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### Struggle for safety

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*Document Version*  
Publisher's PDF, also known as Version of record

*Publication date:*  
2010

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*  
van den Hout, P. J. (2010). *Struggle for safety: Adaptive responses of wintering waders to their avian predators*. [Thesis fully internal (DIV), University of Groningen]. [s.n.].

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## When shorebirds meet raptors

Along the East-Atlantic Flyway, when foraging on mudflats, non-breeding shorebirds must fear a variety of predators, such as Short-eared Owls *Asio flammea*, Marsh Harriers *Circus aeruginosus*, Hen Harriers *Circus cyaneus*, Goshawks *Accipiter gentilis* and Sparrowhawks, *Accipiter nisus*, and several falcon *Falco* species. For the two most important sites for staging/overwintering (Wadden Sea) and overwintering (Banc d'Arguin) we give an overview of the raptor species these millions of migrant shorebirds, which breed in high Arctic regions, meet on the way. I make an attempt at a crude valuation of the relative impact these may have in terms of disturbance and lethality.

### WADDEN SEA

At least on open mudflat, Merlins *Falco columbarius*, which were observed in autumn and winter, hunted primarily passerines and seldom shorebirds (see also Cramp *et al.*, 1983). Hobbies *Falco subbuteo* visit the Wadden Sea in small numbers during their spring and autumn migration (Bijlsma *et al.*, 2001, LWVT/SOVON, 2002). I observed Hobbies creating massive disturbance when hunting smaller shorebirds, such as Dunlins *Calidris alpina* and Ringed Plovers *Charadrius hiaticula*. During our field work Goshawk occasionally traversed open mudflats on passage, but generally created minor disturbance; the same applies to Kestrels *Falco tinnunculus* (I once observed a Kestrel landing on a large wader roost to join shorebirds without causing any disturbance!). Marsh Harriers did cause disturbance among shorebirds, but attacks, let alone catches, were seldom witnessed, at least on open mudflat. Once in a while an Osprey *Pandion haliaetus* visited the Wadden Sea during migration, and, in striking contrast to the Banc d'Arguin (were Ospreys are common all winter and don't instil fear; see below), they created massive disturbance in shorebirds.

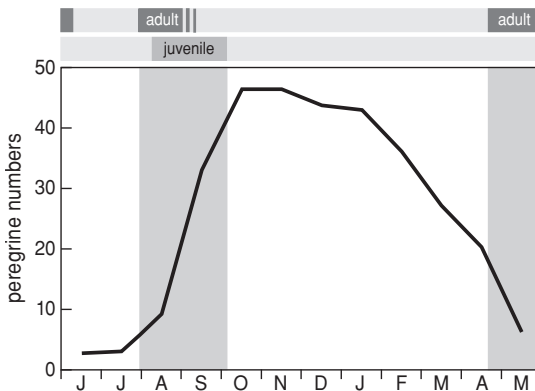
But, certainly the most lethal predator of shorebirds in the Wadden Sea is the Peregrine Falcon *Falco peregrinus*. After having recovered from the pesticide crash

during the 1960s and 1970s (Ratcliffe, 1993), Peregrines have now become a common raptor in the Wadden Sea. Many Peregrines, particularly from Fenno-Scandia, winter in the Wadden Sea. Numbers mount from August onwards and reach a plateau in mid-winter. Many Afro-Siberian migrants, including Red Knots *Calidris canutus*, evade these raptor peaks by migrating just before (autumn) or after (spring). Yet, juveniles, by migrating later in autumn, experience higher overlap with raptors (Figure III.1). Similar patterns were reported by Lank *et al.* (2003), Ydenberg *et al.* (2005) and Ydenberg *et al.* (2007). But as virtually all sand bars and spits contain one or more Peregrines during winter, shorebirds that spend the winter in the Wadden Sea are regularly confronted with these fast aerial hunters.

Peregrines were most often seen hunting in early morning and just before dark. They were highly selective towards 'easy' prey, such as exhausted and/or lost racing pigeons, or – often nocturnal – migrants that were slow flyers (such as Rails *Rallus* species) and/or not familiar with the mudflat habitat (forest species, pelagic species). Such hunting comfort, which relaxed predation pressure for shorebirds, only presented itself at times of migration or in weekends (racing pigeons) (van den Hout, 2009).

### BANC D'ARGUIN (MAURITANIA)

Several raptor species occur at Banc d'Arguin. During our field work some raptors visited Banc d'Arguin occasionally on migration, such as some eagle species (Bonelli's Eagle *Hieraetus fasciatus* and Golden Eagle *Aquila chrysaetos*), but these



**Figure III.1** How transient Red Knots avoid the peak of Peregrine migration by travelling early and late in the season. The bars represent the staging periods in the Dutch and German (the latter particularly in spring) Wadden Sea of *C. c. canutus*. The dashed portion of the dark grey bar represents the period in which a minority of the adult Red Knots are still present in the Wadden Sea. The pattern of Peregrine occurrence refers to the Dutch Wadden Sea and is based on counts in 1989-2006. Peregrine numbers are 40% imputed. Adapted from Van den Hout, 2009.

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were mostly seen resting. Black Kite *Milvus migrans*, and Montagu's Harrier *Circus pigargus* occur more than occasionally during migration, but were still uncommonly seen. Conversely, Marsh Harriers were common in winter. They were usually seen in slow flight checking dune ridges, stopping every now and then. Shorebird disturbance, however, was commonly limited to a small zone created by the harrier's flight path, whereas attacks on shorebirds were seldom witnessed (however, in view of their hunting style, attacks may be easily concealed from the observer!). Marsh Harriers were often seen at places where shorebirds gathered in large numbers, such as high tide roosts. Occasionally a Marsh Harrier was spotted hanging around falcons on the hunt in order to steal their prey – in which they sometimes succeeded. Short-eared Owls were occasionally spotted in the low dunes bordering the mudflat, but neither attack nor disturbance of shorebirds was ever witnessed. Ospreys were common. One or more Ospreys were commonly spotted while resting close to roosting shorebirds. Quite contrary to the situation in the Wadden Sea (as just described) shorebirds were by no means disturbed by Ospreys, even when they flew very close overhead!

Clearly, the raptors that stroke most terror into shorebirds at Banc d'Arguin were falcons *Falco* spp.. Although many shorebirds that winter in Africa may succeed in escaping the peak number of Peregrines in the Wadden Sea, they are still confronted with falcons after arriving on their winter destination. Here they encounter at least three species of large falcons: Peregrines, either transients in autumn, or wintering individuals, and at least two resident species: Lanner Falcon *Falco biarmicus*, and Barbary Falcon *Falco pelegrinoides*. The plumage characteristics of Barbary Falcon that occur at Banc d'Arguin seem intermediate between populations from the Middle East and a subspecies of Peregrine, *Falco peregrines brookei*. These birds represent the most westerly extreme of the Barbary Falcon cline. In fact, Barbary Falcon was long considered a subspecies of Peregrine (*Falco peregrines pelegrinoides*), and traces of *F. p. brookei* which occurs in the south of France, Spain and coastal North Africa East through Mediterranean to Caucasus may be apparent in these falcons, which may cause the large variation in plumages among these falcons (Cramp *et al.*, 1983, van Duivendijk, 2002, Isenmann, 2006, Forsman, 2007; Fig. III.2).

At Banc d'Arguin falcons are most abundant in autumn, when both transient and resident birds are present. Like in the Wadden Sea, at this time of the year, predation on shorebirds was invariably relaxed when falls of passerine migration brought many exhausted passerines – most often Pied Flycatchers *Ficedula hypoleuca* – inland.

In our study area the resident falcons staid all winter, but their numbers decreased markedly in spring. I speculate that these birds leave foraging sites closer to mainland and possibly withdraw on remote islands where they can safely breed free from Golden Jackal *Canis aureus*. Indeed, breeding of Lanner Falcon was reported on remote islands at Banc d'Arguin; eggs are laid between early February and early May, and fledging takes place between early April and early May (Cramp



**Figure III.2** Falcon species that occur on the Banc d'Arguin. (A) Lanner Falcon *Falco biarmucus erlangeri* (adult); picture taken by Jeroen Reneerkens; (B) Barbary Falcon *Falco pelegrinoides* (adult); picture taken by Jan van de Kam (C) Lanner Falcon (subadult); picture taken by Jan van de Kam (D) Peregrine Falcon (picture not taken at Banc d'Arguin, but in Sitz Mountains, Alaska, by Piet J. van den Hout).

*et al.*, 1983, Isenmann, 2006). So, the danger of jackals for Lanner eggs (or the incubating owner of these eggs) might relax predation danger exactly at times when shorebirds become more vulnerable for predation as they fuel up for northward migration (see also Chapter 5).

#### ACKNOWLEDGEMENTS

I am grateful to Arend Wassink for sharing his ideas about – intergrades between – Peregrine and Barbary Falcon in North-West Africa.