

A Ten Year Study of Long Range Movements of Cory's Shearwaters (*Calonectris diomedea borealis*), Using PTTs

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Cory's Shearwaters (*Calonectris diomedea borealis*) are one of the most interesting migratory marine birds breeding in the Northeastern Atlantic. Between early February and late October these birds are present at their breeding colonies, located in the Macaronesian archipelagos of the Azores, Madeira, Selvagens and the Canaries, as well as in some small islands off the Portuguese west coast. The Selvagens alone, a very small archipelago located 162 nautical miles south of Madeira, hold a colony of more than 60,000 breeding birds, which may represent almost one third of the entire population of this species.

For the last 46 years, this species has been studied at the Selvagens and more than 50,000 rings have been applied, not only for population studies, but also to help determine their movements at sea and their migrations. However, ring returns gave just preliminary indications as to where these birds would feed during the breeding season and eventually migrate. .

The miniaturization of satellite transmitters (PTTs) has allowed tracking of these birds on foraging trips, during incubation, as well as during their annual migration. Over the last 10 years a series of 32g battery operated PTTs and more recently, 9.5g solar powered PTTs, were used on birds from the colonies of the Selvagens, Madeira and the Azores.

The results of this effort, although not completely satisfactory, due to the relatively small numbers of PTTs used, have shown that these birds migrate to high productivity areas of the ocean. When foraging during the incubation period (May-July), the birds from the Selvagens went to the northwestern coast of Africa (Morocco and western Sahara), staying out between 10 and 22 days. On the contrary, birds from Madeira and the Azores headed north, reaching as far north as the parallel of Brittany during their incubation period. Birds from all colonies migrated south during their annual migration (October-March). One adult bird from the Selvagens went as far South as the Sea of La Plata, off Argentina, where it stayed for almost 3 months. Juveniles on their first annual migration also headed south, crossing the Atlantic at the latitude of the Cape Verdes and ending up off the coast of northern Brazil and southern Venezuela. So far no bird has completed the whole migratory trip and returned to the colony with the PTT. The record stays at 174 days and over 19,000 miles travelled. The method of attaching the PTT to the bird needs further refinement. The use of medium drying epoxy-resin glue for attaching the PTT is suitable for short-term studies, i.e. foraging during incubation, or feeding of juveniles. Harnesses, or an alternative, for long-term application, i.e. migration, need to be perfected.