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More case studies from around the globe
Edited by Pritpal S. Soorae

IUCN/SSC Re-introduction Specialist Group (RSG)

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Re-introduction of Turks and Caicos rock iguana to Long Cay, Turks and Caicos Banks

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Introduction

Relatively small, Turks and Caicos rock iguanas (TCRI; *Cyclura carinata carinata*) typically reach less than 800 mm and under 2 kg in size, but are generally much smaller than this. Inhabiting the islands of the Turks and Caicos Banks, TCRIs inhabit a variety of habitats (Burton & Bloxum, 2005), although they appear to prefer rock coppice and sand strand vegetation (Iverson, 1979). The IUCN lists the TCRI as Critically Endangered and the species is included on Appendix I of CITES. Gerber and Iverson (1999) estimated approximately 30,000 iguanas in the Turks and Caicos Islands; however, the species disappeared from 13 islands in the last 20 years and its range contracted by about 94%. Predation by feral animals, notably domestic cats and dogs, likely represents the primary cause of the species' decline (Iverson, 1978); however, tourism development destroys habitat and often leads to the introduction of iguana predators onto islands (Mitchell *et al.*, 2002). The critical status and declining number of TCRIs induced us to explore the possibilities for restoration and re-introduction onto cays that formerly supported the species. Toward that end, we began working with the Turks and Caicos government in the late 1990s to begin an iguana restoration project.

Turks and Caicos rock iguana

Goals

- Goal 1: Eradicate introduced domestic cats from Long Cay.
- Goal 2: Establish a re-introduced population of iguanas from Big Ambergris Cay.
- Goal 3: Prevent future releases of domestic cats on Long Cay.

- Goal 4: Build support for the population among local people.
- Goal 5: Develop sound policies and governmental support for iguana conservation.

Long Cay, TCI - site of the re-introduction

Success Indicators

- Indicator 1: Absence of domestic cats on Long Cay.
- Indicator 2: An established population of Turks & Caicos rock iguanas on Long Cay, with an increase in iguana numbers and distribution following establishment.
- Indicator 3: No future sightings of feral cats or feral cat spoor on Long Cay.
- Indicator 4: Positive attitudes toward the TCRIs among the local public.
- Indicator 5: Supportive legislation and policies and active governmental implementation of those policies and population monitoring for the restored population.

Project Summary

Feasibility: As part of a mitigation effort for planned tourism development on Big Ambergris Cay, Caicos Bank, we conducted a feasibility assessment to re-introduce iguanas that the development would displace (Mitchell *et al.*, 2002). Following evaluation of several possible re-introduction sites, we selected Long Cay in 1999 as a target island for re-introduction because of its size; broad array of food-plant species; habitat diversity, including sandy nesting sites and a limestone ridge with abundant refugia; elevated topography for hurricane protection; absence of introduced ungulates; lack of human development; and the island's status as a protected government reserve (Mitchell *et al.*, 2002). We also examined socio-political considerations. We worked with local people to develop support and understand reasons for people releasing cats onto uninhabited islands. We developed strong relationships with the Turks and Caicos government and worked with government staff on our project. We failed, however, to explore relations with other conservation organizations and how those relationships (or lack thereof) might impact our work.

Implementation: In 1999, we undertook a feral cat eradication campaign as a necessary first step (Mitchell *et al.*, 2002). We began re-introducing iguanas following cat eradication. Re-introductions took place between November 1999 and November 2000, during which time we relocated 403 iguanas from Big Ambergris Cay to Long Cay (Mitchell *et al.*, 2002). We implanted all re-introduced iguanas with PIT (passive integrated transponder) tags in their thighs or lumbar regions so that they would remain identifiable. Our outreach program worked to

educate local people about the dangers to iguanas of releasing cats on islands and we installed signs to warn people not to do so. Throughout implementation we maintained excellent governmental relations, but as we moved into the monitoring phase, we encountered problems. Another conservation organization wanted to begin similar conservation work for TCRIs. We offered to collaborate; however, the other group stated that while they would love our financial support, they had no desire for other collaboration. They offered the government more resources than we could provide if they could run future TCRIs conservation work. Wishing to avoid conflict and the possible loss of these resources, we simply agreed to withdraw from further work.

Post-release monitoring: Following re-introduction, we evaluated the re-introduction twice. We performed a preliminary assessment in January 2001, during which we documented untagged hatchlings and 1-year olds (Mitchell *et al.*, 2002). We conducted a more rigorous assessment in 2004 using distance sampling and trapping. That assessment included both a population survey and an evaluation of the condition and growth of iguanas inhabiting Long Cay. We compared those data with data we collected on the population density and condition of iguanas on Big Ambergris Cay in October 2000. In general, we sighted more iguanas on transects with greater habitat diversity as opposed to transects with only 1 or 2 habitat types. We obtained an estimate of 10.34 (95% C.I. = 7.32 - 14.60) animals/ha or 1,065 (95% C.I. = 754 - 1,504) animals for Long Cay. Our population estimate of iguanas on Long Cay represented a 264% (95% C.I. = 187 - 373%) increase over the 403 animals re-introduced, or an instantaneous growth rate of 17.90% (95% C.I. = 27.77 - 37.63%); a growth rate much faster than recorded elsewhere (Iverson, 1979).

Our density estimates for Long Cay were considerably lower than our estimates for Big Ambergris Cay in 2000. On Big Ambergris Cay in October 2000, density estimates in different habitats ranged from 16.62 iguanas/ha in the dunes to 38.93 animals/ha in the fringe/shore areas. However, we predicted that the iguana population on Long Cay would continue to grow until intra-specific competition begins limiting it. We captured 22 animals to monitoring body condition: 6 marked founders and 16 unmarked animals born on the island. All animals appeared healthy, with no significant differences in body mass or snout-vent measurements between Long Cay and Big Ambergris Cay animals. Iguanas on the island appeared to double their weight each year (e.g. 6 animals born on Long Cay had snout-vent lengths >20 cm, range 20 - 31 cm, after ≤ 3.5 years). We noted, but did not quantify, differences in coloration between iguanas born on Long Cay and Big Ambergris, with Long Cay iguanas appearing more brightly colored, with yellow or yellowish-orange dorso-lateral coloration that was most intense on the legs. In contrast, the majority of Big Ambergris animals appeared dull brown or gray. The brighter color of Long Cay iguanas may result from more frequent shedding due to their rapid growth rate.

We found no evidence of domestic cats on Long Cay. The poor relations we encountered with the other conservation organization have precluded us from conducting further monitoring since 2004, but at last report a good population of

iguanas still inhabited the island. In 2002 The Turks and Caicos government presented us with a conservation award to acknowledge our achievements.

Dr. Numi Mitchell and Tim Trout measuring a captured Turks and Caicos Rock iguana

Major difficulties faced

- Conflict with another conservation organization that wanted to be the primary group through which all Caribbean rock iguana conservation took place and which pressured the government for full control over iguana conservation activities.
- Getting local people to recognize the importance of not releasing feral cats, especially black ones that they consider harbingers of bad luck, onto uninhabited islands.
- Developing benefits to South Caicos residents from iguana conservation through ecotourism.

Major lessons learned

- The importance of eliminating the original cause of the species' decline; in this case the introduction of exotic predators in the form of domestic house cats.
- The critical need to work collaboratively among conservation organizations and avoiding competition - there is plenty of work to go around!
- The potential of small, uninhabited islands for restoration and recovery of threatened island species.

Success of project

Highly Successful	Successful	Partially Successful	Failure
√			

Reason(s) for success/failure:

- High commitment by all the conservation organizations and government agencies that collaborated on the project.
- Our ability to effectively eliminate the original cause of decline (introduced cats).

- An effective public relations and government monitoring program to prevent further introductions of cats.
- The presence of a healthy source population of animals available for translocation.

References

Burton, F. J. & Q. M. C. Bloxam. 2005. Turks and Caicos iguana, *Cyclura carinata carinata* conservation and management plan, 2005 - 2009. IUCN/SSC Iguana Specialist Group, Turks & Caicos Department of Environment and Coastal Resources, and Turks & Caicos National Trust, Providenciales, Turks & Caicos Islands. 31 pp.

Gerber, G. & J. Iverson. 1999. Turks and Caicos iguana, *Cyclura carinata carinata*. Pp. 15 - 18 in A. Alberts (comp. and ed.) West Indian iguanas: status survey and conservation action plan. IUCN/SSC West Indian Iguana Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK. 6 +111 pp.

Iverson, J. 1978. The impact of feral cats and dogs on populations of the West Indian rock iguana, *Cyclura carinata*. Biological Conservation, 14: 63 - 73.

Iverson, J. B. 1979. Behavior and ecology of the rock iguana *Cyclura carinata*. Bulletin of the Florida State Museum, Biological Sciences, University of Florida, Gainesville, 358 pp.

Mitchell, N., R Haeffner, V. Veer, M. Fulford-Gardner, W. Clerveaux, C. R. Veitch, & G. Mitchell. 2002. Cat eradication and the restoration of endangered iguanas (*Cyclura carinata*) on Long Cay, Caicos Bank, Turks and Caicos Islands, British West Indies. Pp. 206 - 212 In: Veitch, C. R.; Clout, M. N. (eds) Turning the tide: the eradication of invasive species. IUCN SSC Invasive Species Specialist Group, IUCN, Gland, Switzerland, and Cambridge, UK.