volume of air, making them too buoyant to be efficient divers. As a result, Wandering Albatrosses are indiscriminate foragers, taking a wide range of prey, including inappropriate items such as plastic litter. Squid comprise the majority of the diet, and most are probably found dead or moribund because species that float when dead predominate in the albatross's diet.

In calm weather, the Wandering Albatross has to work hard to stay aloft, and, with its heavy, hunch-backed appearance, the species is cumbersome relative to the smaller albatrosses, or mollymawks. When the wind does fail, the Wanderer spends a large amount of time sitting on the water; one satellite-tracked individual barely moved for seven days when it was becalmed in a high-pressure cell. The requirement for reliable wind prevents the Wandering Albatross from penetrating tropical waters, and it is scarce north of 30 ˚S. However, a handful of records from

the Northern Hemisphere shows that it can cross the doldrums, albeit rarely.

Albatrosses are among the most oceanic of seabirds, coming ashore only to breed. As a result of the logistic difficulties of studying a bird that flies at up to 80 km/h and often travels 1 000 kilometres a day over the open ocean, most of our knowledge about the Wandering Albatross is based on the relatively short periods it spends at the breeding islands. It is only in the last 10 years with the aid of satellite tracking that we have begun to gain any real insight into the biology of the bird at sea.

LIFE ASHORE: THE LONG INFANCY

Wandering Albatrosses breed in loose colonies on relatively flat, open, windswept areas at sub-Antarctic islands. They need a long runway for take-off, and on calm days birds often walk in their ungainly, goose-like fashion to exposed ridges where breezes are stronger.

Adult birds return at the end of November, and locate their mate at the site of their previous nest, reaffirming the pair bond through a series of elaborate displays. Both sexes participate in building the nest, which typically is a large, shallow cone made of vegetation and soil, less impressive than the mud pillars of the mollymawks.

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Above *Young Wandering Albatrosses have among the longest nestling periods of any bird, spending up to 10 months on the nest.*
Below *Despite their rather ungainly gait on land, Wandering Albatrosses retain their regal bearing.*

After mating, the females go to sea for a few weeks to feed while forming the single, large egg, which is laid about a month after first returning to the island. Although laying within a colony is staggered over several weeks, individuals tend to lay on almost the same day of the year in successive breeding attempts. At Marion Island, most eggs are laid in the first week of January. Incubation is shared between the sexes, with shifts of up to 15 days, but these become shorter as hatching approaches. The chick finally struggles out of the egg (a process that takes a few days in itself) almost 80 days after the egg was laid.

The young albatross, which weighs only about 400 grams, emerges with a thin layer of down, but this is scant protection from the cold winds and is no defence at all against predatory Sub-Antarctic Skuas *Catharacta antarctica* and giant petrels (*Macronectes* spp.). ▷

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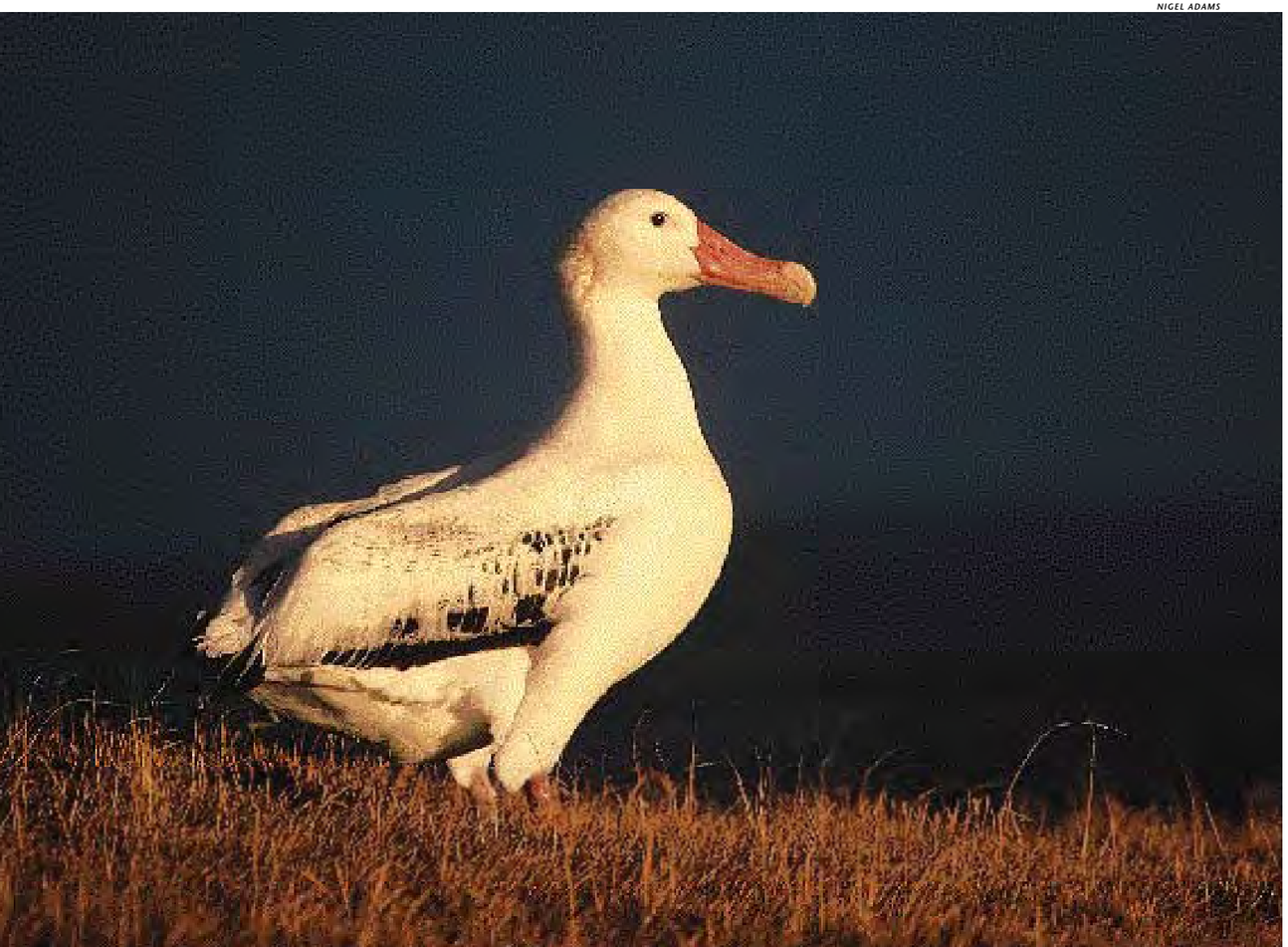


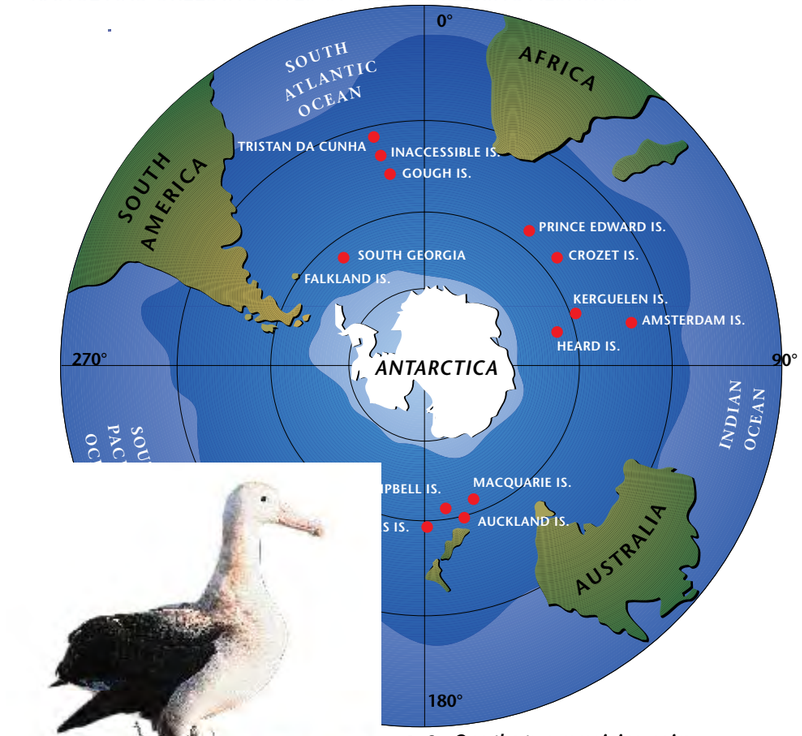
As a result, the chick is brooded for the first month, during which time it grows to the point where it is capable of looking after itself. Each parent stays with the chick for 3–4 days, while the other forages for itself and the chick.

By the end of the brood stage, the brief summer is drawing to a close, and the chick spends the winter in solitary splendour on its icy throne. Both adults are away feeding at sea, each returning roughly once a week to feed the chick a meal of squid and oil weighing anything from 1–2 kilograms. The chick grows rapidly, gaining 500 grams each week, and by the end of the winter is as large as its parents, with a thick layer of fat under its dense coat of pale grey down. It reaches its maximum weight seven and a half months after hatching, when it is more than a third heavier than its parents. In the final month and a half before fledging, it slims down to a more respectable body weight, and replaces its down with the characteristic chocolate-brown juvenile plumage.

The nestling period lasts a staggering 9–10 months. I have often wondered what it must be like to sit in one spot for that length of time, and am surprised that they show such a strong tendency to return to the exact same spot to breed later in life. Some chicks do show a spark of what could anthropomorphically be termed 'initiative' by moving house towards the end of their long infancy; they build 'play' nests a few metres from the one provided by their parents. It is not known whether this is functional (for example, to escape parasites or to practice for later breeding attempts) or is merely a misdirected behaviour.

At the end of the nestling period, parental feeds become less frequent, and the young birds depart to sea, having virtually attained adult size. As far as we know, they have to fend entirely for themselves as soon as they go to sea; there is no evidence of post-fledging parental care. Even so, it is simply not possible for adults that successfully rear a chick to breed again the following year. The time investment from laying to fledging averages 350 days, so there is not enough time for adults to replenish their reserves and moult before the breeding season begins again the following year. As a result, pairs breed only every second year. However, if their breeding attempt fails before midwinter, they can try again the following year.

RANGE AND BREEDING SITES OF THE WANDERING ALBATROSS



Left *One the two remaining pairs of Wandering Albatrosses breeding on Inaccessible Island. Note the extensive dark feathering typical of the northerly breeding populations.*

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THE WANDERERS OF INACCESSIBLE ISLAND

With the extinction of Wandering Albatrosses on Tristan da Cunha at the beginning of this century, adjacent Inaccessible Island is now the most northerly breeding site. Between 1870 and 1938 the numbers of pairs breeding on the island plummeted from around 200 to only two, apparently as a result of predation by feral pigs, although collecting by humans also played a role. Pigs died out on the island during the 1930s, yet numbers of albatrosses have remained at only two pairs ever since.

The failure of the population to recover may in part be due to the lack of birds on the island. At their northern breeding sites, Wandering Albatrosses are restricted to plateau areas where vegetation is short enough for them to run along the ground and gain enough speed to take flight. Only a small area of Inaccessible Island has suitable vegetation, and a young bird returning after years at sea has to land in the right spot or risks getting trapped in the dense woodland that covers much of the summit of the island. In the absence of other birds on the island to provide visual cues, this fate might befall a number of birds returning to the island for the first time.

UGLY DUCKLINGS, ADOLESCENCE AND MARRIAGE

The young birds remain at sea for 5–8 years before returning to the breeding islands. During this time at sea they moult out of their juvenile plumage, and become progressively paler. However, the acquisition of adult plumage, like all things for Wandering Albatrosses, is a slow and rather painful process.

Moult of the flight feathers in albatrosses is protracted, not following the wave pattern of replacement used by most birds. Similarly, the brown juvenile body plumage is only slowly and patchily superseded by white adult plumage. This results in a mottled 'leopard stage', in which each bird has a unique set of markings.

The rate and extent to which white plumage is attained varies both geographically and between the sexes. Typically, males become whiter than females, and birds at more southerly breeding sites (that is, the 'Snowy Albatross') are whiter than those ▷

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breeding farther north. The process continues slowly throughout the albatrosses' life, with some males finally being all white except for the tips of the flight feathers and the primary coverts. However, the birds return to the breeding islands in search of a mate long before this final stage is achieved.

Although there have been a few observations of birds displaying at sea, most courting takes place on the breeding islands. Young birds returning for the first time tend to arrive several months later than breeding adults, coming ashore in February and March. The courting adolescents gather in small groups to display, performing rituals with evocative names such as the Gawky Look, Yapping and Bill-vibrating, while emitting a bizarre series of croaks, whines and gurgles. However, the most impressive display is Wing-stretching, when the immense wings are held out and bowed slightly forward to show off the dazzling white underwing and almost embrace the recipient of the display.

A few birds visit other breeding islands, but almost without exception end up finding a mate and breeding in the colony where they were born. After a few seasons, birds establish a relationship with a single partner, and start coming ashore earlier in the summer, until, after five years, they arrive at the same time as the breeding adults. At this stage they attempt to breed for the first time, although there is a fair chance of failure in these early attempts, often through standing on the egg! The average age of first breeding is 11–12 years, with the females being on average slightly younger than the males. However, there is considerable variation, with some breeding as early as the age of seven, and others taking up to 16 years.

THE COST OF BEING CAUTIOUS

All this restraint raises the question: 'Why take so long to breed?' Selection favours the fecund, and yet here are animals that, at best, produce only a single offspring every second year, and wait 10 years before even trying to breed for the first time.

The facile answer is 'Because it works' (although it may be better to say 'worked')! Breeding is a stressful business, especially for young, inexperienced birds. It appears that young birds need the long adolescent period to learn the ropes, such as locating the most reliable feeding areas around the breeding islands. Satellite tracking has shown that birds don't range randomly over the ocean: each individual has favoured foraging areas which often coincide with oceanographic features such as seamounts or shelves that are likely to have higher concentrations of food.

The low reproductive rate is offset by a long adult life. Albatrosses are the longest lived birds, with banding records providing evidence of individuals known to live at least 60 years. Once a bird matures and starts to breed, it is likely to go on to produce enough young to keep the population viable. The major drawback to this slow but steady life history is that small increases in the mortality rate can have dramatic consequences, and thus albatrosses require careful conservation.

In the past, albatrosses have been exploited for meat, eggs and feathers, leading to the extinction of some breeding colonies. For example, Wandering Albatrosses last bred at Tristan da ▷

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Above *Two birds establishing their pair bond, with the spectacular wing-stretching display.*
Top right *Unlike most other albatrosses, which form dense colonies, Wandering Albatrosses breed in loose aggregations. Albatross Valley, on South Africa's Prince Edward Island, houses the densest colony of Wandering Albatrosses in the world. It also supports four other breeding albatross species.*
Middle right *The newly hatched chick requires the constant attention of a parent to keep it warm and protect it from marauding skuas and giant petrels.*
Right *The chick is fed a meal of semi-digested squid, oil and water. There is some evidence that adult seabirds can slow their rate of digestion when foraging for chicks, and thus supply food from areas far removed from their breeding site.*

Cunha, the most northerly breeding site, in 1907, as a result of harvesting the chicks for Christmas lunch!

Today, albatrosses are protected from direct exploitation throughout their range, but their survival is in jeopardy. They are being killed in large numbers by longline fisheries (see page 37), resulting in world-wide population declines. Numbers of Wanderers have fallen dramatically at some colonies, and the trend persists. The growing use of longline fishing has to be coupled with education and active enforcement of measures to reduce seabird bycatch if we want albatrosses to continue roaming the Southern Ocean.

SEEING A WANDERER...

Sadly, it is becoming increasingly difficult to see Wandering Albatrosses off Africa. During the 1950s they were seen in their hundreds and were as abundant as Shy Albatrosses off the Western Cape; today they are scarce visitors to the edge of the continental shelf. Probably the best bet to see one is to take a sea trip that ventures at least 30 miles off the Cape Peninsula, preferably during winter, but even then you will be lucky to see one on any given day. Although they follow ships assiduously in oceanic waters, Wandering Albatrosses tend to avoid the dense aggregations of mollymawks and other seabirds that gather at demersal trawlers.

The mollymawks are more accessible, with Shy, Black-browed and Yellow-nosed all fairly common, at least seasonally, from southern Angola to southern Mozambique. The demersal trawling grounds off the west and south coasts of southern Africa are the best place to see large numbers of albatrosses, with more than 5 000 gathering behind trawlers to scavenge fish and offal.

Of course, the best way to view albatrosses is to visit them at their breeding islands, and this may soon become a realistic option. The South African Department of Environmental Affairs and Tourism, which administers the Prince Edward Islands, currently is assessing the viability of limited tourist access to Marion Island. Such tourism would have to be strictly controlled to avoid disturbing the delicate island ecosystem and to ensure that no foreign organisms are introduced, but, if handled properly, it could benefit research and the long-term conservation of the islands. □

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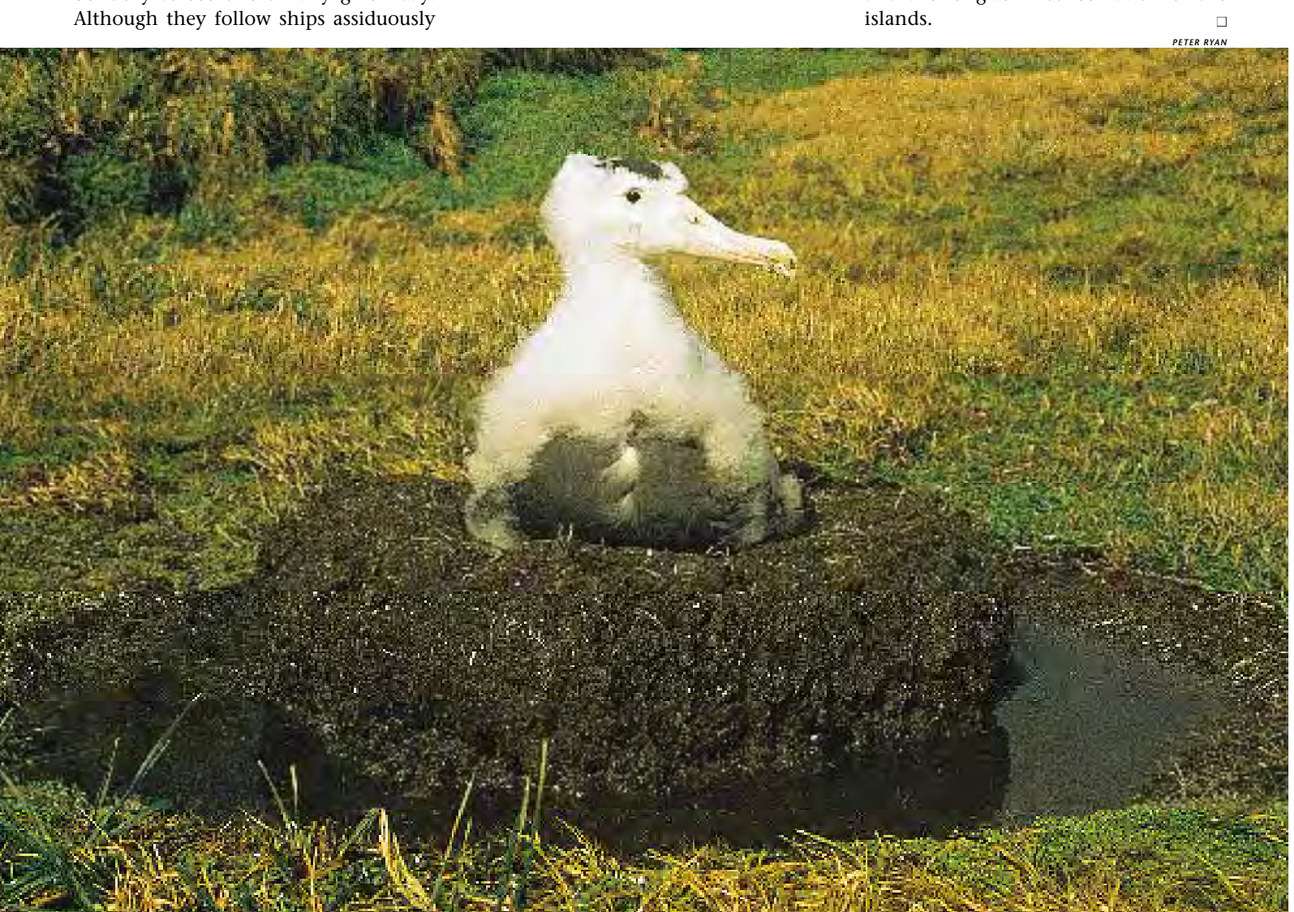
Above ***Chicks spend their first winter alone in their nests, having to withstand the often harsh sub-Antarctic winter conditions.***

Below ***Most Wandering Albatrosses nest on gentle slopes, where drainage isn't a problem. However, this large chick moulting into its juvenile plumage has a more substantial nest to cope with marshy conditions.***



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A NEW TAXONOMY FOR ALBATROSSES

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A young Sooty Mollymawk, with its characteristic grey down and 'gas-mask' face pattern.

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The incomparably beautiful adult Sooty Mollymawk; they are the most vocal albatrosses.

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The Yellow-nosed Mollymawk is the smallest and arguably the most agile albatross. This bird uses its feet as brakes while soaring near its nest site.

Most authorities place the albatrosses in two genera: the two sooty albatrosses in *Phoebetria,* with the remaining 12 species in the rather diverse genus *Diomedea*. This genus includes the rather different great albatrosses and smaller mollymawks of the Southern Ocean, with the four North Pacific species perceived to be intermediate forms linking them.

Recent genetic analyses have shown that this view of the genus *Diomedea* does not reflect the likely evolutionary relationship. Four genera are now recognized, with a major split between the albatrosses and mollymawks, each with two genera. The great albatrosses in *Diomedea* are closely related to the North Pacific forms *Phoebastria*, with the sooty mollymawks *Phoebetria* being more closely related to the typical mollymawks *Thalassarche.*

At the same time, there is a suggestion that many of the forms currently described as subspecies warrant recognition as full species. This boosts the number of species from 14 to as many as 24, with all the changes being among the great albatrosses and mollymawks.

GREAT ALBATROSSES *Diomedea*
*Sanford's Albatross *D. sanfordi* (formerly the northern subspecies of Royal Albatross)
*Royal Albatross *D. epomophora* (the southern subspecies of Royal Albatross)
Gibson's Albatross *D. gibsoni* (the Auckland Island population of Wandering Albatross)
Antipodean Albatross *D. antipodensis* (the Antipodes and Campbell Island populations of Wandering Albatross)
Amsterdam Albatross *D. amsterdamensis* (only 20 pairs, restricted to Amsterdam Island)
*Wandering Albatross *D. exulans* (restricted to Gough and Inaccessible islands)
*Snowy Albatross *D. chionoptera* (populations of Wandering Albatross at South Georgia, the Prince Edwards, Crozets, Kerguelen, Heard and Macquarie)

PACIFIC ALBATROSSES *Phoebastria*
*Laysan Albatross *P. immutabilis*
Black-footed Albatross *P. nigripes*
Waved Albatross *P. irrorata*
Short-tailed Albatross *P. albatrus*

SOOTY MOLLYMAWKS *Phoebetria*
*Sooty Mollymawk *P. fusca*
*Light-mantled Sooty Mollymawk *P. palpebrata*

MOLLYMAWKS *Thalassarche*
*Yellow-nosed Mollymawk *T. chlororhynchos* (the nominate form from Tristan and Gough in the South Atlantic Ocean)
*Carter's Mollymawk *T. carteri* (the Indian Ocean populations of Yellow-nosed Mollymawk, also referred to as *bassi*)
*Grey-headed Mollymawk T. chrysostoma
Campbell Mollymawk *T. impavida* (the Campbell Island population of Black-browed Albatross)
*Black-browed Mollymawk *T. melanophris* (all the other Black-browed populations)
*Buller's Mollymawk *T. bulleri* (nominate Buller's Albatross, breeding on Solander and Snares islands, south of New Zealand)
Pacific Mollymawk *T. platei* (populations of Buller's Albatross breeding on Chatham and Three Kings islands, east of New Zealand)
*Tasmanian Mollymawk *T. cauta* (the nominate form of Shy Albatross, restricted to three islands off Tasmania)
*White-capped Mollymawk *T. steadi* (arguably the same as *T. cauta*; breeds on the Auckland islands, south of New Zealand)
Chatham Mollymawk *T. eremita* (the distinctive Chatham Island form of Shy Albatross)
Salvin's Mollymawk *T. salvini* (the form of Shy Albatross from the Snares and Bounty islands, with a few pairs also on the Crozets)

This proposed revision is the subject of considerable debate. It has important implications for the conservation of albatrosses, raising the status of many species to 'rare' or 'threatened' in terms of the new IUCN Red Data categories. It also poses significant problems for field identification, because many of the new species are almost inseparable at sea.

From an African perspective, the proposed revision raises the number of species recorded from 10 to 14, adding two great albatrosses and two mollymawks. Probably the greatest problem facing African birders will be the identification of Tasmanian and White-capped albatrosses, should this distinction be supported.

** Denotes species recorded in African waters, although in the case of Buller's Albatross it is uncertain which form was recorded.*

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An adult Yellow-nosed Mollymawk on Inaccessible Island, showing the grey head typical of the Atlantic Ocean population.

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An adult Grey-headed Mollymawk: superficially similar to the Yellow-nosed Mollymawk but occurring farther south in colder waters.

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A Light-mantled Sooty Mollymawk with its chick at its cliff-side nest.