

# Reproductive and Dispersal Behaviour of the Critically Endangered Utila Spiny-tailed Iguana *Ctenosaura bakeri*, Honduras

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## Abstract

- The Utila Spiny-tailed Iguana (*Ctenosaura bakeri*; Fig. 1) is endemic to the island of Utila, Honduras. It inhabits mangroves and sandy beaches, with a total area of occupancy of around 10 km<sup>2</sup>. These habitats are threatened by land development, while individual iguanas are hunted for consumption, with females and eggs being highly prized, and which may cause a sex bias in the population. It is listed as Critically Endangered, due to a decreasing population of <5,000 mature individuals.
- This project will take place from January to September 2016 and collect essential life history data on the iguana, including:
  - Nesting ecology;
  - Hatchling biology;
  - Dispersal behaviour; and
  - Population size.
- This information will be used to inform effective species and habitat conservation management, including supporting Species Action and Recovery Plans.

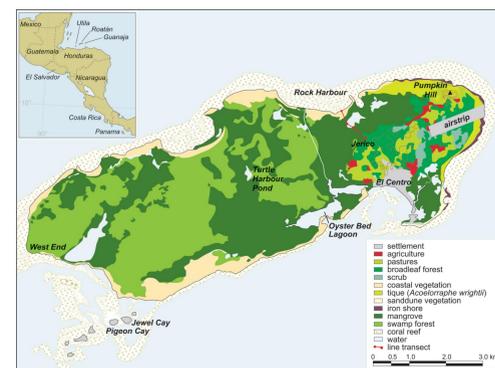
**Figure 1.** Utila Spiny-tailed Iguana in mangrove habitat. Photo credit: Kanahau Utila Research and Conservation Facility (KURCF).



## Introduction

- Ctenosaura bakeri* is Critically Endangered and endemic to Utila (Pasachnik *et al.* 2013), an island in the Bay Island archipelago off the Caribbean coast of Honduras (Fig. 2).
- Habitats include swamp forest, agricultural land, mangroves (covering approximately 6.6 km<sup>2</sup>), and sandy beaches (Fig. 2).
- Most extensive mangroves of the Bay Islands (Fickert & Grüniger 2010); essential habitat for *C. bakeri*.
- Declining and small island population occupying around 10% of Utila (42 km<sup>2</sup> total area; Pasachnik *et al.* 2013).
- Threatened through habitat clearance, hunting, and predation (Pasachnik *et al.* 2013).
- We aim to investigate and quantify:**
  - Nesting ecology: environmental parameters, clutch sizes, hatchling success rates;
  - Hatchling biology: sex ratio, biometric measurements;
  - Dispersal behaviour: home ranges, migration routes between breeding and nesting habitats; and
  - Population size.

**Figure 2.** Habitats and potential study sites on Utila (from Fickert & Grüniger 2010).



## Methods

- This study will be based at the Kanahau Utila Research and Conservation Facility, Honduras, which has previous experience of studying *C. bakeri*.

### Capture-Mark-Recapture (CMR) Study

- Use ethically-approved iguana catching methods at previously used survey locations (Gutsche & Streich 2009; Pasachnik *et al.* 2009, 2013).
- Mark individuals with a passive integrated transponder (PIT) tag or permanent toe clips, depending on size (Fig. 3; Pasachnik *et al.* 2012).
- Record biometrics – snout-vent and tail lengths, weight – and sex.
- Compare growth measurements and conditions of previously caught individuals (Pasachnik *et al.* 2012).
- Estimate population size from CMR data collected from line transects (Fig. 4); Distance sampling, occupancy analyses.

**Figure 3.** Utila Spiny-tailed Iguana being tagged in the mangroves on Utila. Photo credit: KURCF.



### Nesting and Hatchling Ecology

- Monitor nesting sites daily from March to June.
- Geo-reference and date new nests.
- Fence off nests after 75 days (incubation period is approximately 85 days; Pasachnik *et al.* 2013); monitor daily for hatchling emergence.
- Take morphometric measurements of hatchlings; determine the sex by cloacal probing.
- Record clutch size, hatching success, nest characteristics.
- Compare the sex ratios of hatchlings and adults to identify any population sex ratio bias.

### Reproductive Migration and Home Range

- Fit a subset of captured iguanas with VHF tags.
- Track individuals to locate nesting sites, identify breeding migration routes, demarcate home ranges, and monitor any spatial or temporal changes in activity patterns.

**Figure 4.** Scanning an iguana for a PIT tag. Photo credit: KURCF.



## References

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## Planned Outcomes

- Lacking Species Action or Recovery Plans require quantifiable ecological data (as discussed at the ISG meeting, Utila in 2009).
- This project will contribute to and inform these priority requirements by:
  - Providing a clear understanding of how *C. bakeri* utilizes key and threatened habitats;
  - Estimating population size;
  - Assessing how harvesting may be impacting the status and health of iguanas, particularly females;
  - Supporting current outreach environmental awareness programs; and
  - Providing a quantitative contribution to the conservation of *C. bakeri* and its habitats.