

# Blood characteristics related to oxygen carrying capacity in birds from South Georgia Island

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During a cruise on board R/V *Hero* to South Georgia Island in March and April 1977 we had the opportunity to obtain blood samples from ten species of sea bird that occur in the area. The collection included six species of petrel, one diving petrel, one albatross, and two penguin species. We also obtained samples from the flightless steamer duck of Tierra del Fuego.

Most blood samples were obtained by cardiac puncture from birds sacrificed a few minutes earlier by Sea World biologists who were collecting museum specimens. The king penguin samples were obtained in the more normal procedure of a percutaneous withdrawal from the wing vein which was large and easily palpated. Immediately after the collection the birds were released.

The general trend was that albatross blood had the lowest oxygen carrying capacity, followed by the petrels, and the highest oxygen carrying capacities were those of the diving birds.

Especially interesting to us was the small but robust South Georgia diving petrel, whose blood oxygen carrying capacity

matched that of the adult king penguins. Equally as low as the albatross values were those from the king penguin chicks. The chicks sampled were nearly as large as the adults. In terms of muscular development, they were quite weak, and they seemed at this stage to be made up primarily of a mouth, stomach, and digestive system.

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## Ornithological research between Argentina and South Georgia

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In conjunction with Frank S. Todd, Douglas Schwartz, and Maurice A.E. Rumboll, continuous seabird censuses were made between Ushuaia, Argentina, and South Georgia

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aboard R/V *Hero* during a cruise from 21 March to 21 April 1977. These are the most detailed censuses ever made in the area, and they greatly expand our knowledge of autumn seabird populations in this region. In addition, water temperatures and plankton trawls were taken when weather conditions permitted. At South Georgia several transects were made away from the island to determine the feeding ranges of the nesting seabirds. When feasible, birds were closely scrutinized for signs of oil pollution. Some oiled birds were seen, the oil seemingly having originated from whalers and krill ships operating in the area. However, oiling does not seem to be a significant cause of bird mortality at this time. Beach walks were also made to obtain data on the incidence of oiling among dead birds.

While ashore at South Georgia, field parties obtained important behavioral data on many species. Data on king and macaroni penguins will be particularly important in the event that captive breeding stocks need to be established. The land parties worked closely with British scientists at Elsehul and Bird Island, and their cooperation was outstanding. In return, where possible, we assisted by providing ship time for transects and other census work. Some preliminary work, done jointly, indicates that the macaroni penguin population on the Willis Island group comprises a minimum of 13 million individuals.

Because of *Hero's* mobility, the field parties were able to visit areas not usually studied, and several new avian records

were obtained. Important findings were several records of Kerguelen petrel, one Adélie penguin, one emperor penguin, and the first records of cattle egrets south of the Antarctic Convergence.

At the request of the British Antarctic Survey, we conducted a census of wandering albatrosses nesting at the Bay of Isles. We found that wandering albatrosses breeding and attending chicks on Bird Island were feeding as much as 950 miles west of South Georgia. These data are important because they show the great extent to which this species may roam during the breeding season. These travels bring South Georgia birds near or over the continental shelf, where the threat of oil pollution is high.

Sightings of marine mammals were documented. Hump-backed, right, pilot and sperm whales were observed, as well as numerous hourglass dolphins and possibly Peale's dolphin. Close-up photographs of the right whale are being studied to determine if this animal may be part of the Golfo San Jose, Argentina, population.

The facilities of *Hero* for this research were superb. The anticipated foul weather did not materialize, so we were on schedule most of the time and were able to devote the entire time at sea and at the island to productive studies. We acknowledge the cooperation of Captain Denniston and the crew, who helped to insure the success of this project.

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