

Living Laboratory in Peril

The name Galapagos conjures up images of giant tortoises, Darwin's finches, and a remote pristine archipelago that is rightly described as "a living laboratory of evolution." But that picture of this World Heritage site is seriously flawed by current events, including wholesale violations of the Special Law for Galapagos passed by the Ecuadorian government in 1998. That law, which followed a series of conflicts generated by immigration and illegal fishing, was a consensus of island and national opinion and was greeted with delight by scientists and conservationists. Alas, it isn't working.

The law excluded even Ecuadorians from moving to the Galapagos unless they had been born there or had family on the islands. Unfortunately, much immigration had already occurred. The Special Law's goal was to promote the conservation of biodiversity jointly with sustainable development: a dream uniting incompatible goals. The Galapagos population has grown a remarkable 10-fold in 30 years, to over 27,000 in 2005. Consumption has grown even faster: In contrast to a mere three vehicles in the 1970s, over 350 taxis now create pollution and congestion on Santa Cruz Island.

The threat to endemic species on the Galapagos is significant. A viability workshop conducted by the Darwin Initiative and the World Conservation Union (IUCN) in February of this year found that the Galapagos penguin was under serious threat, with the probability of extinction in the next century estimated at about 30%. Terrestrial ecosystems have a growing invasive species problem: Blackberries, introduced in the 1980s, now shade and smother native vegetation. Old invaders, such as goats, pigs, rats, and cats, continue to destroy native ecosystems and affect the function, species composition, and restoration of the islands.

The islands' fishery, small in the early 1970s, is now an industry, serving markets in Asia and elsewhere. The sea cucumber fishery, in the 1990s, involved "pepineros" from off-island who periodically took over the Charles Darwin Research Station, holding it hostage to protest fishing restrictions. They're still around: In March 2005, one raid found 7000 sea cucumbers, of a species illegal for harvest, in crates hidden in the mangroves on Fernandina Island; 100,000 were also captured on Isabela. An international shark fishery has already decimated that population in its effort to supply the Asian market for shark-fin soup.

Tourism is currently capped at 120,000 tourists a year, and an average year sees about 100,000 tourists visit the islands. They generate an annual \$150 million, but most of the money either stays on the mainland or goes to where the tours originate. Tourism, even when well managed, generates external costs through waste disposal and also by encouraging development and a standard of living that attracts immigrants. Several immediate actions are needed to help the Galapagos archipelago remain a poster child for evolution and conservation. The islands need a nonextractive marine park around the westernmost islands of Fernandina and Isabela to protect the two endemic bird species (the Galapagos penguin and flightless cormorant) that are concentrated there. Policies limiting human population growth and consumption on the islands should be encouraged. Conservation measures are needed to prevent the introduction of diseases such as West Nile Virus and avian malaria. Fishing rights could also be bought out. New regulations must control illegal fishing and prohibit fishing techniques with unacceptable bycatch. Alternative work for genuine fishermen must be found. Galapagos tour costs should also include the external environmental costs of tourism.

How will such changes come about, and who will exact them? The organization charged with running the Galapagos, the National Park, lacks stability at the top. Ten park directors have been terminated in the past 2 years. Their demise was the result of constant political intervention to ignore exploitation of the islands. That leaves the solution in the hands of others. How can scientists help? Through scientific and professional organizations, we can call on establishments such as the IUCN to help the Ecuadorian government carry out science-based conservation, acquire worldwide financial support, and devise and enforce new laws that work. Our responsibility as scientists is to alert institutions, governments, and the public to the de-evolution of the Galapagos Islands. The international science community must garner strong global political support for the natural wonders of the Galapagos. Only then will this laboratory of evolution have a chance to persist for another 100 years.

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