

PRELIMINARY REPORT ON *CYCLURA RICORDI*
IN THE BARAHONA PENINSULA



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INTRODUCTION

The present report is a resume of the preliminary results of the survey undertaken by Grupo Jaragua in the Cabo Rojo – Pedernales region. The main purpose of the survey was to search and localize *Cyclura ricordi* habitats and populations within the region. Threats to the species and human impact on its populations were also assessed.

METHODS

Field work was started in December 2002 with the basic task of looking for key informants in order to interview them about their knowledge of *Cyclura ricordi*. Photos of *Cyclura cornuta* and *Cyclura ricordi* were used to find out if the person interviewed was able to discriminate between the two species.

The group of key informants comprised persons who are known to be spending a lot of time in the field and to be having a good knowledge of the local flora and fauna. “Monteros”, hunters of wild pigs and goats, and park rangers from Jaragua National Park were the best sources of information.

Field trips were made to the places indicated by the key informants. The presence or non-presence of *C. ricordi* was verified by the following methods:

Direct sighting: clear identification of an animal as being *C. ricordi*

Dead animals: identification of parts of dead animals as being parts of *C. ricordi*.

Tail-drag: when dragging the distal part of their tails through the fine reddish soil of the so-called “fondos” iguanas leave a specific tail drag mark. The marks of *C. ricordi* and *C. cornuta* can be differentiated on the basis of the pattern of the mark (*fig 2* and *fig 3*).

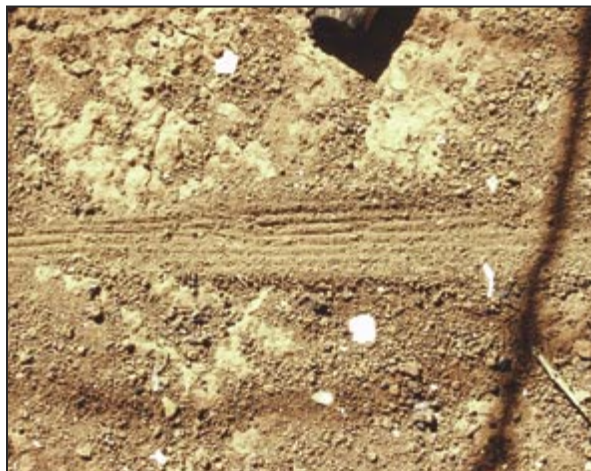


Fig. 2 Tail drag mark of *C. cornuta*. Note the parallel stripes



Fig. 3 Tail drag mark of *C. ricordi*. Parallel stripes are missing

Retreats: Animals of *C. ricordi* seem to spend a good amount of time of the day very close to their retreats. If an animal is sighted and identified, its retreat can often be found easily in the vicinity where the animal has been spotted. In the fine reddish soil tail drag marks also give a clue to the owner of a specific burrow.

Nesting Sites: Nesting activities of *C. ricordi* started in early April this year and females were active during



May. During these two months no nesting activity of *C. cornuta* could be verified. All nesting attempts and finished nests during that period should actually be attributed to *C. ricordi*. Nest that showed signs of emerging hatchlings in July also can be assumed to have been of *C. ricordi* origin.

The coordinates of places where presence of *C. ricordi* could be verified were registered with GPS (UTM, map datum: NAD 27 of the Caribbean)

In April 2003 a reconnaissance flight over the Pedernales –Cabo Rojo area was made with a helicopter of the Dominican Air Forces. After having gained some experience with the field work on the ground we were looking especially for “fondos” as possible nesting sites of *C. ricordi*. The satellite image of Landsat 1999 was also used for the same purpose.

RESULTS

GENERAL

The presence of *C. ricordi* could be verified in a small area.



HABITAT

The area limited to the north and consists of flat plains punctuated by marine limestone terraces (Ottenwalder 1999). Inside this area we found presence of *C. ricordi* in a mosaic of different patches of terrain, which can be broadly classified into three categories:

Fondo: flat plains and depressions in the ground covered by fine argillic soil of reddish color (*fig. 5*). The vegetation is of the open canopy type and certainly disturbed. The dominant species are: Cayuco (*Cephalocereus polygonus*), Alpargata (*Opuntia moniliformis*), Bayahonda (*Prosopis juliflora*) and Guasábara (*Cylindropuntia caribea*). During most of the year the ground was barren, but rains in September and October triggered heavy and fast growth of herbs, grasses and climbers (*fig. 6*). Fondos are used by Ricord iguanas to excavate their retreats and they are also major nesting sites.





Múcara: pure limestone rock (*fig. 7*), whereby *C. ricordi* seems to show preference for the more smooth type, where holes and cracks serve as retreats. The extent to which Ricord iguanas are moving into the dogtooth type of limestone, is unclear. The vegetation has an open canopy, but it is more diversified than in the fondos and the above mentioned species are less dominant. Bayahonda is scarce.

Cascajo: gravel and small bolders (*fig. 8*). The vegetation seems to be a mixture of the elements of múcara and fondos. The ground gets cover by herbs, grasses and climbers after heavy rains. Cascajo can serve the Ricord iguanas as nesting sites and to excavate burrows.

At about 100 m asl towards the north the vegetation becomes more dense, the canopy can close up and the number of tree species becomes more numerous, even though the ground conditions can still be classified according to the three mentioned categories. Animals of *C. ricordi* are present in this habitat, and the places we could see animals seem to approximate the limit of 150 m asl proposed by Ottenwalder (1999).



Fig. 7 Pregnant female on múcara



Fig. 8 Various nesting attempts of *C. ricordi* in cascajo

DISTRIBUTION, AGE STRUCTURE AND POPULATION DENSITIES

Two subpopulations of *C. ricordi* were identified in the area of investigation. The smaller subpopulation inhabits an area of approximately 2 km² right at the outskirts of the town of Pedernales. Animals of all age classes are present. Retreats are found in múcara and cascajo. The area is characterized by having been used for slash and burn agriculture (conucism) in the past. Secondary vegetation with strong presence of Guasábara has taken a hold of the place since. An estimation of the population density of *C. ricordi* was not made (no chance to trace transects in places heavily infested by Guasábara). *C. cornuta* is present in the area.

The small subpopulation is cut off from the other subpopulation by an area called “Los Olivares” (*see fig. 4, page 4*). This area is under intensive agricultural use. It is a flat plain characterized by its argillic reddish soil. Informants mention that Los Olivares had a strong presence of *C. ricordi* before being converted into agricultural land. Aerial photos, taken in 1983, show that the eastern part of Los Olivares was still under natural vegetation cover at that time. An irrigation channel built in 1984 also impedes the free movement of animals between the two subpopulations.

The other subpopulation has a much larger distribution and we were able to confirm the presence of *C. ricordi* within a polygon of about 32 km² (*see fig. 4, page 4*). The area includes the outer fringes of Los Olivares towards the northeast, the marine limestone terraces which surround Los Olivares and the plain which covers these limestone terraces. On the plain one fondo with an extension of about 47 ha shows very high activity of Ricord iguanas. This fondo, which is locally known as “Fondo de la Malagueta” (*see fig. 4, page 4 and fig. 9*), is surrounded by patches of múcara, cascajo and some smaller fondos. On a transect of approximately 500 m length (20 m width towards



both sides) through the Fondo de la Malagueta we counted 63 active burrows in May. Assuming that every active burrow gives home to an adult animal, a density of 31.5 animals per ha can be calculated. This is certainly a very crude figure and the matter should be investigated further. But the number gives an idea of the high density of adult animals in the fondo. The presence of juveniles and hatchlings was also noted. The incidence of *C. cornuta* seems to be low. Only the southeastern corner of the fondo showed signs of activity of this species.

Outside the Fondo de la Malagueta it is more difficult to make an estimate on densities of *C. ricordi*. Considering the availability of suitable cracks and holes in *múcara*, one can assume that population density might be much lower than in the Fondo de la Malagueta. Both species are present in the area surrounding the fondo. Retreats are not as easily detected in *múcara* and *cascajo* as in the fondos. No tail drag marks give a clue on the owner of a specific retreat, and the animal occupying a specific retreat can only be identified, if it is directly seen. Reports by a key informant indicate that some retreats, which have been known over a period a various years, had a change in ownership from one species to the other. The idea that suitable retreats in *múcara* might constitute a limited resource for both species may be worthwhile to be looked upon.

A second fondo with a size of 25 ha has the local name “Fondo de Robinson” (*fig. 10*). In contrast to the Fondo de la Malagueta no burrows were found. There were indications that the fondo may be an important nesting ground for both species. Various retreats of *C. ricordi* in *múcara* surrounding the fondo could be identified and several juveniles were sighted.

The northern fringes of the flat plain of Los Olivares adjacent to a limestone terrace also include various smaller localities with active burrows of *C. ricordi*. Part of the land is being cleared for agricultural use, so the area may soon be lost as suitable habitat for the species (*fig. 11* and *12*).



Fig. 9 Aerial view of the Fondo de la Malagueta (centre). Note the mosaic of small fondos, cascajo and *múcara* in the surroundings



Fig. 10 Aerial view of Fondo de Robinson



Fig. 11 Aerial view of part of the outer fringes of “Los Olivares”; note the recent clearings of land in the upper center of the photo and the clearing which is taking place in the lower right corner



Fig. 12 Aerial view of part of the northeast fringes of “Los Olivares” showing the Pedernales-Las Mercedes road. Note the waste dump in the centre of the photo and recent clearings of land close to the dump

NESTING AND REPRODUCTION

Females of *C. ricordi* started their nesting activities in early April. Rains which fell in the area of Pedernales on March 31st and on April 1st may have triggered the process (see Ottenwalder 1999). On the May, 8th we counted 28 finished nests along the 500 m transect in the Fondo de la Malagueta. We could also confirm nesting activities in the outer fringes of Los Olivares and in many other smaller fondos. In fact it seemed that any suitable spot would serve as a nesting ground. Small fondos of the size of 1 m x 1 m showed finished nest. Even in some patches of cascajo (see fig. 8, page 6) nesting attempts and finished nests could be observed.

On the 10th of July we found the first nests with signs that hatchlings had emerged. On 20th July we counted 20 nests, where hatchlings had escaped from the dark, along the 500 m transect of the Fondo de la Malagueta. If we make a rough calculation of 10 hatchlings per nest, this would give a result of 100 hatchlings per ha. The same day we got a hold of two hatchlings which were hiding inside hollow tree logs on the ground. The availability of suitable retreats may be a limiting resource for emerging hatchlings considering the amount of hollow logs and trees present in the fondo. The role of adjacent múcará to give shelter to hatchlings in its cracks and holes may be worthwhile to be looked into.

We encountered nesting females of *C. cornuta* in early July. They may have started with their nesting activities somewhat earlier, but during June no field trip was possible, so no exact data is available. Females of *C. cornuta* nest also in places which are used by *C. ricordi*. They start excavating nests before hatchlings of *C. ricordi* emerge. The impact of this behavior on the reproductive success of *C. ricordi* should be looked upon more closely.

We only encountered two nests of *C. cornuta* in the *southeastern* corner of the Fondo de la Malagueta. In the major part of the fondo no nesting of *C. cornuta* occurred and it looks like *C. ricordi* may have the competitive edge concerning reproduction in this fondo.

THREATS

Exotics like mongooses and cats are present in the area. The magnitude of their presence and the resulting impact on populations of *C. ricordi* are not known. A number of 5 heads of free-ranging cattle was noted in the area east of Los Olivares. Trampling of burrows or nests might be the result (fig. 13). In a place like the Fondo de la Malagueta even a small number of cattle may cause major damage and their presence should be avoided.



Fig. 13 Effects of trampling by cattle



Fig. 14 Nesting attempt of female of *C. ricordi* in recently cleared and fenced terrain on the fringes of Los Olivares



Habitat alteration and habitat destruction by human activity may be of more concern than the presence of exotics. The area of Los Olivares may have been the actual centre of activity of *C. ricordi* in the past. All this area except for its outer fringes has been converted into intensely used agricultural land (see fig. 4, page 4). These outer fringes are presently also under pressure and part of the terrain has been recently cleared of its vegetation (fig. 14). The areas where the two present subpopulations are found may already constitute only partial remnants of the former total distribution of the species in the area.

Trapping of iguanas and the excavation of their burrows are activities which seem to be quite frequent in the outskirts of the town of Pedernales. The northeastern fringes of Los Olivares are also impacted. People in Pedernales eat iguanas, although the magnitude of the phenomenon is still unknown. A proposal to study this phenomenon and its impact on iguanas was submitted to the Pittsburgh Zoo Fund (fig. 15 and 16).



Fig. 15 Snare trap



Fig. 16 Rests of dead animal. The animal was killed for meat



The immediate surroundings of the town of Pedernales, where iguanas still can be found, are threatened by land clearings for housing development projects. Part of the terrain is used as waste dump.

The extension of the boundaries of the National Park Jaragua, which was proposed in 2002 under the “Proyecto de la Ley Sectorial de Áreas Protegidas” by the Secretaría de Estado de Medio Ambiente y Recursos Naturales, only would protect part of the area where the presence of *C. ricordi* has been confirmed (*see fig. 4, page 4*). The marine terrace “Los Brujos”, part of the outer fringes of Los Olivares, and the Fondo de Robinson would be excluded.

RECOMMENDATIONS

Considering the findings mentioned above and being aware of the critical situation, which the species *C. ricordi* is experiencing in the area of Pedernales, we propose the following:

The area of Los Brujos including Fondo Robinson and the outer fringes of Los Olivares should be included in the system of protected areas.

Since the legal process to protect *C. ricordi* may take time and the final results of this process might be uncertain, more immediate and direct measures should be taken.

The type of landownership and the actual owners of the land which is most threatened by habitat destruction (immediate surroundings of Pedernales and fringes of Los Olivares) should be investigated. The acquisition of this land and its private ownership would guarantee direct protection of the remaining habitat on this land and facilitate the restoration of degraded terrain.

The employment of two persons should be envisaged to monitor the area where *C. ricordi* is present. These persons should be of the local community and should have an excellent knowledge of the terrain and the target species. They should control the persecution of iguanas and stop illegal habitat destruction by surveying the area, advising people on wrongdoings and reporting to the authorities involved, if necessary.

The socioeconomic aspect of iguana hunting and consumption in Pedernales should be investigated.

Educational programs must be developed which do not only address the general public, but will open a dialogue with the target group of persons in Pedernales involved in iguana persecution.

LITERATURE

Ottenwalder, Jose. (1999): Ricord's iguana *Cyclura ricordi* in: Alberts, Allison (comp. & ed): West Indian Iguanas: Status Survey and Conservation Action Plan. IUCN/SSC West Indian Iguana Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. Pp. 51 – 55.



ADDITIONAL SUPPORT PHOTOGRAPHS



Fig. 17 Aerial view of the limestone terrace “Los Brujos” with part of the agricultural land “Los Olivares” lying below the terrace. The town of Pedernales can be seen in the upper right corner



Fig. 18 Nesting attempt by female of *C. ricordi*. Note tail drag mark in the centre of the photo.



Fig. 19 Finished nest of *C. ricordi*



Fig. 20 Finished nest in small fondo of about 1.5 m to 1.5 m



Fig. 21 Successful hatching indicated by hole in the nest



Fig. 22 Hatchling hidden inside a wooden log



Fig. 23 Hatchling



Fig. 24 Two year old juvenile



Fig. 25 Retreat of juvenile in múcara



Fig. 26 Land clearing and fencing in the outer fringes of Los Olivares



Fig. 27 Waste dump in the outskirts of Pedernales, *C. ricordi* is present in the terrain in the background



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