# Galapagos conserv — 11 years or

R.W. Tindle

The author has been resident scientist and naturalist guide in the Galapagos Islands during 1970–72 and 1976–79, and throughout has been associated with sea-bird conservation in the archipelago. In July 1982, he visited the islands once again, and here reports on the effect of tourism on Galapagos wildlife over the 11-year period. Some of this work has be aided by the ffPS 100% Fund.

In the late 1960s, tourism on a regular basis began in the Galapagos Islands and the last 15 years have witnessed a visitor explosion. By the late 1970s a limit of 12,000 visitors per annum was set by the Galapagos National Park Service, based on intuitive judgement rather than hard data on tourist impact. Twenty-five thousand people visited the archipelago during 1982. What effect has this had on Galapagos wildlife? Since 1971, I have watched this question closely, having spent five of the last 11 years in the islands.

Most naturalists involved in Galapagos tourism in the early 1970s, though impressed with the responsible manner in which tourism was handled, under the scrutiny of the Charles Darwin Research Station and later, the Galapagos National Park Service, had forebodings about the future. The tameness of the indigenous Galapagos fauna is legendary, but surely it would suffer as scores of visitors approached within feet of nesting sea-birds, iguana herds and sea-lion harems? And surely plant communities and local topography would suffer under the weight of so much human traffic? Although the coastline of the archipelago is long, landing sites are few because of the rough terrain. Thus, human impact tends to be concentrated. Whereby it is hardly surprising that the Darwin Station has given high priority to the monitoring of tourist impact upon the islands and their wildlife, and that its recommendations have been implemented by the Galapagos National Park Service.

Most data to hand have come from the long term observation of sea-bird colonies. More than a decade of data, some hard, some anecdotal, is available on breeding effort and success of the more conspicuous species at tourist-visited sites, e.g. flightless cormorant *Nannopterum harrisi*, red-footed, blue-footed and masked boobies (*Sula sula, S. nebouxii, S. dactylatra*), greater and magnificent frigate birds (*Fregata minor, F. magnificens*). It is immediately apparent that breeding intensity has fluctuated enormously from year to year, and in no case does this correlate with the number of visitors to the colony. In some cases breeding effort almost certainly correlates with marine productivity, i.e. the amount of food which a bird can obtain to sustain itself and its offspring, e.g. flightless cormorant (Harris, 1979), Galapagos penguin *Spheniscus mendiculus* (Boersma, 1978). In other cases the correlation is strongly suspected, e.g. red-footed booby (Nelson, 1969). The capricious marine environment produced by an interplay of sea-currents favours opportunistic breeding. Non-productive waters may preclude breeding of a species in a given location for several years. Alarmist reports over the short-term of a species abandoning a particular colony because of tourist encroachment have in all cases to date, proved unfounded. Eleven years on, in July 1982, the visited red-



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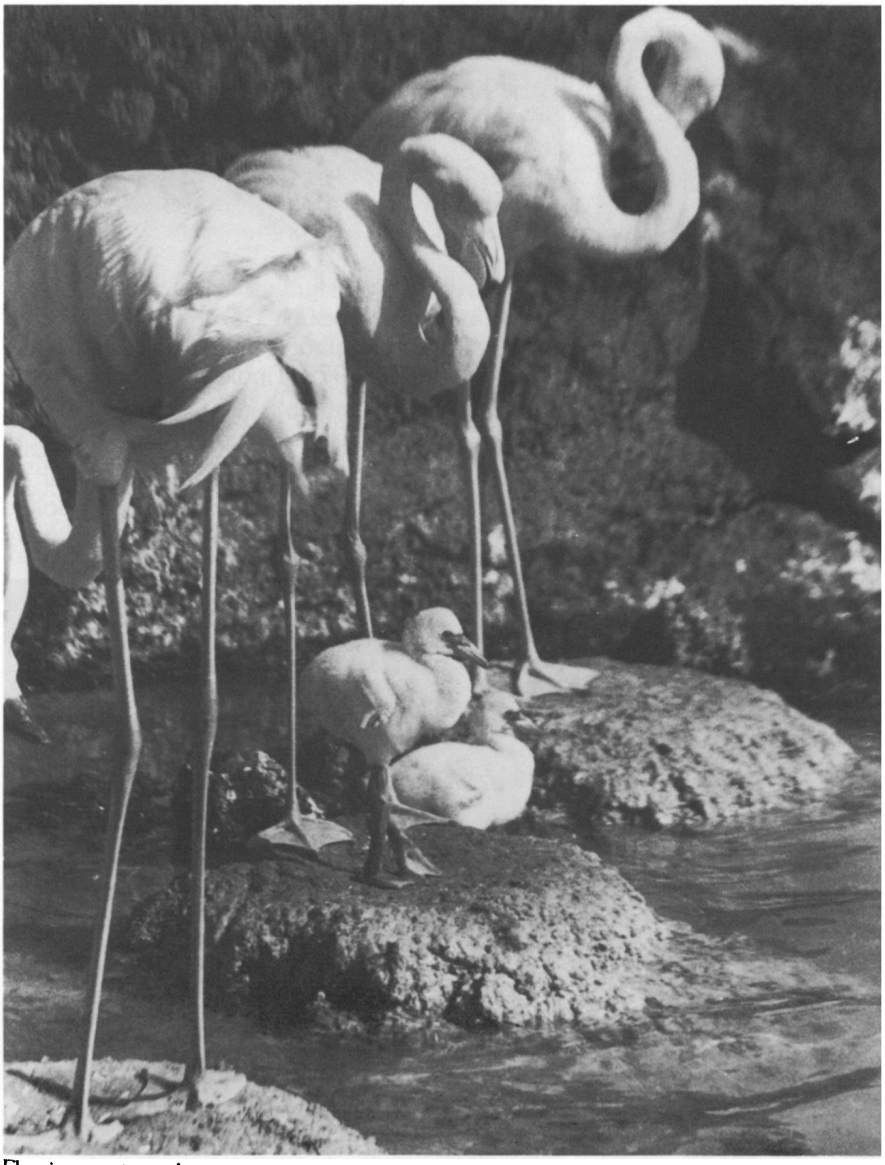
# ation and tourism



Flamingos returned to nest at Punta Cormorante in 1978, for the first time in 14 years, although tourism has increased dramatically at this site *(R. W. Tindle)*.

*Galapagos conservation*



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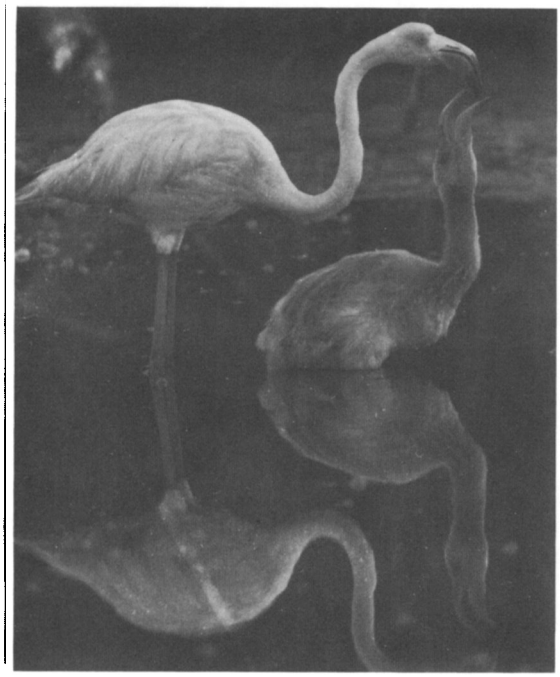
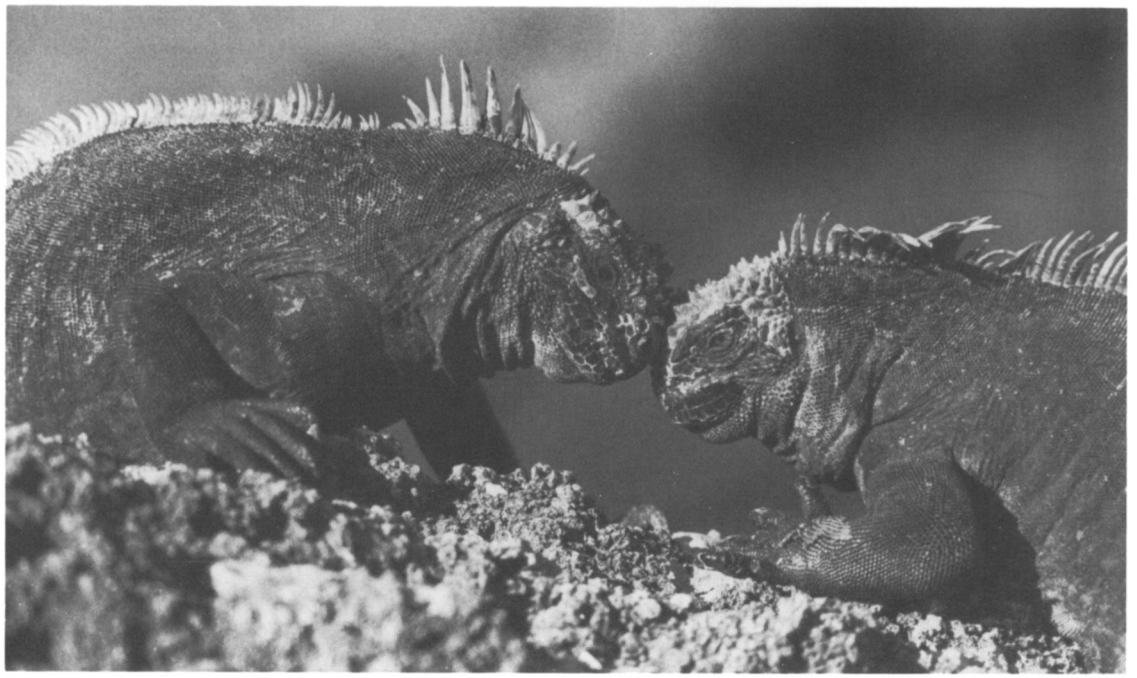


*Above:* Flamingo juveniles are fed within metres of the tourist trail *(R.W. Tindle)*.
*Below:* Male marine iguanas exhibit ritualised combat at the visited Punta Espinosa colony *(R.W. Tindle)*.

footed booby colony in *Cryptocarpus* shrub, at Darwin Bay, Genovesa Island, was redolent of nests. Indeed the number of juveniles in the bay indicated a level of breeding activity scarcely matched since the 'peak' year recorded by Nelson in 1964 (Nelson, 1969). Similarly, blue-footed booby nests at all stages of the breeding cycle were as abundant as ever on North Seymour and Punta Suarez, Española Island, as were flightless cormorants on Punta Espinosa.

It had been felt that tourist disturbance might have insidious effects upon bird behaviour not detectable by simple census-taking. Teams of round-the-clock observers have, as yet, however, been unable to detect significant differences unequivocably due to human incursion, in nest-attendance, incubating and chick-rearing behaviour of the flightless cormorant, masked and blue-footed boobies and both species of frigate, when comparing visited and non-visited colonies (Tindle, 1979; Tindle and Tindle, 1982).

At least three species are noticeably tamer at certain locations than 11 years ago. Magnificant frigates now nest alongside the tourist trail on North Seymour, whereas previously they took to flight at human approach. Flamingos no longer





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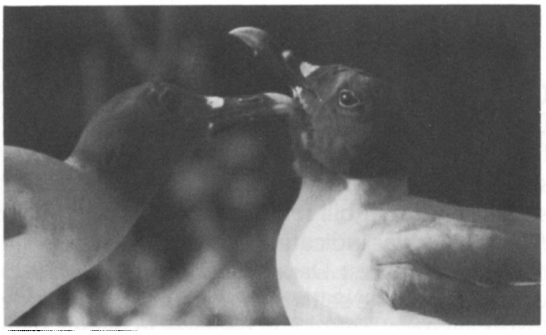
In 1981 red-footed boobies nested more densely on Genovesa Island than at any time since tourism began *(R.W. Tindle)*.

hurry so readily to the 'other-side' of the lagoon (indeed they have nested twice in the last five years at the heavily visited Punta Cormorante, a lagoon where breeding has occurred only very sporadically in the last 50 years, and was latterly recorded in 1964). The yellow warbler *Dendroica petechia*, previously timid, now flutters around one's shoes. For the last couple of years, a nesting pair of great blue herons *Ardea herodias* has overlooked launch-loads of snorkelling tourists at Devil's Crown.

Herds of sea-lions *Zalophus californicus* and marine iguanas *Amblyrhynchus cristatus* continue their disregard for the nearest visitor, though guides wisely outlaw touching the animals. Feeding is also forbidden, whereby land iguanas *Conolophus subcristatus* on South Plaza island, which previously had foregone the confines of site ownership to crowd around hand-held titbits, have now resumed territorial spacing.



Swallow-tailed gulls show mutual preening behaviour alongside tourist trails *(R.W. Tindle)*.

Since the early 1970s the Galapagos National Park Service has introduced well-planned tourist trails and ensures that all tourist groups are accompanied by a naturalist guide. Spreading of visitor impact is thus prevented. Vegetation stands (potential nesting sites) are no longer indiscriminately trampled, nor are fragile lava formations worn down by constant human tread. The lunar character of Bartolome Island cinder cones remains intact in spite of an almost daily ascent of its summit by files of tourists. Souvenir collecting is now of course forbidden. Having watched quantities of coral and reef invertebrates disappear in the hands of sailors and visitors alike a decade ago, one might not have expected to find the coral community of Devil's Crown thriving, as I did in 1982.

Now 88 per cent of the land area is set aside as national park; the remainder is agricultural and urban. Of this only a tiny fraction, mostly at the coast, receives visitors but it includes some of the choice wildlife sites of the archipelago. Few could have predicted a decade ago that these would have remained in such a near pristine condition as they do today. Human pressure increases, however. While Ecuador's central role in conserving its islands is to be applauded, profit-motivated, quasi-governmental 'development' organisations lurk in the wings. How many visitors *will* the islands support?—a constant question asked of the National Park Service. Should numbers be allowed to increase until possibly irreversible detrimental effects *are* seen? Complacency must not be allowed to replace satisfaction of those, who like myself, have watched conservation and tourism go successfully hand in hand in this world heritage site.

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