
A large prion *Pachyptila* wreck in south-east Brazil

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Mortalidades massivas de faigões (*Pachyptila* spp.) tem sido registradas em vários países do Hemisfério Sul. Estas podem envolver centenas de indivíduos e são a principal fonte de registros deste gênero para o Brasil. Em Julho de 1996 uma mortandade de *Pachyptila belcheri* e *P. desolata* foi registrada no litoral Brasileiro entre o norte do estado do Paraná, São Paulo e Rio de Janeiro, com registros adicionais da Bahia. Uma estimativa conservadora é de 10.000 aves mortas neste trecho. Todos os indivíduos examinados eram jovens e com peso muito abaixo do normal. Embora associada à passagem de frentes frias outros fatores podem estar relacionados ao evento.

Mass mortalities (“wrecks”) of prions *Pachyptila* spp. have been recorded in several countries, such as New Zealand⁵, South Africa^{1,6} and Brazil⁷, although there is little information from South America. Prion wrecks, usually documented by museum specimens, have been recorded in Brazil in 1954, 1982 and 1984^{4,7} and are the main source of records of these rarely seen birds in Brazil. For example, in a study of beached seabirds along the São Paulo state coast, between 1989–1994, only four prions were found⁴. In July 1996, large numbers of Slender-billed *Pachyptila belcheri* and Antarctic Prions *P. desolata* were found dead or dying along c.1,100 km of coastline between Rio de Janeiro and Paraná states, south-east Brazil.

Quantitative data on the wreck were obtained at two localities in southern São Paulo, Peruíbe (c. 24°20'S 46°50'W; 15 km of beach) and Ilha Comprida (c. 24°50'S 47°45'W; 74 km of beach), and one in northern Paraná (Superagui island (c. 25°16'S 48°12'W; 8 km of beach). Areas were surveyed by jeep (Peruíbe and Ilha Comprida) or on foot (Superagui) and all stranded birds counted. Live and freshly dead specimens, totalling 680 prions, were secured for further examination. Standard measurements were taken and each bird was also sexed, its skull pneumatization assessed and stomach contents analysed. Both Peruíbe and Ilha Comprida have been surveyed for beached seabirds at least twice a month since 1993 and results of previous research are summarised in Olmos *et al.*⁴.

The wreck immediately followed the passage of a cold southern front with strong winds and rough seas which brought debris far above the usual high-tide mark, although four dead *P. belcheri* were found in Peruíbe six days prior to this front's passage. On 22 July, no birds were found on the beach, but the following day 82 prions were recovered in Peruíbe. On 24 July, the beaches at Ilha Comprida yielded 1,255 prions in 74 km. The next day, at Peruíbe, 44 prions were found. No new birds were subsequently recovered but a few decomposed carcasses continued to arrive on the beach for several days. In total, between 23–25 July, 1,334 *P. belcheri* (64 alive) and 47 *P. desolata* (12 alive) were recovered from both São Paulo localities, most at Ilha Comprida (91%). A further 33 *P. belcheri* were found at Superagui on 16–21 July, but many may have been missed as they were buried under debris.

The number of recorded birds is an underestimate; many Black *Coragyps atratus* and Turkey Vultures *Cathartes aura*, Crested *Polyborus plancus*, Yellow-headed *Milvago chimachima* and Chimango Caracaras *M. chimango* (the latter only at Superagui) were feeding on the carcasses; the caracaras also snatching live birds from the water before they reached the beach. Remains of predated prions were found amid the restinga forest at Superagui, over 1 km from the beach. Other seabirds found at Ilha Comprida were single White-chinned Petrel *Procellaria aequinoctialis*, Yellow-billed *Diomedea chlororhynchus* and Black-browed Albatrosses *D. melanophrys*, Sooty Shearwater *Puffinus griseus* and Pintado Petrel *Daption capensis*, with three Brown Booby *Sula leucogaster*. Only the White-chinned Petrel was alive, the remainder already decomposing. At Peruíbe only a Manx Shearwater *Puffinus puffinus* was found alongside the prions.

All examined prions were young, with skulls not pneumatized and small gonads. Their condition was poor, being very underweight (some with only 40% of body weights reported in the literature) and with no body fat. Stomach contents, when present, were of filamentous algae and polyethylene pellets. No live prions, we attempted to treat, recovered; c. 50 cared for by veterinarians at the Santos Aquarium, 100 km north of Peruíbe, also all died. Autopsies showed hemorrhagic areas in the stomach and intestines, and alterations to the liver.

On the north coast of São Paulo, H. Alvarenga found many dead and already decomposing prions at Ubatuba (23°26'S 45°03'W) a few days after being informed of the wreck. Interestingly, Maciel *et al.*³ reported 200 dead *P. belcheri* and *P. vittata*, and one decomposed White-chinned Petrel at Restinga de Marambaia, in southern Rio de Janeiro (23°05'S 44°30'W) on 19 July, earlier than those found further south. In northern Bahia, Lima *et al.*² found 1,221 beached seabirds of several species in April–September 1996. Among these were 743 *P. desolata* and 71 *P. belcheri*; 21 of which recovered and were released.

On 28 August, we found a dead *P. desolata*, now in the collection of the Museu Paraense Emilio Goeldi (MPEG), at Salvaterra, Marajó Island, Pará state (0°46'S 48°30'W), at the mouth of the Amazon. This is the northernmost record for the species and may be related to the mortality further south.

The findings from Paraná, São Paulo, Rio de Janeiro and Bahia are probably related to a single event over a short period, and was widespread along the Brazilian coast. If the lower São Paulo results are taken as a mean (seven birds per km), and considering the number of carcasses which never reached shore, the minimum total of dead birds along the São Paulo coast (c. 650 km of coastline) must have been 5,000 with 10,000 being a conservative estimate for the whole Brazilian coast, making this probably the largest prion wreck ever recorded.

Although a cause-effect relationship between wrecks and unfavourable climatic conditions has been noted^{5,6}, our results from São Paulo suggest that mortality was selective toward prions, as few other dead seabirds were found. Their emaciated condition demonstrates that they were under stress for some time before the cold fronts which brought them to shore. Alternative explanations are currently being tested, but disease is thought to have played a role.

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