Both Friend and Food: The Conservation of Iguanas in Panama's Market Economy

Darrin DuFord

New York, New York

Green Iguanas wear many hats. These unassuming reptiles play roles as tourist attractions, pets, and endangered species. However, their role as the main course for dinner ironically is providing Panama with a vehicle for the species' conservation.

Iguanas have appeared on menus in Central America for thousands of years, but the species' existence only began to be threatened over the last century as a consequence of excessive hunting and destruction of its habitat to make room for cattle and other agricultural cogs in a cash economy. However, scarcity hasn't quelled the Panamanian's traditional practice of entering the forest with a slingshot and leaving with a "free-range" iguana. With high protein and low fat content, iguanas, which are herbivores, have provided many a family with a fresh, healthy, natural meal. Iguana eggs, a rich, creamy treat, allegedly cure various ailments, once one finds a way through the tough, leathery shells.

Balancing the conservation of a species, a regular supply of a customary meal, and income for farmers has never been a simple task. In the 1980s, biologist Dagmar Werner tackled the complex challenge by launching a project in Panama to evaluate the viability of raising iguanas in captivity for food and profit. She

After hatching in a secure pen, baby Green Iguanas at the Río Cabuya iguana farming project are transferred to an elevated cage (shown here), where they will remain, safe from predators, until they reach six months of age. The fabrication of the cage has an intentionally improvised appearance to mimic the availability of whatever building supplies may be lying around any farm in Panama. *Photograph by the author.*

soon moved her operation to nearby Costa Rica in order to take advantage of a more nurturing political and economic climate. Despite initial successes, however, the Costa Rican project, including a restaurant serving iguana burgers to promote its cause, recently and unexpectedly closed its doors.

Today, Panama is giving the idea a second chance. Nestled in a park in the watershed of the Panama Canal, scientists at the 60-hectare Rio Cabuya Agroforestry Farm have been spearheading a program to teach campesinos how to raise their own iguanas as a sustainable food source. While profits are understandably on the minds of the participating farmers, the primary goal of the project, at least at first, is to keep the campesinos from hunting the threatened creature in the wild.

While poaching wild iguanas is illegal in Panama, little government-funded monitoring actually occurs — and conservationists in Panama have frequently encountered impediments. This lack of oversight triggered a recent decision by the Convention on International Trade in Endangered Species (CITES) that recommends sanctions on all of Panama's CITES-listed exports of both flora and fauna, explicitly due to the government's failure to adopt legislation protecting the country's species in danger of extinction.

Even at the agroforestry site itself, setbacks occur. "Poachers sometimes raid the park and steal a few of our iguanas," explained ANCON Expedition's Rick Morales, as we followed the life cycle of iguanas hatched and raised in the ground's caged housing. The facilities appeared modest and improvised — intentionally — to mimic the availability of whatever building supplies may be lying around any farm in Panama: scrap sheet metal, chicken wire, and spare lumber.

The idea is simple. The project lends campesinos a pair of adult iguanas at no cost, and provides tutelage on housing, guarding, and feeding them. In protective captivity, around 95% of the 35 or so eggs per clutch will survive. This stands in stark contrast to the about 5% success rate in the wild, where eggs helplessly succumb to the hunger of ants, snakes, and other natural predators. At six months, adolescent iguanas, virtually predator-free, are either released into the campesinos' trees for future easy-access meals, or they are kept in a larger shelter. After 18 months, the campesinos can swap their breeding iguanas for another pair.

To uphold their end of the deal, the campesinos must return twenty percent of the iguanas to the wild. They can sell or eat the rest. The mathematics, in principle, tell us that the forest gains more of a threatened species, the campesinos gain the opportunity to legally eat a traditional meal without hunting in the wild; and only the snakes lose (but don't worry; snakes still have plenty to eat).

So, how successful has the project been? Our search for answers led Rick and me to the office of ANCON biologist Augusto Gonzalez, who, for the past twelve years, has been managing the iguana-farming project. According to Gonzalez, the accomplishments of the project varied with the diverse Panamanian geography. "So far, in the Canal watershed area, the participating farms have achieved little," he conceded. Whereas iguanas are threatened throughout Panama, populations in various provinces have been unevenly affected, following uneven patterns of hunting and deforestation. In the watershed of the Panama Canal, the iguana population has suffered less than in other parts of the country, hence the watershed's campesinos do not want to pay for feeding and raising something that they can readily — albeit illegally — catch for free in the wild.

The author inspects a juvenile Green Iguana that, in two years' time, will be lent, along with husbandry technology and an iguana of the opposite sex, to a Panamanian farmer so the farmer can establish his own legal iguana ranch. The farmer must return twenty percent of the adolescent hatchlings to the wild, and can eat or sell the rest. *Photograph by Rick Morales.*

Some iguana farms backfired. A few would-be iguana ranchers, in the course of protecting and raising the creatures, found the iguana's curtain-like dewlaps and distinguished stares too endearing to eat them, even extending the attachment by giving the creatures names. Those campesinos could not bear releasing the reptiles into a bordering tree, lest "Paquito" end up on a skewer over a neighbor's barbecue pit.

The arboreal behavior of Green Iguanas has been both a blessing and a curse to the program. An iguana likes to stake out one tree and claim it as its home and territory, where it basks and feeds, so campesinos do not have to worry about their investment scampering off deep into the forest. Also, although iguanas grow faster if released into trees, the practice leads to a few other problems. If the trees are too near crops — a typical scenario if the trees are used as buffers in between crops to prevent erosion — iguanas may not be able to resist feasting on the readily available buffet. Worse yet, if the trees border a neighbor's farm, the iguanas might just eat the neighbor's profits.

Why not keep them in large pens? Food, then, becomes an expense, as opposed to iguanas released into fruit trees, which require no feeding, since they take care of themselves by munching on treetop leaves, mangoes, and papayas at their leisure. The

tree-dwelling iguanas still leave fruit for the campesino, although for heavy stocking of trees, some supplemental feeding is required. Caged iguanas also take longer to reach "harvesting" weight — to five years for a five-pound iguana that is able to feed a family of four or five. Many campesinos concerned with making ends meet week to week simply cannot wait that long to spoon up that iguana stew.

The culinary climate is completely different in the central provinces of Panama. Since the campesinos of Coclé and Southern Veraguas have virtually wiped iguanas out of the region, they were much more willing to participate in the project. Gonzalez nodded with satisfaction as he informed me that 100 iguana farmers in the central provinces have been enjoying the project for years. Well-run iguana farms can yield 300 kg of meat per year per hectare — that's five to ten times as productive as raising cattle on the same land — with the added benefit that, with a "herd" of iguanas, the erosion-fighting trees remain standing. Some farmers utilize a mixed system, in which they still raise other livestock and grow other crops while keeping iguanas in a caged shelter, providing a diverse yield. Other farmers have even profitably sold some iguana meat to their neighbors (presently, technological and political barriers preclude the realization of large profits from iguana farming, preventing the practice from becoming more popular). Still others enjoy raising them for fun. The species itself has shared in the program's rewards as well; thus far, over 10,000 iguanas have been returned to the wilds of Panama.

As an added benefit, iguanas also can provide a reason to keep trees on one's property and help preserve the remaining tropical forests. In 1850, 92% of Panama was covered by forest. By 1986, the percentage had been reduced to 37%, almost entirely due to the voracious needs of short-term profit farming. When farmers clear a plot of tropical land using the slash and burn technique — still a common sight (and smell) in many parts of Panama — the poor tropical soil provides a bountiful crop for one or two years, owing to the nutrients in the burned material. Soon after, however, the plot becomes a desiccated wasteland that often requires twenty years before it is reclaimed by forest. Long before then, the farmer has moved on to another plot. If large swatches of land were cleared using this technique, the area may risk becoming a desert. Since the forest is not only the habitat of the iguana, but thousands of other plants and animals, the action of preserving tropical forest, in effect, preserves the entire ecosystem.

Diner or dinner? A curious Green Iguana looks up from foraging in a Panamanian forest. Due to overhunting and the ongoing destruction of habitat from extensive farming, Green Iguanas are a protected species in Panama. *Photograph courtesy of ANCON.*

Of course, believing that the Green Iguana can provide the lizardly linchpin capable of holding together the Western Hemisphere's tropical ecosystems would be naïve. After all, humans must make the choice to balance their needs and those of the environment. However, thanks to the Green Iguana, conservation has never been so delectable.

Disappearing Treasures: National Association for the Conservation of Nature (ANCON) Biologist Augusto Gonzalez (right) examines adult iguanas captured from their Panamanian habitat. Gonzalez manages a project encouraging farmers who eat Green Iguanas to raise the iguanas in captivity and semi-captivity instead of hunting them in the wild, as the creature's numbers in the wild are decreasing. *Photograph courtesy of ANCON.*

References

Berrocal, R.E. 2004. Prohíben comercio de animales con Panamá. *La Prensa,* 18 May 2004 (http://mensual.prensa.com/mensual/contenido/2004/05/18/hoy/portada/1689408.html).

Cobb, C.E. 1986. Panama: Ever at the crossroads. *National Geographic* 169(4): 467–493.

Convention on International Trade in Endangered Species. 2004. Djibouti, Equatorial Guinea, Guinea-Bissau, Liberia, Mozambique, Panama, Rwanda and Sierra Leone — Recommendation to suspend trade. CITES Notification No. 2004/024 of 30 April 2004. (http://www.cites.org/eng/notifs/2004/024.pdf).

Downer, S. 1996. Iguana: Survival of the tastiest. *Iguana Times* 5: 16–18 (reprinted from *Costa Rica Today,* 21 October 1993).

Eilers, K., W. Koops, H. Udo, H. Van Keulen, and J. Noordhuizen. 2002. Analysis of *Iguana iguana* farming systems in Nicaragua, Costa Rica, and Panama. *Interciencia* 27: 599–606.

National Research Council. 1991. Green Iguana, pp. 347–353. In: *Microlivestock: Little-Known Small Animals with a Promising Economic Future.* National Academy Press, Washington, D.C.

Rand, A.S., B.A. Dugan, H. Monteza, and D. Vianda. 1990. The diet of a generalized folivore: *Iguana iguana* in Panama. *Journal of Herpetology* 24: 211–214.

The following webpage also may be helpful: Melissa Kaplan's Green Iguana Care Collection (http://www.anapsid.org/iguana/index.html).

VOLUME 11, NUMBER 3 SEPTEMBER 2004 US$6.00

IGUANA

JOURNAL OF THE INTERNATIONAL IGUANA SOCIETY

WWW.IGUANASOCIETY.ORG

Grand Cayman Blue Iguana, *Cyclura lewisi*, Grand Cayman, Cayman Islands (see story p. 148). *Photograph by Fred Burton.*