

LAND IGUANAS RETURN TO BALTRA

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After over 40 years of absence, land iguanas (*Conolophus subcristatus*) were returned to Isla Baltra, the first step in an effort to repopulate the Island with direct descendants of the large iguanas native to that arid and inhospitable place.

Historically, Baltra had a thriving population of land iguanas, the largest individuals of the species. However, the population began to decline near the beginning of this century, apparently due to habitat destruction by introduced goats (*Capra hircus*). Then, following World War II, the land iguana population on Baltra disappeared, most likely an unfortunate result of habitat destruction not only by the introduced goats but also by the construction of a large U.S. Army Air Base (Woram 1991).

Fortunately, in 1932-33 and prior to their extinction on Baltra, 70 iguanas had been transferred from there to North Seymour, a small island a half mile to the north (Perkins 1932, Banning 1933). Members of the Hancock Expedition, noting that the land iguanas on Baltra were skinny and the vegetation was scarce due to devastation by the goats, decided to make the transfer as an experiment. Although the two Islands are similar in terrain and vegetation, land iguanas were not native to North Seymour, neither were there introduced goats, and as a result, the vegetation was much more abundant. Following the transfer, the iguanas were left on their own for nearly 40 years. [Editor's Note.—See accompanying article by John Woram this issue.]

Meanwhile, sometime in the 10 years or so following the end of World War II, the land iguanas on Baltra disappeared.

In the mid-1970s, personnel of the Galápagos National Park Service (GNPS) and the Charles Darwin Research Station (CDRS) began occasional checks of the population on North Seymour (Reynolds 1981a, Snell 1984, Werner 1984, Hoyos 1987). They found only the original large adults and no juveniles. It was not until the Niño event of 1982-83 that juveniles were seen on the island.

In 1980, due to the lack of recruitment in the population on North Seymour, a pair of adult iguanas was

transferred from there to the GNPS/CDRS Breeding and Rearing Center in Santa Cruz (Reynolds 1981a, 1981b). By 1985, eight more iguanas were transferred to the Center. The immediate objective was to reproduce the iguanas in captivity in order to save a portion of the gene pool of the Baltra population. A second, but equally important, goal was the eventual repopulation of Baltra with descendants of the original natives.

Reproduction in captivity was a success and, by 1991, approximately 80 young Baltra iguanas were housed at the Center. Unfortunately, the adults were very old and, over the years, most of them died; those remaining were weak and the females had difficulty recuperating after nesting. The last three adults in the Center were returned to North Seymour in 1989.

THE REPATRIATION

The repatriation of land iguanas to Baltra consisted of five phases: 1) the development of an official agreement regarding the repatriation among the various institutions, 2) environmental education for the personnel of the Ecuadorian Armed Forces working in Baltra, 3) poisoning the cats (*Felis catus*) in the area designated for the repatriation, 4) repatriation of iguanas, and 5) follow-up studies.

Unlike the other Islands of the Galápagos Archipelago, Baltra does not belong to the National Park; instead it is owned by the Ecuadorian Armed Forces and houses both an Air Force and a Navy Base (Fig. 1).

Prior to repatriating land iguanas, it was necessary to reach an agreement with the Ecuadorian Armed Forces. Negotiations started in 1985, and, on 22 April 1991, an agreement was signed between the Ecuadorian Air Force (FAE), the Ministry of Agriculture, and the Charles Darwin Foundation, permitting the repatriation of land iguanas to Baltra and allowing for follow-up studies, future repatriations, and necessary management of the population.

The repatriation site, in the southeastern corner of the Island, was chosen primarily based on biological considerations (Fig. 1). In the early 1930s, the iguanas in this area were in better condition than elsewhere

on the Island (Perkins 1932, Snell et al. 1986). A review of the Island in 1986 indicated that the south-eastern corner had the highest concentration of plant species important in the diet of land iguanas, such as *Opuntia* and *Castela* (Snell et al. 1986). In addition, the area has more soil, an important factor for the construction of burrows.

In the 2 months prior to the repatriation, visits were made to Baltra by personnel of both the GNPS and the CDRS to give talks to the Armed Forces personnel and to control cats and dogs (*Canis familiaris*) present on the Island. Two control trips were made, focusing primarily on the repatriation site, but also on the two military bases.

On 19 June 1991, 35 5-year-old iguanas were taken from the Breeding and Rearing Center on Santa Cruz and transferred to Baltra. There, they were carried in cloth sacks to the repatriation site, a series of small rock hills to the south of the airstrip (Fig. 1).

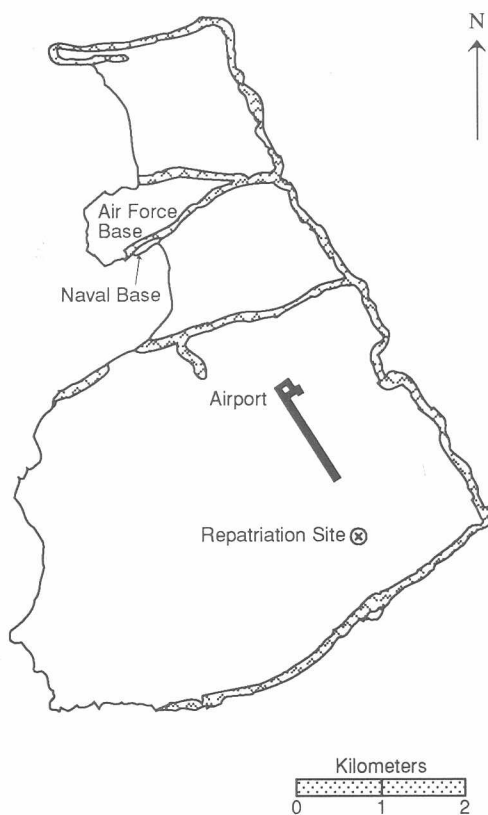


Figure 1. Map of Isla Baltra showing the repatriation site, the airport and active airstrip, and the two military bases.



Figure 2. Repatriation of land iguanas to Baltra, 19 June 1991, showing Linda Cayot, Head of Herpetology, CDRS, handing an iguana to Fernando Rodríguez G., Port Captain of Baltra; Edgar Sierra R., Chief of Baltra Airport (FAE), releasing an iguana; and Daniel Evans, Director, CDRS, and Oswaldo Sarango, Acting Head of the GNPS, looking on.

Given the historical importance of the repatriation, more than 40 people participated, including personnel of the GNPS, the CDRS, the FAE, and the Ecuadorian Navy. The officials of each institution spoke in a short ceremony. Personnel of the four institutions assisted in the liberation of the young iguanas, which soon dispersed throughout the nearby rock outcrops (Fig. 2).

During the first year following the repatriation, several monitoring trips were made to the Island, four for 3-6 days each (June and September 1991, and January and April 1992), as well as four 1-day trips (June, July, and August 1991).

Results of the monitoring trips since September 1991 indicate a survivorship of at least 40%. In April, the remains of an iguana, apparently consumed by a cat, was found. However, iguanas and iguana sign indicate dispersal from the repatriation site. The repatriates are still relatively small and not easy to locate. Therefore, it is likely that several of the surviving iguanas were missed. A census of the population has not yet been done.

In April 1992, 12 more iguanas, aged 8-10 years, were repatriated to Baltra (Fig. 3). These were the first Baltra iguanas hatched in the Breeding and Rearing Center and several of them had already reproduced in captivity.

An additional 32 Baltra iguanas (4-5 years old)



Figure 3. Alberto Jaramillo, iguana caretaker at the Breeding and Rearing Center, releasing a land iguana on Baltra, 10 April 1992.

are still at the Center. In 1992, three pairs of adults will be brought to the Center from North Seymour in order to continue the Breeding and Rearing Program for this population and thus provide more individuals for repatriation to Baltra. A study of the iguanas in North Seymour in 1989-90 (Izurieta 1991) provides the knowledge needed to select the most fit individuals.

The reestablishment of a population will ultimately be judged on documentation of successful recruitment into the population. The importance of introduced mammal control cannot be forgotten. A management plan for continual control and monitoring of these species (particularly cats and goats), or better yet their complete eradication, must be developed.

We hope to repatriate iguanas to Baltra until the

population is well established. The existence, after so many years, of land iguanas on Baltra, descendants of the native population, and the valuable collaboration among the different institutions, have achieved a historical step forward in the conservation of the Galápagos Islands, giving us more hope for the future of the Archipelago.

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