

Occupational hazards: Brown Boobies (*Sula leucogaster*) as a nuisance to fishermen at Fernando de Noronha Island, with comments on injuries inflicted to the birds

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RESUMO: Riscos ocupacionais: o atobá-pardo (*Sula leucogaster*) como estorvo para pescadores na Ilha de Fernando de Noronha, com comentários sobre ferimentos causados às aves. Os atobás (Sulidae) são beneficiados pelo descarte de pesca em diversos locais da costa brasileira. Entretanto, na Ilha de Fernando de Noronha essas aves são um estorvo aos pescadores de tarrafa. Relatamos aqui como os pescadores, quando tarrafeiam sardinhas nas praias para servirem de isca na pesca de alto-mar, são assediados por atobás-pardos (*Sula leucogaster*). Assim que os pescadores escolhem um local para lançar a tarrafa, os atobás que sobrevoam as proximidades pousam nas rochas e na areia perto dos pescadores. Quando a tarrafa é recolhida e arrastada pela praia, os atobás se lançam sobre as sardinhas presas na rede, bem como as que escapam das malhas. Ao apanhar os peixes, os atobás por vezes prendem o bico, os pés, ou as asas nas malhas da tarrafa, o que pode resultar em fraturas e outros tipos de ferimentos. Embora não pareçam intencionalmente causados pelos pescadores, tais ferimentos dificultam ou impedem a atividade habitual de pesca dos atobás, podendo resultar em sua inanição e morte.

PALAVRAS-CHAVE: Sulidae, alimentação, ferimentos, habituação, conservação.

KEY-WORDS: Sulidae, feeding, injuries, habituation, conservation.

The association of boobies (Sulidae) with fishing vessels to feed on surplus catches or by-catches is known worldwide (e.g., Carboneras 1992, Branco 2001, Schreiber and Norton 2002). However, as a side effect of this foraging mode several birds are killed during fishing operations, being hit by metal parts of the ship or fishing gear, becoming entangled in nets, or swallowing hooked fishes (Carboneras 1992). Entangled or hooked seabirds may be regarded as a nuisance to the fishermen, who must remove the birds from the fishing gear. During this process, birds that are not already dead (Carboneras 1992) may be killed or maimed.

We report here on Brown Boobies (*Sula leucogaster*) that follow casting-net fishermen and try to snatch the entangled fish at Fernando de Noronha Island, off northeast Brazil. Under certain circumstances this foraging mode is a nuisance to the fishermen and a threat to the birds. We comment on several instances of injured or maimed boobies that become impaired to forage in their habitual way and thus might starve and eventually die.

A total of 14 records of the Brown Boobies associated with fishermen were made at the oceanic Fernando de Noronha Island (-03°51'S, 32°25'W), off Pernambuco, northeast Brazil, during short field trips to the island from 2001 to 2006. The birds were observed with naked eye, through

binoculars, and a 75-205 mm photographic camera lens at a distance of 2-5 m. "Ad libitum" and "behaviour" sampling rules (Martin and Bateson 1986) were used during 10-55 min observational sessions, totalling 420 min.

An artisanal fishing fleet is based on the island, the targeted fishes being mostly tunas (Scombridae), jacks (Carangidae), and dolphins (Coryphaenidae) caught in deeper water around the island (Silva-Jr. *et al.* 2007). These fishes are caught with hook and line baited with sardines (Clupeidae), which the fishermen catch with casting-nets on the sandy shores of the island (Linsker 2003) and kept alive on board in large plastic containers. Thus, to watch the association of Brown Boobies with the fishermen, we followed the latter in their efforts to get sardines.

As soon as the fishermen put their fishing gear on a given shore, the boobies flying nearby spotted them and began to land and gather near the people (Figure 1). When the casting-net was pulled to the shore, the boobies gathered at the net end and frenziedly tried to snatch the wriggling, sometimes free but mostly entangled sardines (Figure 2). During this process a booby might end with its feet or bill entangled in the net. On most occasions the fishermen let the booby successfully freed itself, but sometimes they need to give a "helping hand" to the bird, especially when it entangled a feet or a wing. This was

not an easy task, since the entangled booby jabbed with its strong and pointed bill at the fishermen's hands, and thus hampered their effort to free the bird. Only once we recorded a somewhat rough handling of a trapped booby, which ended with a swollen foot and perhaps some dislodged or broken bone.

The fishermen's tolerance and goodwill towards an entangled booby notwithstanding, we recorded a number of wounded or maimed birds wandering on the shores of the island, or washed ashore dead. Wounds included broken mandible tip (N = 3), broken or maimed feet (N = 3), and broken wing (N = 5). Our records surely underestimate the real number of injured birds, as the local staff of the Ibama (environmental protection federal agency) informed us that wounded boobies and frigatebirds brought by tourists were a common sight at the Ibama's quarters. We strongly suspect that the injuries on bill and feet were due to the boobies' frenzied efforts to snatch a sardine from a casting-net dragged to the shore and thus being entangled in the net mesh. An additional possibility for a broken wing would be a booby getting snared on a line and hook handled by sport fishermen (see below).

Besides snatching sardines from casting-nets of professional fishermen, Brown Boobies also gathered near sport fishermen that stood on rocks at low tide and fished with hook and line. If a fisherman paid not the due attention to his catch and/or did not scare the boobies away, the birds approached and tried to steal the catch that was placed in tide pools or on the rocks nearby. From time to time a bolder booby succeeded to snatch a fish. Due to the proximity of the birds and the line-handling fishermen, there always was the chance of a bird being snared by a line withdrawn from the water by a fisherman, or when the latter twirled the line to cast it in the water. In both instances the line or the hook might snare a booby staying on the line's route.

Whatever the cause of Brown Boobies' injuries, they most likely are due to these birds' habituation to humans and their boldness to get a fish at any opportunity they are able to perceive. A booby wounded on the wing or the bill is unable to forage by the usual way of plunge-diving (Carboneras 1992, Sick 1997) and will starve and eventually die. Thus, we suggest that more care should be exercised by professional and sport fishermen at Fernando de Noronha Island when boobies gather around, thus contributing to the conservation of these sea birds (see Carboneras 1992 for additional threats to boobies and gannets due to human influence).

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FIGURES 1-2: Interaction between Brown Boobies (*Sula leucogaster*) and casting-net fishermen at Fernando de Noronha Island: (1) Fishermen arrange live sardines in a plastic container and prepare the net for another cast, with one booby already landed, one landing (both marked with the letter "B"), and one arriving on the wing (above the fishermen) – plus a Magnificent Frigatebird (*Fregata magnificens*) flying by; (2) five boobies follow a casting-net dragged by the fishermen, with two birds trying to snatch a still entangled sardine – the bird on the right pulls its bill through the meshes of the moving net.