

GALAPAGOS TORTOISES: CURRENT STATUS

Peter C. H. Pritchard

The Galapagos tortoises are perhaps the most famous of endangered chelonians; the distinctive island taxa also include several forms that have already passed into extinction, so it should never be claimed that the warnings of extinction of these magnificent tortoises were exaggerated or untrue.

Nevertheless, there is good news to tell. After about forty years of work by an increasingly competent and empowered Galapagos National Park Service, with scientific advice by staff of the Charles Darwin Research Station, the surviving populations are receiving good management, with the active programs carefully tailored to reflect the very different status and threats on each island. Feral mammal eradication programs have achieved growing success, and such technological aids as GPS units have proven extremely valuable in the difficult Galapagos terrain in the task of systematic elimination of feral goats and pigs, as well as burros, dogs, and potentially cattle, rats, and cats. The status of the different island populations may be summarized as follows:

- i) Santa Cruz. The population of giant tortoises in the southwestern quadrant of the island numbers in the low thousands of individuals, and many nests are protected annually by erecting rocky cairns over them. The stones are too heavy for feral pigs to dislodge, but the gaps between the rocks allow the hatchling tortoises to escape. A population of smaller tortoises, genetically close to those of San Cristobal, occurs in eastern Santa Cruz centered around Cerro Fatal. Population density is relatively low but tortoises of all ages are found. There are some goats in the habitat, and these are sometimes hunted by local people for meat or sport. It is interesting that such healthy tortoise populations occur on an island with thousands of human inhabitants, whereas the tortoises of Fernandina and Pinta have disappeared completely despite the lack of humans on these islands. There are a great many introduced vegetative species in the tortoise reserve of Santa Cruz, and some of these, especially the guavas, are actually much appreciated by the tortoises.

- ii) Santiago. The tortoises on Santiago show an unbalanced population with a preponderance of large, old males, but intensive mammal control operations have now entirely eliminated both the goats and the pigs on the island. (Pigs have to be eliminated first, because shooting the goats first results in vegetative recovery which makes it difficult to locate the pigs). The vegetation is indeed recovering, and it may be anticipated that the tortoise population may now breed successfully and with normal recruitment of young into the population.

- iii) Pinzon. Tortoises are now more abundant on Pinzon than they have been for a century, as a result of decades of collection of fertile eggs each season. The eggs complete their development under controlled conditions at the Darwin Station, and this is followed by several years of head-starting of the young before release. Some of the released youngsters have now reached maturity, and indeed one sees very few of the “original” tortoises (i.e. those hatched before the introduction of feral rats around 1890) nowadays.

Rats, which predate disastrously upon the hatchling tortoises, have proved difficult to eradicate, and the head-starting program will probably continue indefinitely. The current Pinzon tortoise population is in the low hundreds.

- iv) Espanola. The feral goats on Espanola have now been eliminated, and there are no other feral mammals on the island. The tortoises were so rare that captive breeding of the survivors (just two males; a dozen females – and a male from the San Diego Zoo) was necessary, and over thirteen hundred hatchlings have now been produced and the majority released. Some of the “new generation” have now reached maturity and are breeding, but few hatchlings or young are found on the island, and it is thought that this may be a result of predation by unnaturally high densities of (native) hawks, which proliferated during the goat-killing years. More research is needed.

- v) San Cristobal. Tortoises were thought to be extinct on San Cristobal up to the mid or late 1900s, but it is now

know that a rather large population exists in the vicinity of Pan de Azucar in the extreme northeast. This apparently numbers in the low thousands and is reproducing well, with many juveniles being encountered. Feral dogs, formerly a problem in the habitat, have apparently died out. Like Santa Cruz, this is an island with many tortoises and many humans, although they occupy the opposite extremes of the island.

- vi) Isabela. Goat control is now underway with a vengeance on the northern three mountains of Isabela. The island is too large and the terrain too difficult for normal, land-based techniques, and the procedure selected is to utilize helicopter-based sharpshooters, operating from a base near Cowley island. The goats are corralled into tight concentrations by the encircling helicopter, and then the entire group is shot. In the late stages, “Judas goats” with radio-collars are released to gather up the stragglers. Volcan Wolf and Volcan Darwin are now essentially clear of goats. They were only on these parts of Isabela for a few years, and the vegetative

damage is reversible within a few rainy seasons. We found about ten tortoises per day on the western lowlands of Wolf in October 2003, ranging from youngsters to adult males. In earlier years we also found modest numbers of tortoises on Volcan Darwin, but this mountain has so much fresh lava that tortoise habitat is limited.

While on goat control duty in the high southern slopes of Volcan Wolf, the goat control parties observed large numbers (thousands?) of live tortoises in an area that had apparently never been examined from ground level, and we hope to investigate this exciting discovery further in September. On Volcan Alcedo, huge numbers of goats have had a severe impact on the vegetation, especially on the tree ferns at the higher altitudes, although even here the stress to the tortoises is mainly apparent during the dry season, and the entire mountain will still “green over” with adequate rainfall.

The goat campaign does not extend to southern Isabela, and the almost impassable Perry Isthmus separates the two worlds of northern and southern Isabela. Goats are also present in the south, but are relatively scarce and subject to predation by both settlers and

feral dogs. A wide spectrum of other feral mammals is also present, whereas the main secondary mammals in the north are burros on Alcedo and cats on Wolf and Darwin. Tortoises are found in scattered pockets in southern Isabela, and seem to include two subspecies, *vicina* and the huge, flat-shelled *guntheri*. The distributions of the two are still poorly understood, but several years ago the main colony of *guntheri* was threatened by a lava flow. About seventeen adult tortoises were transferred by helicopter to Puerto Villamil, where they have reproduced abundantly in captivity at the Arnaldo Tupiza breeding center, and presumably the survival prospects for the taxon are now better than they have been for a long time. Unfortunately, incidents of slaughter of tortoises on southern Isabela have been reported in recent years, and this also occurs in the lowland areas, easily accessible from the sea, of Volcan Wolf.

Tortoises have long been extinct on Floreana, and none are found today on Pinta although Lonesome George survives at the Darwin Station. Various other islands, including Santa Fe, Fernandina, and Rabida, have been reported to have tortoises, but this is questionable.