

Discovery of Ricord's Iguana (*Cyclura ricordii*) in Haiti

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Ricord's Iguana (*Cyclura ricordii*) is listed as Critically Endangered (CR) on the IUCN Red List (Ottenwalder 1996). The species is endemic to Hispaniola and is considered a flagship species in a "hotspot" region of high biodiversity and endemism. Until recently, the species had been known to exist only in the Jaragua-Bahoruco-Enriquillo Biosphere Reserve of the southwestern Dominican Republic (Fig. 1), where it is restricted to the arid Valle de Neiba and the most xeric portion of the coastal lowlands on the Península de Barahona (Ottenwalder 1999). The presence of Ricord's Iguanas in the Haitian extension of the Neiba Valley plain had been presumed by Schwartz and Carey (1977), but the species had never been recorded within Haiti from either the Lake Étang Saumâtre Basin or the dry coastal fringe extending from Anse-à-Pitres to Marigot across the Dominican border from Pedernales (Ottenwalder 1999).

Since 2003, Grupo Jaragua has been monitoring the only previously known population of *C. ricordii* on the Península de Barahona, which occupies an area east of Pedernales and north of Cabo Rojo, inside the fork of the Oviedo-Pedernales and Cabo Rojo-Acetillar roads (Figs. 1 & 3). The area consists of a series of broad, flat plains punctuated by rocky outcrops and marine terraces with very fine soil covering exposed limestone (Ottenwalder 1999). Ricord's Iguanas prefer to dig their burrows in so-

called "fondos," which are depressions in limestone rock filled with deep reddish clays. When soil is unavailable, rock cavities are used for retreats. During our monitoring work, we noticed that active iguana retreats in the grayish weathered rock could be detected by a whitish-colored ring. This trait makes it possible to spot active dens even from a distance. As iguanas dig, they scratch the weathered limestone with their claws, rendering it white and creating the ring. Burrows dug by Rhinoceros Iguanas (*C. cornuta*), which are broadly sympatric with *C. ricordii* throughout the latter's range, lack this feature.

Looking west toward Haiti from the town of Pedernales, one can see a topography of limestone terraces similar to that in which *C. ricordii* is present on the Dominican side. In October 2005, we questioned residents in the town of Anse-à-Pitres, Haiti, and discovered that many had seen iguanas in the limestone terraces west of the town. Furthermore, at least one iguana hunter indicated that he was able to distinguish between the two types of iguanas. On 8 November, with a youth group from Anse-à-Pitres, we set out to visit the terraces. Despite evidence of heavy impact by animal grazing and charcoal production, considerable vegetation in the form of cacti, small bushes, herbs, and grasses remained. In Kachiman, which consists of plantain fields on alluvial clay, we saw at a distance of



Fig. 1. Locations of Ricord's Iguana (*Cyclura ricordii*) populations on Hispaniola.

about 70 m, along the foot of one of the terraces in a steep rock wall, what appeared to be an active Ricord's Iguana den with its typical whitish ring (Fig. 2). Around 0900 h, an iguana's head slowly appeared at the entrance. With binoculars we confirmed that this was a Ricord's Iguana — and a big one at that. The animal did not completely leave its den. It certainly had spotted us. Frequent human presence in the area causes iguanas to be very shy. Moving nearly a kilometer along the lower part of the terrace, we spotted another animal, approximately 100 m away in a steep rock wall. Only the tail and part of the body were visible, but again with the help of the binoculars, the species' characteristic tail rings could be detected. This animal was also a *C. ricordii*. On the way back to town, we also saw three basking Rhinoceros Iguanas.

During follow-up visits, we encountered the same two *C. ricordii* on several occasions, although we were never able to take any reliable photos because of the distance. In February 2007, we were visited by Tom Wiewandt, who has intensively studied *C. stejnegeri* on Mona Island. We hoped that with his excellent gear, especially a huge telescopic lens, we could finally get photographic proof. As we approached the first den, the large iguana was just lying there in perfect position for a star photo. Tom got his equipment ready and took one more step to get into a better position for the shot. Before he was able to touch the button on the camera, the iguana disappeared in its den.

Clearly, the Ricord's Iguanas in the Anse-à-Pitres area were few in number and holding on only in places not easily accessible by people, almost certainly a reflection of intense hunting pressure. Was this small population about to be extirpated? One requisite for its survival would be suitable nesting grounds with proven female activity during the reproductive season. Again, for comparison, we looked at Pedernales, where the



Fig. 2. An active Ricord's Iguana den in a limestone terrace.

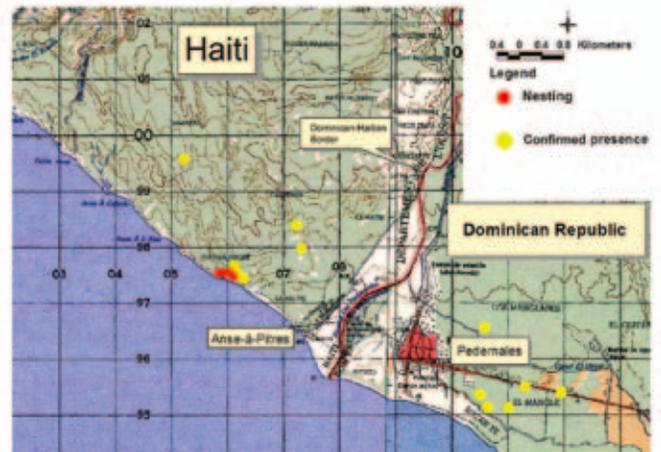


Fig. 3. The area of Anse-à-Pitres and Pedernales, dots mark sites where the presence of *Cyclura ricordii* has been confirmed.

fondos, with their terra rossa, were typical nesting grounds for *C. ricordii*. We concluded that all we had to do was look for similar fondos in Anse-à-Pitres. Google Earth® satellite images provided evidence of several smaller fondos within the limestone terraces where we had spotted the iguana dens. During the 2006 and 2007 nesting and hatching season, we visited these possible nesting areas, but never found evidence to indicate that Ricord's Iguanas were nesting there.

At this point, we had given up on finding any nests, and we thought that the animals we had seen in the limestone terraces were the last survivors of a doomed population. However, on 19 May 2008, during a visit to a reforestation project in Anse-à-Pitres, one of our youth collaborators approached us, opened a bag with a triumphant smile, and pulled out four eggs. Based on size and shape, they were Ricord's Iguana eggs. We were stunned. Although their removal from the nest meant that the embryos would not survive, the boy had found a nest and, therefore, a nesting ground. We followed him to where he had excavated the eggs, and to our surprise the excavation had not taken place in a fondo with red clay. Instead, we found a beach with fine grayish white sand, the same substrate used by Ricord's Iguanas in the Neiba Valley.

Table 1. Ricord's Iguana nests documented in 2010 in the Lasalin habitat, Anse-à-Pitres, Haiti. Nests for which egg numbers are not indicated (marked with —) were not verified.

Nest #	Poached	Emergence Hole	Eggs hatched/ not hatched
N1	yes	yes	20/0
N2	no	no	—
N3	yes	no	0
N4	yes	no	—
N5	no	yes	—
N6	no	yes	0
N7	no	yes	—
N8	yes	no	0
N9	yes	yes	5/0
Unmarked 1	no	yes	4/0
Unmarked 2	no	yes	—



Fig. 4. Satellite image of the *Cyclura ricordii* habitat at Lasalin near Anse-à-Pitres, Haiti (Google Earth®).

The sandy beach is called Lasalin, and is about the size of a football field (Fig. 4). We started looking around and soon detected a recently evacuated nest, which could be recognized by the pure white sand brought to the surface (Fig. 5). During the following two weeks, we found a total of nine nests, seven of them complete, and two excavated. We also were able to spot a gravid female. During the hatching season from July to September 2008, we were unable to visit the beach to evaluate hatching success.

The International Iguana Foundation supported a workshop on 22–24 August 2009, during which the presence of *C. ricordii* was further documented. The purpose of the workshop was to learn how to apply methods for estimating population size, hatching success, and survival rate at different life stages. Led by iguana specialist Stesha Pasachnik, we set up a hands-on workshop in known *C. ricordii* habitats in Pedernales, and visited the habitat in Anse-à-Pitres. Participants included Dominican and Haitian field guides and assistants. Our goal visiting the Anse-à-Pitres site was for individuals participating in the workshop to discuss the quality of this habitat and the potential for the presence of a substantial population, and to excavate potential nests. We excavated several successful nests. Hatched eggshells were recovered from subterranean burrows 45–60 cm deep, and, based on size, shape, and consistency of the shells, they were clearly those of *C. ricordii*. Hatching success was 100% in two of these nests. As if to further prove the presence of the species in Haiti, two underdeveloped *C. ricordii* fetuses were recovered from one nest, and were identified based on the species' classic tail-ring characteristics.

In September and October 2009, with the help of a local youth group, we conducted a socioeconomic study investigating human impact on the Ricord's Iguana population in Anse-à-Pitres. The 502 surveys yielded results critical in developing the next steps to conserve the species. However, while conducting the surveys, the Lasalin nesting site was nearly destroyed. On 15 September, one of the Haitian field guides saw a road being excavated on the edge of Anse-à-Pitres, and it was headed directly toward Lasalin. Inquiries determined that the work had been ordered by a prominent person from Anse-à-Pitres, with the intent of mining sand for construction projects. Early the following morning, the guide and his father



Fig. 5. The first *Cyclura ricordii* nest in Haiti was found on sandy beach near Anse-à-Pitres.



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Fig. 6. Members of OJAA protecting Ricord's Iguana habitat in September 2009.

confronted the construction workers and demanded they halt the work. The workers threatened violence with machetes. Meanwhile, the youth group, which was assisting us with the surveys, set up a tent at the nesting site and refused to leave (Fig. 6). The altercation ended without violence, but clearly demonstrated the vulnerability of the precious habitat, and how close the species was to being extirpated in Haiti! A few weeks after this incident, a local habitat surveillance and monitoring team was established.



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Fig. 7. Emergence hole in Anse-à-Pitres (top) and Masani Accimé and field assistant Nelson Jean with 20 eggs excavated from nest #1 (bottom).



NELSON JEAN

Fig. 8. First photograph of a wild Ricord's Iguana (*Cyclura ricordii*) in Haiti.

This team regularly patrols the 4.5-ha habitat to prevent iguana hunting and tree-cutting for charcoal production. In addition to protecting iguanas, this vigilance clearly has benefited ecological biodiversity in the habitat.

During the 2010 *C. ricordii* nesting season, we closely monitored the Lasalin habitat. The March–June time frame and an incubation period of 90–100 days corresponded with data collected on the species in the Dominican Republic. We did not use external markers to identify the Lasalin nests, as we do in Pedernales, for fear of poaching. Last year, nine nests were found in the sandy habitat of Lasalin, and the location of each nest was identified only with GPS coordinates. Two additional nests were found once hatchlings had emerged, leaving behind emergence holes indicating the location of the nests (Fig. 7). Several nests were verified by excavation with 100% hatching success (Table 1). Several adult *C. ricordii* were subsequently seen in the area surrounding Lasalin, and we found additional active dens in the limestone outcrops on the northern edge of the nesting site. All dens had the characteristic ring. We found scat at the entrances as additional proof of activity, and one large adult was sighted scurrying into one of the dens. Nesting success for 2011 is still being evaluated. The habitat-monitoring team was given a special assignment to try and capture an image of *C. ricordii*, and, in April 2011, we finally got the first photograph of a wild *C. ricordii* in Haiti (Fig. 8).

We have been working diligently to educate the local community about this species and its significance. The local authorities have been



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Fig. 9. Habitat used by *Cyclura ricordii* near Anse-à-Pitres. The area in the background near the sea is the nesting area known as Lasalin.



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Fig. 10. In the past, drier Pleistocene climates might have allowed genetic exchange between the disjunct subpopulations north and south of the Sierra de Bahoruco. The total range of Ricord's Iguanas is <math><100\text{ km}^2</math>, and less than 60% of the historical range is occupied — and even the occupied portions are disturbed to varying degrees.

informed of the status of the species through workshops, with an emphasis on the local and international importance of habitat conservation, and the possibility of legally creating a Municipal Wildlife Reserve. Educational materials have been created and distributed. The grave state of the Haitian *C. ricordii* population is evident through our monitoring of nesting activity. In sharp contrast to the site at Lasalin (Fig. 9), the population in Pedernales has 200 to 300 nests each year.

Conserving the small population of *C. ricordii* in Anse-à-Pitres is not only about saving the species from extinction in Haiti, it is about giving hope to a struggling country. The concept of wildlife and biodiversity conservation is completely new to the Haitian public, and it challenges the way they have been interacting with nature. Extreme poverty and decades of political turmoil and instability have pushed the people into charcoal production and subsistence farming, the only means for survival. Nevertheless, the idea of protecting these creatures is taking hold in this small rural town. Several local grassroots organizations, youth groups, and local guides have mobilized in this effort to conserve the species and its habitat. They affirm that the presence of *C. ricordii* could have long-term positive benefits for the community, and they are motivated to take ownership of these conservation activities (Fig. 10).

Acknowledgements

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ROBERT POWELL

An adult female San Salvador Curlytail (*Leiocephalus loxogrammus parnelli*) from scrub habitat near Rocky Point.