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Critically endangered Ricord's Iguanas (*Cyclura ricordii*) occur only in the Dominican Republic. A critical portion of the species' very restricted range has been removed from the Dominican protected areas system.

# Preliminary Report on the Distribution and Status of *Cyclura ricordii* along the Southern Shore of Lago Enriquillo

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Photographs by the authors except where indicated.

Ricord's Iguana (*Cyclura ricordii*) is endemic to Hispaniola, where it is one of two species of Rock Iguanas on the island. Ricord's Iguana is critically endangered according to the current IUCN Red List. The population is divided into two isolated areas in the southwest of the Dominican Republic. One area is in the Neyba Valley: on Isla Cabritos in Lago Enriquillo and some adjacent habitats on the southern shore of the Lake. Effective management is in place for the Isla Cabritos Lago Enriquillo Ramsar site, which is also a National Park. The southern shore of the lake, however, is not legally protected at this time. In fact, law 202-04 (2004) eliminated this region from the Dominican protected areas system. The present study examines the distribution of the species along the southern shore of Lago Enriquillo and assesses the conservation status of that population.

## Methods

In order to localize *Cyclura ricordii* habitats and populations along the southern shore of Lago Enriquillo, key informants were contacted and interviewed about their knowledge of *C. ricordii*. Photographs of *C. cornuta* and *C. ricordii* were used to determine if the persons interviewed were able to discriminate between the two species. In addition, field trips were undertaken to the locations mentioned by informants and Landsat satellite photographs were examined in order to identify further potential *C. ricordii* habitat. The presence or absence of *C. ricordii* was determined by: (1) Direct sightings (clear identification of animals as being *C. ricordii*), (2) dead animals (identification of carcasses or parts of dead animals as being *C. ricordii*), (3) tracks (given conditions of fine soil substrate, tracks of *C. ricordii* and *C. cornuta* can be differentiated by their width and form), and (4) retreats (*C. ricordii* tends to occupy sites close to retreats for basking; knowing locations of retreats facilitates identification of basking animals and tracks leading to active burrows can provide an indication of the species occupying the specific retreat). Coordinates of locations where the presence of *C. ricordii* was verified were registered with GPS (UTM, map datum: NAD 27 of the Caribbean) and integrated into GIS.

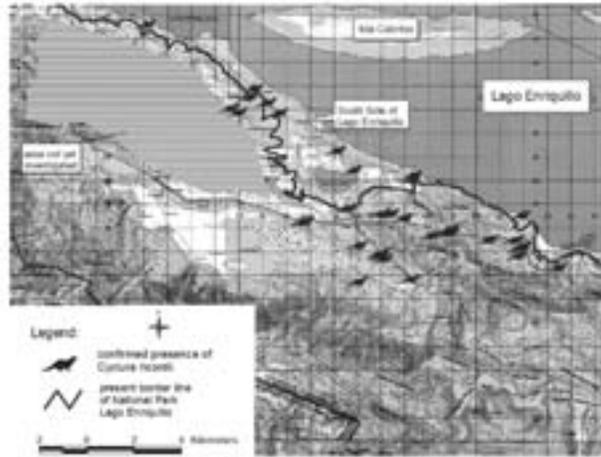
The extent of major threats to the species was defined and quantified by: (1) Interviewing local people; (2) fieldtrips to assess human impact on vegetation and iguanas; and (3) habitat changes evident in satellite images.

## Results

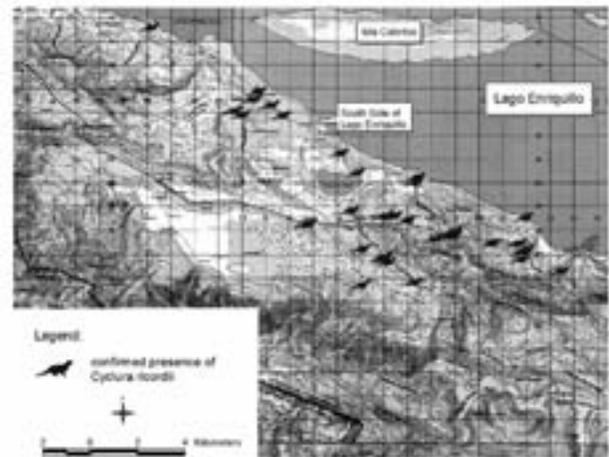
*Status.*—The presence of *C. ricordii* was verified in the following areas: (1) Along the main road from Duvergé to Jimaní



Distribution of *Cyclura ricordii* in the Dominican Republic. Numbered areas represent isolated populations: (1) Isla Cabritos in Lago Enriquillo, (2) southern shore of Lago Enriquillo, and (3) areas south of the Sierra de Bahoruco.



Present boundaries of Parque Nacional Lago Enriquillo and the nearby area not yet investigated for the presence of *Cyclura ricordii*.



Confirmed presence of *Cyclura ricordii* along the southern shore of Lago Enriquillo.

between the towns of Baitoa and El Limón; (2) in the area north and east of Laguna del Limón (called “La Florida”), (3) in the area north and east of Laguna en Medio (the lagoon actually has been drained); and (4) along the old road from Duvergé to Jimaní starting west of Baitoa and extending to Arroyo Aculadero about 5 km east of Jimaní. The occupied areas cover roughly 50 km<sup>2</sup>, conforming largely to the historically known range identified by José A. Ottenwalder in 1999, but with the notable addition of extending substantially farther to the west along the old road to Jimaní.

Not all areas within this zone harbor the species. Dens are absent in areas covered by rock or gravel. The species is mainly present in sandy soil. A high concentration of dens was found in the banks of dry creek beds and ravines, which cut through the marine sediments, often of corals and shells. These sediments make up the major part of the geological layers of the zone. Most creeks have a south-north direction and drain into the southern shore of Lago Enriquillo. One area of apparently suitable habitat (dry creeks, open vegetation) remains to be investi-

gated. It is an area of about 40 km<sup>2</sup>, situated north of El Limón and east of Jimaní.

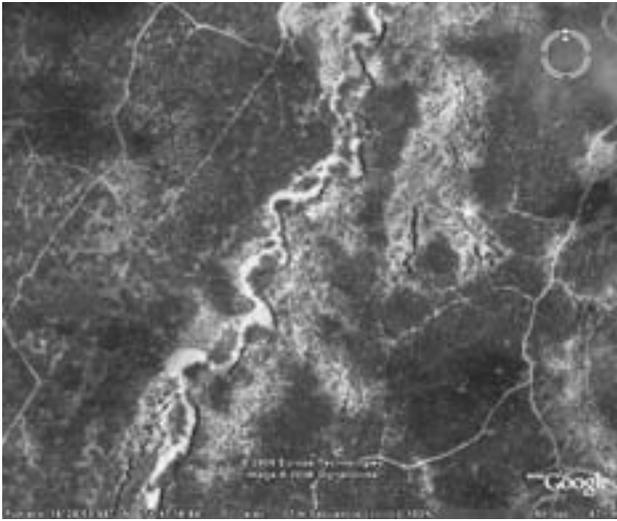
*Cyclura ricordii* is sympatric with *C. cornuta* in the region. A more detailed study is needed to define where *C. ricordii* appears to have a competitive advantage over *C. cornuta*. For



Bank of a dry streambed with two active dens.



Bank of a ravine with an adult male *Cyclura ricordii* in front of his den.



A satellite image of a dry streambed and surrounding area near Jimaní. Note the roads that lead to charcoal production areas. The small round circles are charcoal pits.

example, Thomas Wiewandt (unpublished field notes) visited one of the ravines (“Cañada de Guayabo”) in 1975. He saw only *C. cornuta* (3 adults on 28 July and one adult and 3 juveniles the following day). We visited the same ravine on 25 May of this year and detected four adult and one juvenile *C. ricordii* and two adult *C. cornuta*.

The population structure of *C. ricordii* in this region seems to be healthy. Juveniles are seen regularly, indicating that successful recruitment is taking place and suggesting that nesting activities should also be plentiful. So far, we have only been able to detect one nest (12 eggs, all hatched). We assume that females do not move far from their dens to nest wherever suitable substrate is present. In the sandy soils of the area, they should have little trouble finding suitable sites.

Successful reproduction and a reasonable survival rate of juveniles may have been the key to the survival of the species in the zone to date. However, all of the adult animals can be

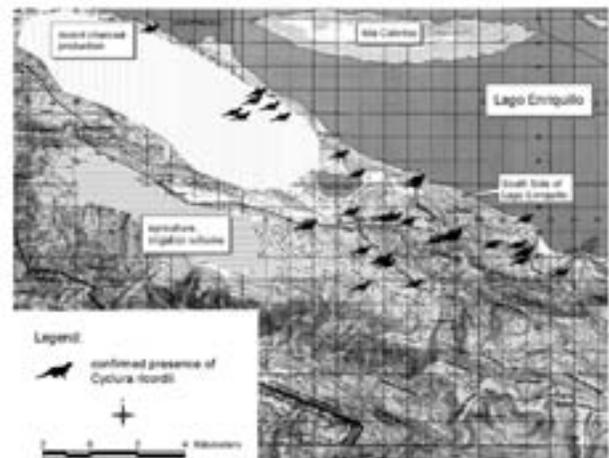


A two-year-old juvenile *Cyclura ricordii* from the southern shores of Lago Enriquillo.

quickly exterminated in a given area. Subsequent recruitment into such areas is therefore of vital importance.

**Threats.**—The major part of the zone where *C. ricordii* is present is not legally protected. It is not included in the Dominican national system of protected areas. Before law 202-04 was put into effect, all of the known distribution of these populations of *C. ricordii* was within the boundaries of Parque Nacional Lago Enriquillo. Law 202-04 reduced the protected habitat of *C. ricordii* to a small strip along the lakeshore, including the dry Laguna en Medio.

Intensive charcoal burning in the 1970s and 1980s practically eliminated all the original vegetation in the area, although Wiewandt noted relatively undisturbed vegetation in 1975. The main impact of charcoal production has been a reduction of plant species diversity combined with the introduction of aggressive species like mesquite (*Prosopis juliflora*) and a cholla-like cactus (*Cylindropuntia caribaea*). These two species and three other cacti (*Stenocereus histrix*, *Opuntia moniliformis*, *Neobabbotii*



Approximate extent of recent charcoal production and of an agricultural irrigation scheme.

*paniculata*) dominate most of the current habitat of *C. ricordii* on the south side of Lago Enriquillo.

The effects of charcoal production on soil and ground conditions are not clear. We have found *C. cornuta* nesting in old charcoal pits in the area near Tres Charcos, which is close to Parque Nacional Jaragua, where animals seem to prefer the relatively open pits to the surrounding denser vegetation. We have not been able to verify the same situation along the southern shores of Lago Enriquillo.

Iguana hunting is ongoing, involving an estimated 30 persons from the towns of Duvergé, Venganaver, and Baitoa. Hunters do not discriminate between *C. cornuta* and *C. ricordii* and, in fact, seem to possess little knowledge of iguanas. This is in sharp contrast to the situation in Pedernales, where persons with an excellent knowledge about iguanas can be found.

One method of catching iguanas consists of putting snares at the entrances of dens. Another method consists in closing the

entrances of active dens with objects such as stones after iguanas have left their dens. The hunters then wait for the iguanas to return and hunt them with dogs. The most common practice is the excavation of dens. Some areas seem to have been “mined” for iguanas, with excavated dens nearly everywhere.

Recently, charcoal production has begun again in the region between the dry Laguna en Medio and the town of Duvergé, with most of the charcoal destined for Haiti. At present, little effort is being exerted to halt this illegal activity. Charcoal production and iguana hunting are closely tied. Whenever a charcoal pit is found, all dens in the area have been excavated, suggesting that charcoal production not only destroys valuable habitat, but that individuals engaged in such activities also engage in hunting iguanas.

Over the past few years, an agricultural irrigation scheme has been implemented southwest of El Limón, affecting an area where *C. ricordii* may have been present, although we lack the historical data necessary to confirm that assumption.

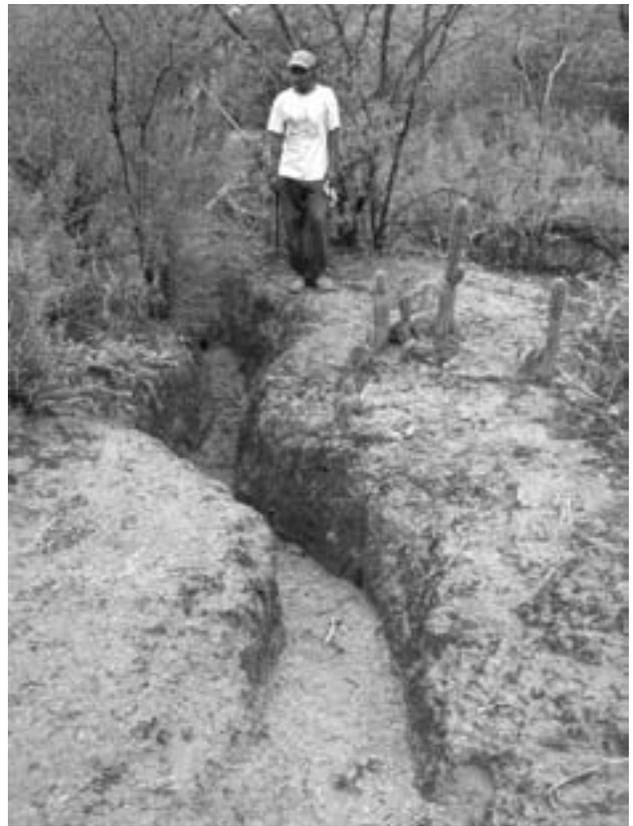
The concentration of dens in dry creek beds may constitute an additional threat to the species. Although creek beds may remain dry during many years, occasional floods can destroy dens because the marine sediments are only loosely cemented together and can easily be washed away. Effects of the flood that wiped out part of the town of Jimaní in 2004 illustrate the risk to dens in the region.



A stand of cacti (*Stenocereus histrix*) surrounded by mesquite (*Prosopis juliflora*).



A recently abandoned charcoal pit.



An excavated iguana den approximately 8 m in length.



A gravid female *Cychura ricordii* inside her den.

*Conservation Measures.*—We had entered into a process with the local government (town hall) of Duvergé to delimit, declare, legalize, and administer the zone as a municipal protected area. A change in the political composition of the town council of Duvergé in August halted the process, which has yet to be reinitiated. Our studies on the distribution of the species have shown that a substantial part of Ricord’s Iguana habitat lies within the jurisdiction of the town of Jimaní. This also is the portion of the range most affected by current charcoal production. A principal focus of our efforts will be to involve the town of Jimaní in conservation activities directed toward the designation of a municipal protected area. Corresponding regional and national authorities are being addressed regarding the illegal charcoal production in the Jimaní area.

A local group, "CIELO," in Duvergé has been actively supporting our efforts. With their help, we mounted a teachers' workshop in August. This program was developed in cooperation with the Indianapolis Zoo and ZooDom (the national zoo in Santo Domingo). Teachers have expressed considerable interest in units addressing the nation's natural heritage, of which Ricord's Iguana comprises an important element. Establishing a local support group in Jimaní and implementing additional workshops for teachers are critical if the local authorities are to become interested in conservation.

#### Acknowledgements

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## S P E C I E S P R O F I L E

### Hispaniolan Lesser Racer (*Antillophis parvifrons*)

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Certainly the most ubiquitous snake species on the Greater Antillean island of Hispaniola (including many of its satellite islands) is the colubrid *Antillophis parvifrons*. It is a slender snake with a maximum snout-vent length (SVL) of 530 mm. Dorsal ground color is variable (brown, black, gray, or bluish), and the dorsum may be patternless or with middorsal and dorsolateral stripes. The species occurs in habitats ranging from xeric scrub to rainforest. These snakes appear to be highly seasonal breeders in dry habitats, but may exhibit prolonged or even continuous breeding activity in moister situations at higher elevations.

A fast-moving, ground-dwelling, diurnally active snake, it can be found in orchard and plantation situations (e.g., banana, breadfruit, cacao, coconut, coffee), where it may be observed cruising through leaf litter or concealed in coconut or banana trash. It appears to do well in greatly altered habitats and is often encountered near human habitations.

*Antillophis parvifrons* is an active forager that feeds on a wide array of frogs (*Osteopilus*, *Eleutherodactylus*) and lizards (*Sphaerodactylus*, *Anolis*, *Leiocephalus*, *Celestus*, *Ameiva*), but *Anolis* accounted for nearly 71% of all prey items in a sample of almost 200 snakes. In contrast, frogs of the genus *Eleutherodactylus* accounted for only 12% of prey items. Although small mammals (*Mus musculus*) are occasionally taken, they are not typical fare (2.2% of the sample).

Groups of three to five individuals have been found together on Île-de-la-Gonâve (Haiti), perhaps in a breeding situation. Clutches of 2–15 eggs have been reported, and clutch size is positively correlated with female SVL. When threatened, some individuals will raise the forepart of the body and the neck will become flattened dorsoventrally, reminiscent of some species of West Indian racers (*Alsophis*).

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The Hispaniolan Lesser Racer (*Antillophis parvifrons*) occurs in habitats ranging from rainforest to xeric scrub, such as that found in the area around Lago Enriquillo.