

## STATUS OF THE GALAPAGOS PENGUIN AND FLIGHTLESS CORMORANT POPULATIONS IN 1985

by

Carlos A. Valle

Charles Darwin Research Station

The Galapagos Penguin (*Spheniscus mendiculus*) and the Flightless Cormorant (*Nannopterum harrisi*) are among the rarest seabirds of the world. Both species are endemic to the Galapagos Islands where their distribution is almost entirely confined to less than 400 kilometers of coast line around the islands of Fernandina and Isabela.

During the three years since the El Niño — Southern Oscillation (ENSO) of 1982-1983, I conducted four penguin and cormorant censuses using the same method as in previous years (see Boersma 1977, Harcourt 1980). The results of all these counts were compared for the purpose of showing the population trends throughout the last fifteen years. This article summarizes these findings and interpretations.

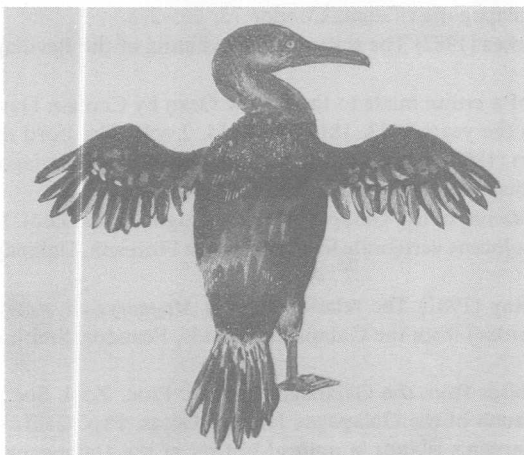
### PRESENT POPULATION SIZE

Estimations of the population size of the Galapagos Penguin and the Flightless Cormorant previous to 1970 were vague and anecdotal. The first realistic figures were those of the 1970 surveys when Boersma estimated 6,000 — 12,000 penguins and Harris 1,400 — 1,600 cormorants. In September-October of 1985 I counted 665 penguins and 843 cormorants around Fernandina and Isabela and estimated a total population of 1,500 — 3,000 penguins and 900 — 1,200 cormorants.

### TRENDS OF THE POPULATIONS

On the basis of their extremely marked sedentary habit (especially in the case of the cormorant) and their restriction to the zone of the coldest water associated with the upwelling of the Cromwell Current, we can surmise that the Galapagos Penguin and Flightless Cormorant populations were never large. From 1970 to 1980 both populations appeared relatively stable (Harcourt 1980). However in August-September of 1983 the numbers of penguins and cormorants were respectively 80 and 50 percent below that of 1980 (Valle 1984). This dramatic population decrease was associated with the abnormal climatic conditions and warm ocean water that occurred during the 1982-83 El Niño — Southern Oscillation (ENSO). After the ENSO the population of cormorants rapidly regained its original level but the number of penguins only started to recover one year later.

The delayed start to the recovery of the penguins and the different patterns of the population increase between the penguins and cormorants are not easy to explain. Both penguins and cormorants are opportunistic breeders (Harris 1969, Boersma 1977, 1978) with a high potential rate of population growth as breeding can be attempted twice each year (Boersma 1977, Tindle & Harris 1982, Tindle 1984). After



Flightless Cormorant, *Nannopterum harrisi*  
Drawing by Hilary Bradt

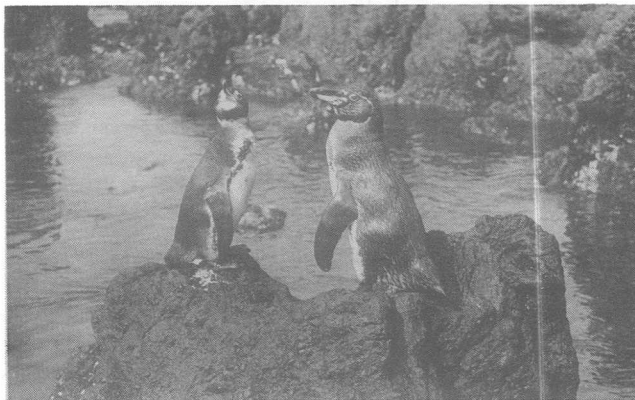
July 1983 the marine conditions appeared optimal for the reproduction of seabirds, including the Flightless Cormorants (Valle 1984b) which feed in the same area as the Galapagos Penguin. Therefore the low reproduction of the penguins during 1984 probably was not associated with a lack of food or other factors in the marine environment.

Circumstantial evidence suggests that the factors causing this low reproduction were intrinsic problems of the population, such as the length of time necessary for the formation of new breeding pairs. Certainly after such a large decrease in the population there is a high probability of the death of one member of most pairs and thus it is likely that a large proportion of surviving penguins were left unmated in 1984. The strong pair bond of the Galapagos Penguin (Boersma 1977), combined with the low numbers and the scattered distribution after the ENSO, could well have diminished the chances of finding a suitable mate, thus delaying pair formation and reproduction.

The latest census shows that in 1985 the number of penguins increased by some 50 percent compared with 1984. This suggests that whatever the problems were that delayed recovery, these have now been overcome. As for the cormorants, there has been no further significant change in population size and they appear to have regained their previous levels in a mere 15 months after the ENSO and to be stable again.

#### THE FUTURE OF THE PENGUINS AND CORMORANTS

Apart from the Hawaiian Petrel (*Pterodroma h. phaeopygia*), which is threatened with extinction, the penguins and cormorants are the most vulnerable of the Galapagos seabirds. Both species have demonstrated their capacity to resist natural disasters by the way they have survived and recovered from the recent ENSO catastrophe. Any threats to their continued existence come from human intervention. As yet they have been little affected by oil spills, though a few minor instances have been recorded. (Valle unpub.). Fishermen and, potentially, tourists pose a more obvious long term danger. But the immediate threat comes from the alien animals (dogs, cats and rats) introduced by man, against which they have little defence, having evolved in a habitat free from terrestrial predators. The cormorants and penguins are particularly vulnerable because they cannot fly; because they are confined within an exceptionally limited area; and because they have such a small total population. Introduced predators are abundant on Isabela where more than half these two species are found. In 1981 there were an estimated 400 — 500 dogs on the coast of Southern Isabela and penguins formed the second most important item of their diet (Barnett & Rudd 1983). Those dogs were killed during the eradication campaign mounted by the National Park Service and the Darwin Research Station in 1981-82 (Calvopiña 1982). This was a most successful operation. However the chance of permanently eliminating all dogs from Isabela is low because there are still some on the volcanoes Cerro Azul and Sierra Negra and there are always new recruits from the farms outside the national park boundaries. The risk of future invasions of dogs into the penguins' and cormorants' nesting areas is high because they can migrate along the coast. Thus the survival of these ecologically fragile populations requires a constant conservation effort to detect and control the threats. Therefore the Charles Darwin Research Station intends to conduct an annual census, the basic object of which is to maintain a close watch on the state of the populations.



Galapagos Penguins, Fernandina  
Photograph: Roger Perry