The impact of the El Niño Southern Oscillation (ENSO) on birds: update from Ecuador 1997

Ben Haase

Aunque el fenomeno de El Niño de 1997, el primero desde el verano austral de 1982–83, no fue tan fuerte como se temía al principio, se anotaron algunos efectos significativos sobre las poblaciones de aves de la Península de Santa Elena (02°13'S 80°50' W) en la costa suroccidental de Ecuador.

Fregata magnificens comenzó su cortejo en julio, casi dos meses antes de los usual y *Sula nebouxii* experimentó un éxito reproductivo extremadamente bajo. *Gelochelidon nilotica* tuvo su temporada de cría más exitosa desde 1986. En contraste, el éxito en cría de *Larus cirrocephalus* fue extremadamente bajo, la mayor'a de más de 500 parejas fracasó en criar cualquier polluelo.

Dos parejas de *Sterna hirundinacea* en despliegue de cortejo en agosto en Mar Bravo pueden representar la primera observación publicada de esta especie en Ecuador. La cronología de los migratorios continentales del Hemisferio Norte fue inusual para algunas especies; además *Stercorarius parasiticus*, *Larus sabina* y *Sterna paradisaea* no registraron movimientos hacia el sur hasta finales de agosto, cuando se vió sólo uno de cada cual. Los registros de especies relativamente comunes, p. e. *Puffinus griseus* y *Oceanodroma markhami* en aguas costeras se limitaron a solamente algunos individuos.

In 1997, the entire Pacific east coast of North, Central and South America experienced the so-called El Niño (ENSO) phenomenon, when extreme weather conditions occur. One of the main characters is a rise in seawater surface temperatures of up to 5°C, causing dramatic environmental changes and affecting many, if not all, forms of life.

The ENSO phenomenon is very variable in its intensity and shows an ill-defined circle of 5–7 years. The most recent and strongest ever reported in history was during the austral summer of 1982–83. Common species along the Peruvian coast, e.g. Peruvian Booby *Sula variegata*, Guanay Cormorant *Phalacrocorax bougainvillii*, temporarily extended their distribution northward, and a typical Humboldt current species, the Inca Tern *Larosterna inca*, was even reported from Colombia[2].

Usually, the ENSO phenomenon appears in December. It is unclear if it was unusually advanced or delayed in 1997, when its presence was first noted in April. Water temperatures remained at 30°C, in contrast to their usual, much lower, values. However, six months after the ENSO was first noted, Humboldt current species from the south have yet to be observed in Ecuador, unlike in 1982–83.

At present (October 1997), only a few remarks can be made about the ENSO affect on birds, and they have to be interpreted carefully because it cannot be proven yet that their cause is directly related to El Niño. Although the climatic conditions of the entire Pacific Coast are being influenced by El Niño, the information presented here is restricted to some sea- and coastal birds of the Santa Elena Peninsula (02°13'S 080°50'W) in south-west coastal Ecuador.

By October 1997, although little data was available for the common species of the area, Magnificent Frigatebird *Fregata magnificens* had commenced their courtship behaviour in July, almost two months earlier then usual (September). For the commonest booby, the Blue-footed Booby *Sula nebouxii*, the only reliable information is that reproduction success is extremely low with many pairs failing to raise young in 1997.

The rainfall in March–April 1997 was the heaviest since 1982–83, and certainly contributed to the best breeding season for Gull-billed Tern *Gelochelidon nilotica* since 1986, when the author started local bird census'. Normally, between 150–200 pairs in several colonies are present from March–September, but in 1997 the number of pairs was estimated to be 400. In contrast, breeding success of Grey-headed Gull *Larus cirrocephalus* was extremely low. During their extended nesting period, from April–October, the majority of over 500 pairs on the Santa Elena Peninsula failed to raise any chicks. Lost eggs or small dead chicks were found commonly, while only up to 50 first-year birds were observed by October. The presence of warm water this year may also have a negative effect on

the northward range expansion of Kelp Gull[1]; by November only single adult birds had been observed. However, two pairs of South American Tern *Sterna hirundinacea* in courtship display in August at Mar Bravo may represent the first published observation of this species in Ecuador.

The timing of Northern Hemisphere migrants off the coast was unusual in some species. Under normal conditions, movements of southbound Arctic Skua *Stercorarius parasiticus*, Sabine's Gull *Larus sabini* and Arctic Tern *Sterna paradisaea* are observed in July, but this year they were absent until late August, when only singles were seen. Although not counted, numbers of typically common species, e.g. Sooty Shearwater *Puffinus griseus* and Markham's Storm Petrel *Oceanodroma markhami*, in coastal waters were limited to several individuals.

Black-bellied Plover *Pluvialis squatarola* was observed in large groups of over 100 (usually dozens) along the Pacific shoreline, while there was a noticeable difference in habitat selection in Ruddy Turnstone *Arenaria interpres* and Semipalmated Plover *Charadrius semipalmatus*. At least during July–September, many 100s of both species were foraging along the shoreline. The former species was only observed in low numbers at their inshore, non-tidal habitat (salt pans), while the latter was absent until September.

Overall, the situation in the Galápagos is similar, with no observations of high seabird mortality reported, despite the much higher water temperatures (H.Vargas pers. comm).

The first news about the El Niño phenomenon in April in Ecuador was sensational and dramatic, because it was expected to generate the worst climatic conditions of the century. After six months, the latest predictions of its development are less pessimistic, but we must wait at least another six months before environmental conditions are likely to become more normal, and more data on this impressive and unpredictable natural phenomenon are available.

References

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2. Von Prahl, H. (1987) Appearance of faunistic elements of the Peruvian–Chilean province in the Colombian Pacific waters during the El Niño phenomenon 1982–83. *Comisión Permanente del Pacífico Sureste (CPPS) Boletín ERFEN* 20: 9–11.

Ben Haase
c/o FEMM, P. O. Box 0901 - 11905 (12-95), Guayaquil, Ecuador