



JAN PANER

The critically endangered Ricord's Iguana (*Cyclura ricordii*) has a very limited geographic distribution in the southwestern Dominican Republic and an adjacent area in Haiti.

# Conserving *Cyclura ricordii* 2007

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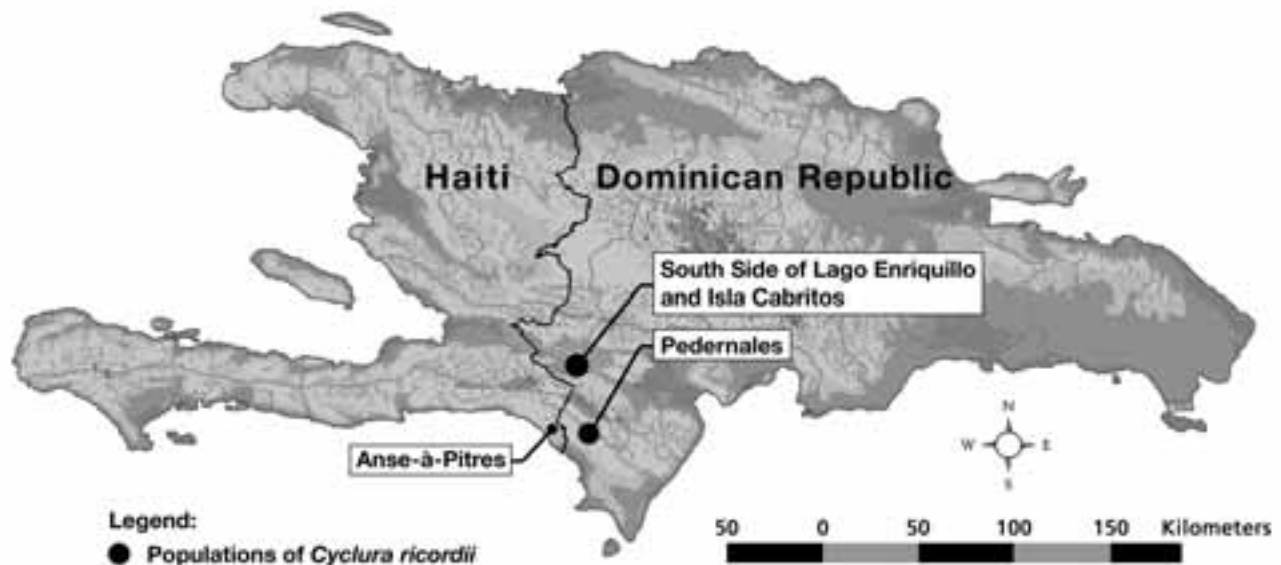
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Ricord's Iguana (*Cyclura ricordii*) is one of the most specialized iguanas of the endemic Caribbean genus *Cyclura*. The species, which is sympatric with the Rhinoceros Iguana (*Cyclura cornuta*), has a very limited geographic distribution in the southwestern Dominican Republic. Three known subpopulations are within the Dominican Jaragua–Bahoruco–Enriquillo Biosphere Reserve. A fourth population has been discovered recently in Anse-à-Pitres, Haiti. The species is included as Critically Endangered in the IUCN Red List, and is the subject of a recovery plan produced by the IUCN Iguana Specialist Group (ISG) in 2003 and reviewed in 2004.

Grupo Jaragua, a Dominican not-for-profit conservation organization, has been working for biodiversity conservation in the area for the last 15 years. It is a member of a consortium of national and international organizations that has been working for the recovery of the species under the leadership of the International Iguana Foundation and the Iguana Specialist Group.



Ricord's Iguanas (*Cyclura ricordii*) survive today only in the most xeric Hispaniolan habitats.



The known distribution of Ricord's Iguana (*Cyclura ricordii*) on Hispaniola.

The recovery of *C. ricordii* is part of Grupo Jaragua's program to conserve biodiversity in the biosphere reserve in the southwestern part of the Dominican Republic, thought to be one of the most diverse sites in the insular Caribbean. Work is conducted in close coordination with the Dominican Government, integrating community-based local municipalities, national, and international organizations.

During 2007, Grupo Jaragua continued to survey nesting activities of *Cyclura ricordii*. A land tenure study in the Pedernales region was undertaken, and we began the investigation of population densities. We are presently working on the translation of the iguana teaching manual from Spanish into French for Haitian schools.

### Nesting

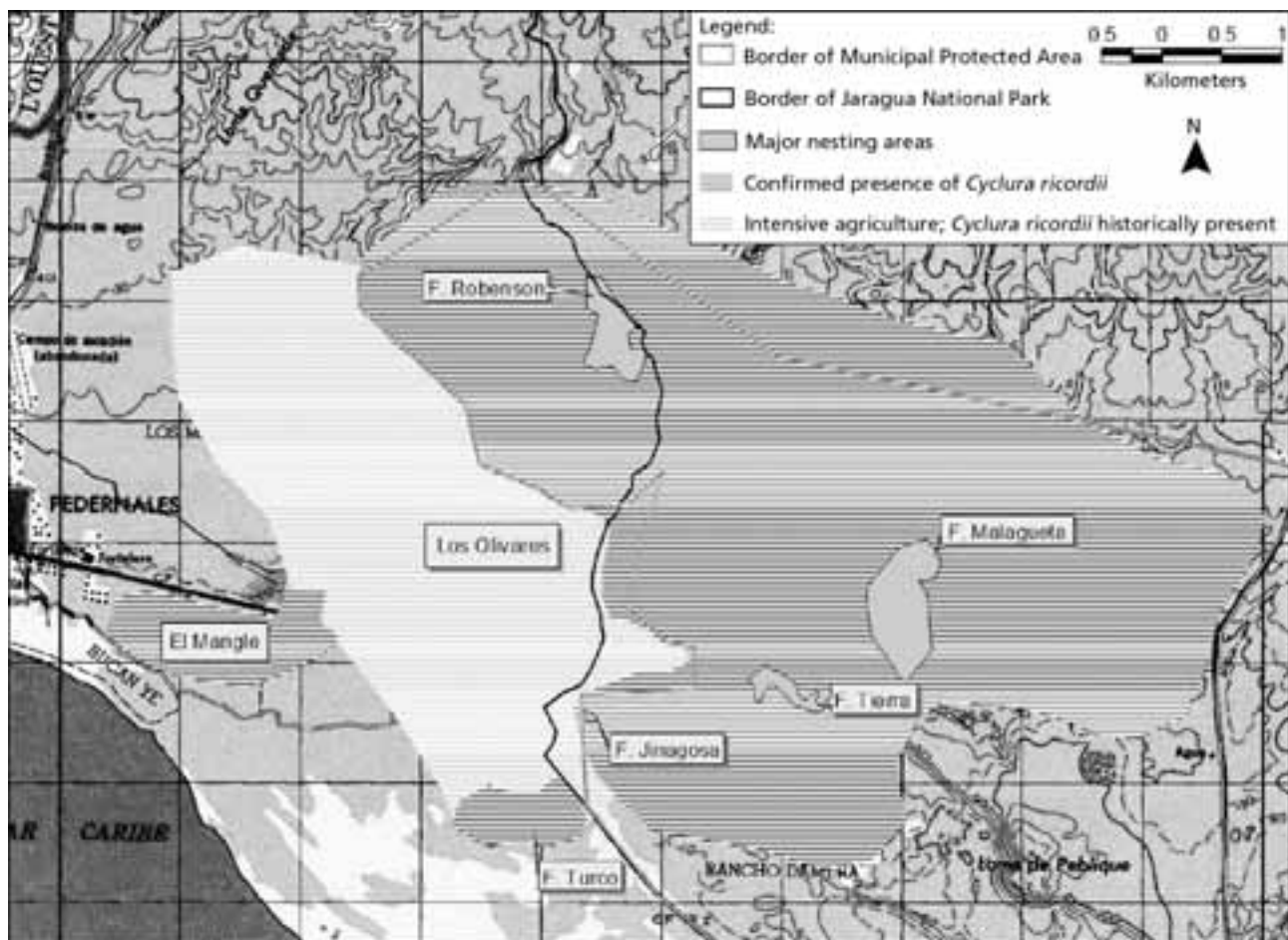
After the 2007 season, we now have four years of data on the nesting of *C. ricordii* and *C. cornuta* in the Pedernales area. The study includes the four major nesting zones of *C. ricordii*, which are Fondo de la Tierra, Fondo de la Malagueta, Fondo de Robenson, and Fondo de la Jinagosa. Two nesting sites where only *C. cornuta* is present (Puente arriba and Puente abajo) also are included in the study.

Nests were marked with flags and their coordinates taken with GPS. Hatched nests are easily identified by the escape holes hatchlings excavate when digging their way out of the nests.

The nesting season for *C. ricordii* starts in early to mid-March and extends for roughly three months until early to mid-June. Hatching occurs from the second half of June to the later half of September. The nesting season for *C. cornuta* starts in mid-June and ends in mid-July. Hatchlings appear from mid-September to mid-October. The nesting season for *C. ricordii* spans three months, but that for *C. cornuta* lasts barely a month. The nesting seasons of the two species do not overlap. The main nesting efforts of Ricord's Iguana are in April and May, which usually coincides with the spring rainy season, and hatching occurs during the drier part of the year. For *C. cornuta*, the situation is reversed. Nesting occurs during the dry parts of June and July, and hatching coincides with the heavy autumn rainy season. Hatchling *C. ricordii* may have a harder time finding sufficient food resources when hatching during a period with little fresh vegetation, whereas hatchling *C. cornuta* usually are able to feast on lush new growth.

A total of 194 nests were found and marked during the 2007 nesting season. Hatching success for marked nests in all study areas combined was 92.4%. Adding non-marked hatched nests found during hatching season, a total of 219 hatched nests were encountered.

When examining the nesting results for the last four years, the number of "total nests hatched" fluctuates around 200 nests per year. Nesting success has been relatively constant.



Localities in the Pedernales region where the presence of *Cyclura ricordii* has been confirmed.

**Table 1.** Nesting and hatching seasons of Rock Iguanas in the southwestern Dominican Republic.

Year	Species							
	<i>Cyclura ricordii</i>				<i>Cyclura cornuta</i>			
	Nesting		Hatching		Nesting		Hatching	
2003	APR/MAY		JUL/AUG		—		—	
2004	19 MAR	2 JUN	29 JUN	12 SEP	16 JUN	16 JUL	02 SEP*	20 OCT
2005	08 MAR†	16 JUN	10 JUN	19 SEP	22 JUN	17 JUL	14 SEP	17 OCT
2006	15 MAR	09 JUN	11 JUL	19 SEP	15 JUN	17 JUL	10 OCT	15 OCT
2007	12 MAR	08 JUN	—	19 SEP	13 JUN	10 JUL	14 SEP	19 OCT

\* Hatchlings dug out of nest

† First nest outside study area on 28 FEB

**Table 2.** Nesting records for *Cyclura ricordii* in 2007. 1 = Fondo de la Tierra; 2 = Fondo de la Malagueta; 3 = Fondo de Robenson; 4 = Fondo de la Jinagosa.

Site	Size (ha)	Transect Area (ha)	Nests Marked	Nests not Found	Escape Hole not Found	Marked and Hatched	Percent Nests Hatched	Non-marked Hatched	Total Nests Hatched	Nests Hatched per ha
1	10.3	—	89	2	8	79	88.8	24	103	10.0
2	47.1	4.2	83	1	5	77	92.8	10	87	20.7
3	25.1	4.3	15	—	—	15	100.0	4	19	4.4
4	0.6	—	7	—	—	7	100.0	3	10	16.7
<b>Total</b>	—	—	<b>194</b>	<b>3</b>	<b>13</b>	<b>178</b>	<b>92.4</b>	<b>41</b>	<b>219</b>	<b>11.3</b>

**Table 3.** Total *Cyclura ricordii* nests hatched in the four major study areas (see text).

Year	Nests Marked	Nests not Found	Escape Hole not Found	Marked and Hatched	Percent Nests Hatched	Non-marked Hatched	Total Nests Hatched	Nests Hatched per ha
2004	208	5	20	183	88.0	15	198	10.2
2005	166	1	14	151	91.0	27	178	9.2
2006*	214	5	23	186	86.9	51	227	11.7
2007	194	3	13	178	92.4	41	219	11.3

\* vegetation was destroyed in Fondo de la Tierra before nesting season

Multiplying 200 nests by the average of 12.5 eggs per nest provides an estimate of ~2,500 hatchlings/year for all study areas combined.

A new record was set for the number of eggs in a single nest. One nest in the Fondo de la Tierra contained 20 hatched eggs. The old record was 19 eggs.

The fondos, with their deep, well-drained soils, seem to provide the perfect nesting medium for *C. ricordii*. *Cyclura cornuta* also uses these fondos for reproduction, but seems to confine nesting activities to the fringes of the fondos close to the surrounding rocky areas. The fondos with *C. ricordii* nests support a low number of *C. cornuta* nests. In contrast, the two small fondos of Puente Arriba and Puente Abajo, where Ricord's Iguanas are not known to nest, show a high concentration of *C. cornuta* nests.

The number of hatched *C. cornuta* nests dropped sharply from 101 in 2006 to 38 in 2007. We attribute this reduction to



Nest with a new record of 20 hatched eggs in the Fondo de la Tierra excavated by students Gerson Feliz and José Luis.

**Table 4.** *Cyclura cornuta* nests hatched where *C. ricordii* is present (four major study areas combined).

Year	Nests Marked	Nests not Found	Escape Hole not Found	Marked and Hatched	Percent Nests Hatched	Non-marked Hatched	Total Nests Hatched	Nests Hatched per ha
2004	23	0	0	23	100.0	5	28	1.4
2005	25	0	3	22	87.0	2	24	1.2
2006*	17	0	2	15	88.2	3	18	0.9
2007	32	0	3	29	90.6	3	32	1.6

\* vegetation was destroyed in Fondo de la Tierra before nesting season

**Table 5.** *Cyclura cornuta* nests hatched where *C. ricordii* is not present (Puente Arriba and Puente Abajo combined).

Year	Nests Marked	Nests not Found	Escape Hole not Found	Marked and Hatched	Percent Nests Hatched	Non-marked Hatched	Total Nests Hatched	Nests Hatched per ha
2004	—	—	—	—	—	124	124	1,851
2005	—	—	—	—	—	101	101	1,507
2006*	—	—	—	—	—	101	101	1,507
2007	—	—	—	—	—	38	38	567

the presence of a band of feral dogs that rampaged through the nesting grounds at Puente Arriba and Puente Abajo. Fourteen mutilated *C. cornuta* carcasses were found in those areas. During the *C. ricordii* nesting season, we also found three mutilated Ricord's Iguana females in the Fondo de la Malagueta. The estimated number of dogs ranges between 5 and 15 according to different witnesses. These animals are extremely shy and seem to have a very large activity range. We are trying to capture them in order to avoid further disasters.

We have surveyed the area around Anse-à-Pitres in Haiti now for the second year without finding any nests.

#### Land Tenure

In the Pedernales region, *Cyclura ricordii* is found mainly in an area of limestone terraces northeast of "Los Olivares," a flat plain of roughly 12 km<sup>2</sup> characterized by well-drained, deep soil of reddish color. It is currently subject to intensive agricultural use, which includes an elaborate irrigation system. Residents mention that Los Olivares had a dense population of *C. ricordii* before being converted into agricultural land.



Carcass of gravid female Ricord's Iguana killed by feral dogs.

The rocky outcrops of the limestone terraces where Ricord's Iguanas still exist do not offer the same soil conditions as those found in Los Olivares. Soil occurs only in depressions within the rocks, which are called "fondos." These are the sites where females nest. The fondos constitute less than 5% of the area where the species is still extant. They thus represent a limited resource, in sharp contrast to former times when the flat plain of Los Olivares provided many suitable nesting sites.

In order to provide Ricord's Iguanas a future, special attention must be given to the protection of the fondos, especially the larger ones like Fondo de la Malagueta, Fondo de Robinson, Fondo de la Tierra, and Fondo de la Jinagosa. The creation of the Municipal Protected Area by the Municipality of Pedernales in 2004, which covers most Ricord's Iguana living space and includes all four of the major fondos, was a huge step in providing legal protection for the species. Part of the area also is within the limits of Jaragua National Park.

In February 2006, a powerful land baron claimed to have bought the Fondo de la Tierra and started to remove the vegetation with bulldozers with blatant disregard for its legal protected status. Alerted by our field assistant Salvador, Grupo Jaragua, in cooperation with the Municipality of Pedernales, was able to intervene and the destruction was stopped. However, considerable damage had already been done. About 40 active Ricord's Iguana retreats had been destroyed. Although nesting activities later in the same year were not affected, we decided to fence the entrance to the fondo to prevent further unwanted access. Unfortunately, the danger of intrusion remains. The Fondo de la Tierra and other minor nesting areas are bordered closely by agricultural land. Without a buffer, the desire of farmers to extend their property into iguana territory is an ever-present threat.

In the southwest of the country, government-owned land traditionally has been regarded as no man's land that could be



Field assistants Pirín and Salvador at the entrance of the Municipal Protected Area.

claimed and possessed by simply putting it to agricultural use or fencing it. Although the legal picture regarding ownership has changed in recent years, some people cling to this practice. Especially during periods prior to elections — and 2008 will see another presidential election — when vigilance is less effective, this practice takes its toll, even in protected areas. The Ricord's Iguana areas are not immune.

Aware of this imminent danger, Grupo Jaragua proceeded with a study to determine land tenure in and around the critical habitats. The study itself is somewhat tricky as hardly any



Surveyor Tédís Perez and student José Luis mapping fenced areas within Ricord's Iguana habitat.

ownership is actually recorded with a land title in the official government registry. So, we had to go to the field to survey the area plot by plot to determine the actual owners. Fieldwork has been completed and a final report, with legal conclusions, will be available by the end of the year.

The idea of the exercise is to pinpoint critical areas where a clash between agricultural use and conservation could potentially occur. Viable solutions for these areas must be resolved. Means of defusing smoldering conflicts should probably include some combination of the following strategies: (1) The purchase of land for a buffer zone around sensitive areas, especially the nesting areas (in contrast to the lack of respect for government-owned land, private ownership is generally acknowledged in the community). (2) The promotion of land use with minimal impact on the iguanas (bee keeping, agroforestry systems with native species). (3) Vigilance in close coordination with the applicable government agencies to prevent further fencing of critical iguana habitat.

### Population Studies

Ongoing fieldwork is providing preliminary results for the Pedernales region, and we will address the southern shore of Lago Enriquillo during the next few months. Ideally, we will combine forces with the crew from the Indianapolis Zoo in April. They are planning to do population studies on Isla Cabritos, which will facilitate a coordination of methods and an exchange of information.

### Translation of Iguana Manual

The Spanish version of the iguana manual has been translated into French and is being proofread in Canada. We are looking forward to cooperating with the IRCF on the layout for the manual. John Binns of the IRCF has designed t-shirts promoting Ricord's Iguana conservation and is polishing our reports for publication. The manual is of great importance in a country where printed material is scarce. It will be used by schoolteachers as a teaching aid.

### Acknowledgements

We thank the IIF for financial support, and also express our gratitude to the Ministry of Environment and Natural Resources and the Municipalities of Pedernales and Duvergé for collaboration in the project.

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