Short papers

The predation of Balearic Shearwaters by Peregrine Falcons

Abstract Previous reports have documented attacks by Peregrine Falcons *Falco peregrinus* on seabirds as large as Manx Shearwaters *Puffinus puffinus*. The examples presented here demonstrate that Peregrines will also readily attack Balearic *P. mauretanicus* and Sooty Shearwaters *P. griseus*. The regular predation of Balearic Shearwaters at breeding colonies is particularly noteworthy given the endangered status of this species.

Seabirds face a variety of direct threats in European waters, both on the breeding grounds (e.g. introduced mammalian predators) and at sea (e.g. oil pollution, fisheries bycatch). Small numbers of seabirds are also taken by raptors, in particular the Peregrine Falcon *Falco peregrinus*. There are, for example, many published records of Peregrines taking Manx Shearwaters *Puffinus puffinus*, most of which are presumed to have occurred when the latter species was on or near land (e.g. *Brit. Birds* 38: 218, Marshall 1965, Saunders 1965, Wormell 1965). Documented reports of attacks over open water are less frequent (e.g. King 1965), and appear to be mostly unsuccessful. However, juvenile Peregrines in particular will attempt to attack just about any small- to medium-sized seabird flying offshore. In most cases these attacks take place close to land, but Peregrines (and other raptors) have also been seen using ships far offshore as a base for capturing seabirds (RBW pers. obs.).

175. Adult Yellow-legged Gull *Larus michahellis* feeding on remains of a Balearic Shearwater *Puffinus mauretanicus*, 12th July 2008, 06.42 hrs (shortly after sunrise). The cave entrance is to the left (view is the same for subsequent images).

176. Balearic Shearwater *Puffinus mauretanicus* landing at the cave entrance, 12th July 2008, 04.08 hrs (shortly before dawn).

Here, we document recent incidents of Peregrines predating Balearic Shearwaters *P. mauretanicus* on the breeding grounds at night. We also summarise recent examples of attacks on Balearic Shearwaters in UK coastal waters. The Balearic Shearwater is listed as Critically Endan-

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gered (IUCN 2008), so it is important to understand the scale and extent of any potential threats to this species.

Attacks on breeding Balearic Shearwaters in the Balearic Islands

In the Balearic Islands, MM-G has previously observed Peregrines attacking Cory's Shearwater *Calonectris diomedea* fledglings near their burrows, and found the remains of Balearic Shearwaters below a Peregrine plucking post. In 2008 and 2009, two Reconyx infrared cameras were installed at the entrance of a Balearic Shearwater nesting cave on the island of Menorca, after the remains of several shearwaters (both adults and fledglings) were found near the entrance. Initial images showed Yellow-legged Gulls *Larus michahellis* eating shearwaters at the cave entrance (plate 175). However, there were no images of gulls attending the colony at night, when the shearwaters are active (plate 176), or of gulls actively predating live shearwaters.

It soon became clear that a Peregrine was visiting the cave entrance regularly at night (plate 177), and was predating both incoming adult and wandering fledgling Balearic Shearwaters (plates 178 & 179). None of the photos show more than one Peregrine, and it is possible that just one

177. Peregrine Falcon *Falco peregrinus* at the cave entrance, 9th July 2008, 22.57 hrs.

178. Peregrine Falcon *Falco peregrinus* taking Balearic Shearwater *Puffinus mauretanicus* at night, 12th July 2009, 21.25 hrs.

179. Peregrine Falcon *Falco peregrinus* taking Balearic Shearwater *Puffinus mauretanicus* at night, 13th July 2008, 02.10 hrs. The shearwater is apparently a fledgling, as subsequent images show downy undertail-feathers.

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180. Saker *Falco cherrug*-type falcon heading out to sea at Gwennap Head, Cornwall, before attacking two Balearic Shearwaters *Puffinus mauretanicus* (circled in red).

individual was involved, although this cannot be confirmed. Most attacks took place on moonlit nights, and we suspect that the falcon was perching a few metres above the cave entrance and waiting for shearwaters to appear below it on an area of bare ground.

In 2008, photos indicated that there were five confirmed kills in eight nights' filming (0.62 kills per night), while in 2009 there were 13 confirmed kills in 24 nights (0.54 kills per night). These figures are comparable with the number of dead birds recovered from around the cave entrance: 15 dead birds were found in 30 days in 2008 (0.5 kills per night) and 21 in 37 days in 2009 (0.56 kills per night). No remains of dead shearwaters were noted in 2007, indicating that this may be a recent phenomenon. Overall, the results suggest that the rate of predation at this site during the 2008 and 2009 observation periods was at least one bird every two nights, with most activity in June and July. After July the shearwaters leave the colony and the falcon then returned to its normal diet of local Feral Pigeons *Columba livia* (MM-G pers. obs.).

This appears to be the first time that Peregrine Falcons have been observed taking Balearic Shearwaters, and represents a previously unreported threat to this Critically Endangered species. The fact that these incidents have taken place on Menorca is particularly interesting, as the taxonomic status of the 'Balearic Shearwaters' on this island is the subject of much debate (e.g. Genovart *et al.* 2005, 2007, Robb *et al.* 2008). Human influence may be a factor at this colony, since nocturnal light contamination is significant (Maó, the island capital, is just 3 km away, and a tourist development is also nearby). Artificial lights from these developments may assist night-hunting Peregrines (see Drewitt & Dixon 2008).

Attacks on migrating Balearic Shearwaters in UK waters

In UK waters, a number of reports of Peregrines attacking Balearic Shearwaters at sea have recently been received through the Sea-Watch SW project (www.seawatch-sw.org). Both adult and juvenile Peregrines have been involved in these attacks, which have been reported in southern England between Kent and Cornwall. Furthermore, also in Cornwall, on 24th October 2008 an adult Peregrine was seen pursuing and striking a Sooty Shearwater *P. griseus* in flight off Trevose Head. The shearwater fell to the sea and was circled by the Peregrine for about 30 seconds, during which time the falcon made several unsuccessful attempts to take the shearwater. The shearwater appeared unharmed, and flew off after resting for a couple of minutes. In addition, a Saker *Falco cherrug*-type hybrid (most likely an escaped falconer's bird) was seen unsuccessfully attacking two Balearic Shearwaters about 0.5 km offshore at Gwennap Head, Cornwall, on 6th October 2008 (plate 180). Both shearwaters plunge-dived to evade capture.

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Moult and ageing in Black-browed Albatrosses

The Black-browed Albatross *Thalassarche melanophris* is the most frequently recorded albatross in the Western Palearctic (Snow & Perrins 1998). The ability to determine the age of birds in the field can be helpful when attempting to track individuals over time and between sites, thus enabling greater precision when evaluating records and establishing patterns of occurrence. This short paper discusses the moult timing and ageing of Black-browed Albatrosses in their first few years of life, and highlights some apparent errors in the literature. My conclusions are based on observations of a few thousand birds at sea (and thus not of known age) in the southern hemisphere, mainly during 1997–2009, in all months except May–July.

Moult and ageing in the Black-browed Albatross has been the subject of two papers based on observations from the breeding grounds at South Georgia (Prince *et al.* 1993; Prince & Rodwell 1994). More recently, in a paper in *British Birds*, Jiguet (2000) attempted to apply the results of these earlier papers in the context of observations at sea. Albatrosses in the genus *Thalassarche* require two to three moult cycles to replace all of their remiges, and birds renew the outer and middle primaries in alternate years, termed phase 1 and phase 2 primary moult, respectively (Prince *et al.* 1993; fig. 1). Moult phases, in combination with bill patterns (which are highly variable among birds of the same age), can allow individual Black-browed Albatrosses to be aged up to five years or older (Prince & Rodwell 1994). Since the youngest birds returning to South Georgia were 'two-year-olds', the timing of moult could only be inferred for birds between their second to third years of life. Black-browed Albatrosses breed in the southern summer (laying in October, fledging in April–May) and it has been assumed that all ages undergo wing moult mainly during May to August, in the non-breeding season (Prince *et al.* 1993; Prince & Rodwell 1994).

Ageing terminology

Describing the age of birds is fraught with problems. For example, the meaning of 'two-year-old' is ambiguous: is this a bird 24 months of age from hatching (in December–January) or from fledging (in April–May); or is it actually in its third year of life (and thus potentially 24–35 months' old), as with human ages? To avoid ambiguity, I have assumed a fledging date of 1st May, and describe age as measured in months from

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181. Black-browed Albatross *Thalassarche melanophris*, Chile, 30th October 2006. At about six months after fledging, still mostly in variably faded juvenile plumage. Note the uniformly fresh upperwings and a few new (post-juvenile) grey feathers appearing on the back.