

THE STATUS OF THE GREATER FLAMINGO IN GALAPAGOS

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INTRODUCTION

The Flamingo in Galapagos is thought to be an insular race of the Greater or Caribbean Flamingo (*Phoenicopterus ruber ruber*). It is separated from the Caribbean flock by some 3000 Km of land and sea. Although Flamingos are capable of long-range migration (1) it is unlikely that interchange of birds takes place between the two places.

In Galapagos, Flamingos are to be found at high- and low-salinity lagoons and saline crater lakes, on Southern Isabela, Santiago, Floreana, Santa Cruz, Bainbridge and Jervis Islands. They have been rarely recorded on San Cristobal. Breeding occurs currently at Poza Noreste and Mina de Sal (Santiago), Poza del Cementerio and Quinta Playa (Isabela) and Bainbridge lagoon. It has formerly occurred at Espumilla lagoon (Santiago) and Punta Cormorante (Floreana).

The status of the Flamingo in the Islands has been hitherto unknown and various anecdotal reports have presumed the population to be both increasing and decreasing.

In 1959, 22 individuals were found (5); in 1964, Leveque (8) estimated the population at 100-150 individuals, and supposed that the Flamingo was the Galapagos bird most in danger of extinction. In a 1967 census for the Charles Darwin Research Station, Gordillo (6) recorded 317 adults + juveniles at 17 sites, and in 1968, 512 adults and juveniles at 22 sites (7).

The increase in numbers over the years is certainly more apparent than real, due to the discovery of new feeding and breeding grounds. For example at Poza del Cementerio (Isabela), an important colony of 158 adults, 39 juveniles and 57 occupied nests was found in October 1968.

By contrast, there have been fears that airmen in World War II had decimated the population, that fishermen salting their catches consistently disturbed the breeding grounds, and that feral pigs and donkeys were trampling the nest-sites. More recently, there has been concern that increasing tourist pressure might be detrimental to this, one of the shyest of Galapagos birds. However, none of these factors has been operative at the two largest breeding sites, namely Poza del Cementerio and Poza Noreste.

CENSUS

On December 22 1976, a whole-archipelago census of the Flamingo was undertaken. The census consisted of having observers at all of the major lagoons, lakes and *pozas* that Flamingos are known to frequent, these observers making counts of the birds at a pre-set time (10:00) on the pre-set day.

A concomitant census of the Black-necked Stilt or Tero Real (*Himantopus himantopus*) was also made.

The results were as follows:

442 Adult + Juvenile Flamingos
21 Chicks
32 Nests with or without eggs

(124 Stilts)

For complete details, see Table I.

The principal omissions from the Census were the lagoons at Punta Moreno (S. Isabela) where up to 20 Flamingos are to be expected. Flamingos are also known to occur from time to time at other small lagoons around Santa Cruz, not included in the census, eg: LAS BACHAS, and could conceivably occur at the numerous small lagoons on the east coast of Santiago.

The only other reliable census, an almost identical one of 1968, revealed 512 adults + juveniles. Since many smaller, less frequented lagoons, where flamingos may occur in the archipelago, have been omitted from both the censuses, it is judged that no diminution of the population has occurred between 1968 and 1976 and the population is more-or-less stable.

POPULATION DYNAMICS

The stability of the population is supported by analysis of the fragmentary breeding data available since 1968. Allowing the currently-accepted view that Flamingos first breed at five years of age (2), it can be calculated that each breeding pair in Galapagos is producing 0.26-0.33 chicks per year. Allowing a 30% first-year mortality of chicks, and 10% mortality thereafter (2), each pair will require 11.8-15.4 years to replace itself with new 5-year old breeding birds.

This correlates reasonably with the theoretical mean life expectancy, calculated by assuming the usually accepted 10% annual adult mortality (2). See Fig. I. It may also seem from Fig. I, that a few birds may be expected to live in the wild for as much as 35 years or more.

The breeding of Flamingos is an uncertain business. Experience with the large flocks in the Camargue, France (1), Africa (3) and the Caribbean (4), has shown that, in some years, thousands of young may fledge, in others, virtually none. Partial or mass failure can usually be associated with droughts, floods or disturbance (sometimes human). Thus, Rooth (4) estimates that success and failure average out to give a juvenile recruitment matching adult mortality over 'units' of about 6 years duration.

Similar fluctuations in breeding success have occurred in the Galapagos flock since 1968. It is thus to be recommended that regular monitoring of the Flamingos in the Archipelago be undertaken at 5-7 year intervals.

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FLAMINGO CENSUS (INCLUDING BLACK-NECKED STILTS)
December 21, 1976

A: adults
J: juveniles
C: chicks
N/E: nests/eggs
B/S: black necked stilts

| ISLAND | SITE | A | J | C | N/E | B/S | CENSUS TAKER |
|---|----------------------------|-----|----|----|-----|-----------------|-------------------|
| ISABELA | LAS NINFAS | 2 | 0 | 0 | 0 | 2 | Luis Segura |
| | LAS SALINAS | 2 | 2 | 0 | 0 | 2 | Jenny Gil |
| | BALTAZAR | 0 | 0 | 0 | 0 | 5 | Julio Segura |
| | JELI | 3 | 0 | 0 | 0 | 0 | Julio Segura |
| | COCAL | 1 | 0 | 0 | 0 | 10 | Nelson Gil |
| | GUAMAN | 2 | 0 | 1 | 0 | 11 | Nelson Gil |
| | CEMENTERIO | 0 | 0 | 5 | 7 | 10 | R. A. E. Tindle |
| | ORIENTAL BARAHONA | 13 | 0 | 0 | 0 | 0 | William Jaime |
| | OCCIDENTAL BARAHONA | 3 | 0 | 0 | 0 | 0 | William Jaime |
| | TERCERA PLAYA | 21 | 3 | 0 | 0 | 3 | Pedro Cartagena |
| CUARTA PLAYA | 0 | 0 | 0 | 0 | 2 | Ulises Guerrero | |
| QUINTA PLAYA | 162 | 0 | 0 | 0 | 18 | Arnaldo Tupiza | |
| JERVIS | | 0 | 0 | 0 | 0 | 0 | Rafael Gil |
| SANTIAGO | MINA DE SAL | 29 | 8 | 3 | 10 | 10 | A. Sánchez |
| | NORESTE (EL SARTEN) | 37 | 17 | 12 | 10 | -- | G. Ramón |
| | ESPUMILLA | 28 | 11 | 0 | 0 | 5 | A. Pachay |
| RÓCAS BAINBRIDGE | | 1 | 2 | 0 | 5 | -- | A. Villa |
| SANTA CRUZ | LAS PALMAS (2 ponds) | 0 | 0 | 0 | 0 | 2 | A. Calapucha |
| | BAHIA CONWAY | 0 | 0 | 0 | 0 | 0 | Juan Jaya |
| | BAHIA BORRERO (2 ponds) | 21 | 0 | 0 | 0 | 0 | D.Green & J.Snyde |
| | PUNTA ROCAFUERTE (2 ponds) | 0 | 0 | 0 | 0 | 6 | Gil De Roy |
| BAHIA TORTUGA | 0 | 0 | 0 | 0 | 2 | Jorge Larrea | |
| FLOREANA | PUNTA CORMORANTE | 63 | 6 | 0 | 0 | 17 | E. Cruz & Son |
| | PUNTA SADDLE | 3 | 2 | 0 | 0 | 8 | E. Cruz & Son |
| | | 391 | 51 | 21 | 32 | 124 | |
| TOTAL: 442 Flamingos (adults and juveniles), 21 chicks, 32 eggs | | | | | | | |
| 124 Black-necked stilts | | | | | | | |

Principal omission: Punta Moreno (Isabela)

Other sites where flamingos are found: Las Bachas and other small ponds on Santa Cruz.

Small ponds on the east coast of Santiago (James).

