By Mark Derr

NY TIMES Science Section – October 10, 2000

The rediscovery inspired an intensive effort to save both the Jamaican iguana and the dry tropical forest of the Hellshire Hills that is its last redoubt. After several exhaustive surveys, Dr. Peter Vogel, a herpetologist at the University of the West Indies, and Rhema Kerr, a zoo curator, identified the lizard as a Jamaican iguana, believed extinct for nearly 50 years.

The Jamaican iguana’s return from oblivion also focused international attention on the plight of all West Indian iguanas, the threats to their survival and programs to preserve them. The two most imperiled, she said, are the Anegada iguana, believed extinct for nearly 50 years, and the dry tropical forest of the Hellshire Hills that is its last redoubt. After several exhaustive surveys, Dr. Vogel has estimated the iguana population at fewer than 100.

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The research was conducted by Catherine Malone, a doctoral candidate in Biology at the University of Florida, 99 pp.

West Indian Iguana Specialist Group

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IUCN - The World Conservation Union
Species Survival Commission
...to Texas A&M University. As the Caribbean archipelago took its present shape, wind and ocean currents occasionally carried iguanas to more western islands, where, isolated, they evolved into 8 species and 16 subspecies. Every major island has its own species of Cyclura iguana, and Hispaniola has two. (Two species of iguana found on islands of the Lesser Antilles are from a different genus.) Next to the Anegada iguana, Ms. Malone found the Jamaican iguana to be the most genetically distinctive and biologically important species of the group. But inbreeding necessitated by its small numbers has forced the Jamaican iguana into a genetic bottleneck, making it susceptible to dangerous mutations, parasites and disease.

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plain tail, but possess an enlarged sub tympanic plate (photo 1).

In the iguana-hybrid phenotype, nearly all the diagnostic characters are as in I. iguana, but one or two are typical of delicatissima. For example, a hybrid male from Ravine du Carber (Basse-Terre) is nearly orange-brown with no enlarged sub tympanic plate, but possesses a row of nearly flat isodiametric scales, a low number of gular spikes (sometimes fused) localized in the upper part of the dewlap, and a tail with shaded transverse bands (photo 2).

All the iguanas depicted here were always found in places where the two species live together, sometimes in the same stand of trees or even on the same tree. According to our observations and those of others, in Basse-Terre and les Saintes, I. iguana has a short laying period, from the end of April to the end of May, and the eggs hatch approximately three months later. I have no data on the laying period of I. delicatissima on Basse-Terre, but according to Du Tertre (1667), I. delicatissima descends from the mountains during May to lay 13 to 25 eggs in sand on the seashore. In Petite Terre, Martinique, and Saint-Bartélémy, I. delicatissima lays from June to August. In Dominica, gravid females are found from February to July (Day et al. 2000). Given the overlap in their reproductive seasons, these species could successfully interbreed.

Although data are not yet available, it is possible that hybrids are fertile or partially fertile, and able to backcross with either species, giving birth to the iguana-hybrid phenotype or the delicatissima-hybrid phenotype, or interbreed themselves. Another possibility is that the delicatissima-hybrid phenotype is the result of a mating between an I. iguana male and an I. delicatissima female or vice versa.

The hybridization problem is a very serious issue with respect to conservation. In 1998, Réserve Naturelle des Îles de la Petite Terre was created on my request to protect I. delicatissima (Breull 1999). Here, as in la Désirade, there are no I. iguana. Unfortunately, a poster made by the local association for vertebrate protection (AEVA) to inform people of the threats to I. delicatissima, and to promote the natural reserve, does not discuss the problem of competition and hybridization. The translocation of iguanas by local people is a very common practice in the French

When they are too large for cats to attack. But the key to their preservation, experts agree, is removal of the feral cats.

The situation in Jamaica is more complex, Dr. Vogel said. Once so abundant in southeastern Jamaica that the coastal area around Kingston was named the Liguanea Plain, the native word for the lizards, the iguana population crashed after the human population doubled in the second half of the 19th century and the Indian mongoose was introduced in 1872. Imported to kill nocturnal rats devastating sugar cane fields, the mongooses feasted instead on bird, snake and reptile eggs and hatchlings. In developed areas, cats and dogs contributed to the slaughter. By the end of the 1940s, the Jamaican iguana was generally considered extinct.

The conservation effort begun in Jamaica in 1990 has concentrated on protecting the last two nesting sites in the south-central Hellshire Hills and collecting half the hatchlings and raising them at the Hope Zoo, which now holds 100 juveniles. After three to four years, when they are too large to be mongoose prey, some of these iguanas are released. Others are kept as a genetic reservoir.

Since 1996, biologists have released 26 iguanas, each equipped with a miniature radio transmitter for monitoring their movements. For the first several years, the abrasive limestone of the Hellshire Hills quickly destroyed the special vests holding those transmitters. So last year, after being approached by researchers, the Nike company provided vests custom-made of abrasive-resistant fabric, said Richard Hudson, a conservation biologist for the Fort Worth Zoo, who works extensively in the Caribbean. All the released iguanas have survived, leading Mr. Hudson and other biologists to conclude that the lizards are “hard-wired” for life in the wild. Last year, Dr. Vogel said, a released female nested for the first time. But a captive breeding program under way at the Hope Zoo and six American zoos has failed to produce any offspring, for still unknown reasons.

Since 1997, field workers have trapped and killed mongooses in iguana territory. They also try to persuade dog owners usually pig hunters and people who gather hardwood for charcoal to keep their pets out of the area. But, Dr. Vogel cautioned, each year the charcoal makers push deeper into the Hellshire Hills in search of mature trees, driving the pig hunters before them. Without greater protection, he fears that dogs and people may overrun the iguanas’ range.

Last fall, the government of Jamaica established the Portland Right Protected Area, including the Hellshire Hills, but the preserve is not yet being managed and there are plans to build roads and houses and to mine limestone in the forest’s interior, Dr. Vogel said. Until those plans are dropped, conservationists fear for the iguana and a number of other species that live only in the Hellshire Hills.

While recognizing that the Jamaican iguana and several of its relatives still teeter on the brink of extinction, biologists seeking to rescue the endangered animals remain optimistic that they will succeed, in large part because of increasing public awareness in the Caribbean and abroad. Mr. Hudson said flatly that none of the West Indian iguanas were going extinct.

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The rearing of juveniles in a protected environment until they reach a larger, less vulnerable body size has the potential to directly address the problem of reduced juvenile recruitment in each of these populations. The AZA grant will provide critically needed support for in-country headstarting efforts in Jamaica and the British Virgin Islands, including expansion of ongoing captive programs and long-term field monitoring of repatriated iguanas following release. In addition, we will continue to conduct surveys work on wild populations of both species and to train local staff in iguana husbandry, restoration, and monitoring techniques.

A hybrid adult male from Basse-Terre, Iguana hybrid phenotype, displaying the absence of subhyaline plate and the orange coloration.

Legal News September 8, 2000  The following press release comes from Peter Murtha, United States Attorney, U.S. Department of Justice, Southern District of Florida

Guy A. Lewis, United States Attorney for the Southern District of Florida, Lois J. Schiffer, Assistant Attorney General for the Environment and Natural Resources Division of the U.S. Department of Justice, Jorge Picon, Resident Agent in Charge for the U.S. Fish & Wildlife Service in Miami and Frank Figueroa, Special Agent in Charge of the United States Customs Service in Miami, announced that Phillip David Langston, 48, of Naples, Florida was sentenced today for his role in a conspiracy to violate U.S. and international wildlife protection laws and U.S. Customs laws.

Langston had previously pled guilty to an indictment handed-up by a grand jury in Miami on December 21, 1999 charging him with trafficking during the period of November 1994 through July, 1995, in reptile species that originated in Haiti and the Peruvian Amazon and that are protected under an international treaty known as “CITES,” the Convention on International Trade in Endangered Species of Fauna and Flora, which is implemented in the United States through the Endangered Species Act.

United States District Court Judge Norman C. Roettger sentenced Langston to 15 years in prison. Langston is the third of three defendants to be sentenced in connection with a large scale and complicated international smuggling conspiracy involving 500-1000 iguanas that originated in Haiti and the Peruvian Amazon.

With the help of Mr. and Mrs. Plassais (Yuana Hotel) and Dr. Anne Breuil, I caught, measured, and tagged 25 I. delicatissima. The females ranged from 300 to 385mm SVL and 1400 to 3050g when gravid (n = 20). The males ranged from 330 to 385mm SVL and 1800 to 2700g (n = 5).

We saw only two sub-adults, and caught a single juvenile male (195mm SVL, TL 790mm, and 430g). The lack of subadults may be due to the 1999 hurricanes, which were responsible for the death of nearly all one and two year age classes. Those surviving the storm, are still likely to die of starvation or be killed by dogs and cats while foraging long distance for rare food sources. Such climatic events are very important with respect to population turnover and reproductive success.

The following is an excerpt from the 2000 IUCN Redlist:

I first proposed the existence of competition between the two Iguana species when I observed in 1992 that the island of Terre-de-Bas des Saints was mainly populated by Iguana delicatissima, whereas Lazell (1973) found only I. delicatissima there in the 1960s. Moreover, I. iguana was very hard to find on that island, as in the Chameau on Terre-de-Haut, where Lazell saw only I. delicatissima. Contrary to Lazell (1973), I proposed that these two species are able to occupy the same habitats with no significant ecological separation between them. In les Saints, I. iguana have clearly invaded areas previously occupied by I. delicatissima. Moreover, some the I. delicatissima of Terre-de-Bas present an enlarged subhyaline plate which had been considered a diagnostic character between the two Iguana species (Lazell 1973). Based on this, I proposed a scenario of hybridization with ecological competition, leading to the elimination of I. delicatissima. Because I. iguana lays between two to three times more eggs than I. delicatissima, this process is rapid. With genetic and morphological data, Day and Thorpe (1996) confirmed the hybridization hypothesis using animals from Basse-Terre and les Saints. Day et al. (2000) report that hybridization was likely already in progress in the 1960s.

Since then I have found new hybridization zones in the Guadeloupean Archipelago on Grande-Terre and Basse-Terre where the two species occur together. This summer, I studied the mixed populations on Terre-De-Haut, first discovered last year (Breuil 2000). This group lives in a small mangrove patch, where there are at least one pure pair of I. delicatissima, one female I. iguana, three hybrid adults, and some hatchlings of undetermined species identity.

In all known hybridization zones, the morphology of the hybrids is extremely variable, although this diversity falls into two major groups: the Iguana-hybrid phenotype and the I. delicatissima-hybrid phenotype, each resembling one parental form more than the other. In the I. delicatissima-hybrid phenotype, nearly all the diagnostic characters are in I. delicatissima, but one or two are typical of I. iguana. For example, these animals may exhibit a number of gular spikes, rounded lateral head scales, no conical scales on the nape, a
two existing nest sites which are commonly overgrown by females (pers. obs. 1997, 1999, 2000), resulting in dozens of eggs lost. After two days, we had sifted and cleared the soil to about 40 cm deep over a 12m² surface.

This nesting area is surrounded by trees and partially shaded. The temperature of the nests early in the morning in July-August is around 28°C, rising to 34-36°C during the warmest part of the day. To prevent flooding of the nest area, we prepared the surface on a slight incline. This appears to be an important characteristic of all *I. delicatissima* nests in the French West Indies except some in sites at Petite Terre. Because this site receives a significant number of tourists (more than 10,000 a year) seeking to see a large kink, the ruins of an old brick factory, and the iguana, we fenced the area (about 100m²) with 40m of green wire netting to prevent tourists from trampling the nests but allows passage for iguanas. One of our most important problems is the high number of crabs. In July we counted 100 crabs at the site and 130 additional crabs in a 2m band outside the fence. It is impossible to prevent crabs from entering and eating the eggs, so we remove as many crabs as possible.

In July and August, we saw with Georges Tayalay, the first results of this work. The first females utilized the original nest sites, but later arriving individuals nested in the restored area between the two patches. Compared with preceding years, there was less egg loss overall at the site. In October, we will be able to determine whether hatching success was similarly enhanced.

In summer 2000, we found a 1997 tagged female that had grown from 87cm to 92cm (25.5 to 28cm SVL) in three years. Another 1997 tagged female in the mangroves near the lime kink was found in July 2000 about 1.8km from its initial capture site. This individual had grown more slowly, from 98cm to 100.5cm (30 to 31cm SVL).

Morphological data collected to date show that the iguanas on this island are very small compared with others in the French West Indies. On Ilet Chancel, the males do not exceed 300mm SVL (106mm TL) and 1900g (n = 20) and the females 305mm SVL (1030mm TL) and 1300g when gravid (n = 46). In Saint-Barthélemy, the largest male was 385mm SVL (1360 TL) and 2700g (n = 5) and the largest gravid female was 385mm SVL (1230mm TL) and 3050g (n = 20). On Petite Terre, the longest male was 390mm SVL (1210mm TL) and 2450g (n = 17) and the longest female 335mm SVL (1150mm TL) and 1950g (n = 35). On Basse-Terre the largest male was 410mm SVL (1415mm TL) and 3400g (n = 10) and the largest female was 400mm SVL (1300mm TL) and 2700g when gravid (n = 15).

Our conservation work is founded by the Direction Régionale de l’Environnement de la Martinique (DIREN) with European funds and technical assistance provided from the Office National des Eaux et Forêts (ONF). I would like to acknowledge Mr. Millo and Mr. Gourbeyre (DIREN), and Mr. Leroy, Mr. Wente, Mr. Robin, Mr. Tanasi, and all the workers of ONF for their interest in this project.

*Iguana delicatissima* in Saint-Barthélemy

In April 2000, I visited Fourchue (a small island north of Saint-Barthélemy) with botanists Dr. Anne Breuil and Dr. Claude Sastre, and Patrick Blanpain and Franciane Géreaux of the Saint-Barthélemy marine reserve. This island was reported to have more than 40 I. delicatissima (Lazell 1973). Goats were introduced there, resulting in total destruction of the vegetation and subsequent erosion. There are less than twenty trees (*Cordia, Capparis* and the only other remaining vegetation is spiny plants including *Opuntia sp.* and *Carapxina bonduc*). In August, we found two nesting holes. The holes were only about 20cm deep and the hardness of the soil are due to presence of large stones appeared to pose obstacles for digging. The only other evidence of iguana we found was a single scat sample.

In August, 2000, I visited the small island Petite Ilette just west of Fourchue with Jean-Claude Plassais (Iletuqo Hotel) and Patrick Blanpain, where we found a lone female *I. delicatissima*. Previous to my visit, Patrick Blanpain had seen an iguana on Ilet au Vent, east of Fourchue. When we landed there together, we saw only a few scat samples. Apparently, there are some I. delicatissima (probably less than ten adults) which still survive on these islands. They are probably able to swim the 20m which separate Fourchue from the two islets.

In August, we also visited Frégate, which in the 1960s, was inhabited by *I. delicatissima* (Lazell 1973). The vegetation on this island has been destroyed by feral goats which have now been removed, except for an old Gibba turtles, green ananodacas, Haitian boa, Haitian dwarf boa, Haitian vine boa, mata mata turtles, red-tailed boa, rhinoceros iguanas, twistneck turtles, white-lipped mud turtles and yellow-footed tortoises. Langston specifically acknowledged selling approximately 60 rhinoceros iguanas, native to Haiti (as well as the Dominican Republic), which is a species currently threatened with extinction, and listed on Appendix I of CITES, the highest level of protection available under the treaty. Many of the other species he trafficked in, including the ananodacas, boa, caiman lizards, dwarf caimans and yellow-footed tortoises are protected under Appendix II of CITES out of concern that unless trade in this species is strictly regulated they too could come under threat of extinction. The government established that the retail market value of the reptiles listed in the conspiracy charge of the indictment was at least $120,000.

Langston also admitted to the Court that as part of his scheme to smuggle reptiles into the United States he established a “breeding farm” in Peru for the purpose of making it appear that wild-caught Amazon specimens (protected under U.S. law and Peruvian law) were instead captive-bred.

Under the terms of his plea Langston was required to surrender his U.S. Fish and Wildlife import-export license. In addition to the license itself, Langston also surrendered to the U.S. Fish and Wildlife Service five Cuban rock iguanas, *Cyclura nubila nubila*, a CITES Appendix I species, which were transported in violation of the laws of Puerto Rico.

The prosecution of Langston is one of a series of related reptile smuggling prosecutions jointly pursued by the United States Attorney’s Office, the Department of Justice’s Wildlife and Marine Resources Section and the U.S. Fish and Wildlife Service stemming from the government’s execution of a search warrant of Strictly Reptiles, Inc. in February 1997. Strictly Reptiles, considered at the time to be the largest importer of reptiles in the United States, and its president, Michael Van Nostrand were convicted in Miami of felony wildlife trafficking charges with Strictly Reptiles losing its USFWS import-export license for five years and Van Nostrand being incarcerated for 10 months and jointly paying a total of $250,000 in fines and restitution. Stemming directly from the Strictly Reptiles prosecution, eight other individuals representing four distinct reptile smuggling rings were convicted of felonies, and six were sentenced to jail, with sentences ranging up to 24 months. These reptile traffickers were responsible for smuggling some of the rarest reptiles on earth, all protected under CITES Appendix I, including the AneQUegia (British Virgin Islands) Rock Iguana and White’s Cay Rock Iguana, both with populations numbering in the hundreds, as well as the Argentine boa and the Black caiman.

Mr. Lewis commended the work of Special Agents Chip Beppler of the United States Fish and Wildlife Service and George White of the U.S. Customs Service for their work on the case. The United States was represented in this matter by Thomas Watts-FitzGerald, Chief of the Environmental Crimes Section at the U.S. Attorney’s Office and Peter J. Murtha, Senior Trial Attorney, United States Department of Justice, Wildlife & Marine Resources Section.

During 1999 the Bahamas Post Office issued four sets of postage stamps in celebration of the Bahamas National Trust’s Fortieth Anniversary. The set issued on 30 November 1999 included a 65 cent stamp illustrating the Rock Iguana species *Cyclura cyclura cyclura*.
Present Investigations on the Cuban Iguana

The Cuban iguana is one of the more abundant species of the genus Cyclura in the Antilles. Over the last few years in Cuba, several investigations on this reptile have been developed, including studies of juveniles in captivity and monitoring of their populations, and ecological studies for sustainable management. This last aspect is the one that our group from the Faculty of Biology at the University of Havana is addressing, in cooperation with the National Company for the Protection of the Flora and the Fauna (Ministry of Agriculture) and the Agency of Medio Ambiente (Ministry of Science, Tecnology and Medio Ambiente). We are testing two hypotheses with observations in the field.

1. The populations of iguana on the cays comprise a metapopulation, with subpopulations that act as sources and drains.
   
   Prediction: The populations on cays that work as drains have a low rate of reproduction and a high frequency of hatching and subadult immigration from the population sources.

2. The natural limiting factor is the availability of nest building sites and refuges, and is of key importance in determining the populations of adult iguanas.
   
   Prediction: An increase in artificial refuges can increase the density of hatching and subadult animals.

The predictions of both hypotheses are under study at the present time. Our work group aims to disseminate our results widely and hopes that they can be applied to the management of other species of Cyclura in danger of extinction.

Translation/editing: tandora grant and allison alberts

The American Zoo and Aquarium Association (AZA) recently awarded the International Conservation Award for the “Jamaican Iguana Conservation & Recovery Program” to twelve zoos who have participated cooperatively in this project. Officials of the Fort Worth Zoo, Zoological Society of San Diego, Indianapolis Zoo, Audubon Institute, Sedgwick County Zoo, Tulsa Zoo, Toledo Zoo, Central Florida Zoo, Columbus Zoo, Woodland Park Zoo, Gladys Porter Zoo and the Milwaukee County Zoo accepted the award at AZA’s 76th Annual Conference.

For nearly 50 years, the Jamaican iguana was believed extinct. In 1990, a relic population was discovered and is now considered by some to be “the world’s most endangered lizard species.” Since its rediscovery, the twelve zoos (coordinated by Rick Hudson, conservation biologist at the Fort Worth Zoo, Fort Worth, Texas) have spearheaded Jamaican iguana conservation efforts by producing logistical, technical, and financial support for the program.

The conservation and recovery program is multi-faceted and includes a new site protected and active predator control program, the development of captive breeding populations in both the U.S. and Jamaica, a headstart program at the Hope Zoo in Jamaica, and a full-scale reintroduction program. To date, 26 headstarted iguanas have been successfully reintroduced into their native habitat. In just ten short years, the Jamaican iguana has gone from rediscovery to reintroduction, and over $100,000 has been dedicated by AZA zoos to support recovery efforts. Today, the project is widely recognized as one of AZA’s premier conservation success stories. In addition, the Jamaican iguana conservation and recovery program illustrates the significant impact of zoo-based partnerships in the recovery of endangered species.

The International Conservation Award is presented each year by the American Zoo and Aquarium Association for recognition of outstanding dedication to international conservation issues and development of natural resources. The American Zoo and Aquarium Association was founded in 1924 and currently represents 185 accredited zoos and aquariums in North America. AZA’s mission is to support membership excellence in conservation, education, science, and recreation.
The Jamaican iguana recovery program has remained a high priority for the West Indian Iguana Specialist Group (WIISG) since its inception in 1997. For the fifth time over the past four years, small groups of headstarted Jamaican iguanas, *Cyclura collei*, have been released into their native habitat in the Hellshire Hills. As part of a strategy designed to restore the depleted wild population of iguanas, an ongoing series of experimental releases are underway in an effort to determine not only if iguanas reared in captivity since hatching can survive in the wild, but moreover whether they can integrate into the natural breeding population. Since 1996, 26 young iguanas, hatched in the wild from 1991 to 1993 and then raised at the Hope Zoo in Kingston, have been released, all equipped with radiotransmitters for monitoring. These releases have been cooperative endeavors between the University of West Indies (UWI), the Hope Zoo, the Natural Resources Conservation Authority (NRCA) and the Fort Worth Zoo. Funding from a core group of U.S. zoos has supported these releases, including substantial grants from the American Zoo and Aquarium Association (AZA) and the Zoological Society of San Diego. The WIISG continues to provide logistical support to both the Hope Zoo headstarting effort and the field research program.

The Jamaican iguana was rediscovered in 1990 after being considered extinct for nearly half a century. A remnant population was found clinging to existence in the rugged and remote limestone forests of the Hellshire Hills along Jamaica’s southeastern coast. Two active nest sites were also discovered and, given adequate protection, now provide a yearly source of hatchlings for headstart. This population exists today in a roughly 100 km² ecosystem which is being degraded and compressed as a result of charcoal burning. This factor, coupled with high juvenile mortality due to mongoose and cat predation, have brought the Jamaican iguana perilously close to the brink of extinction. Today, this species is considered to be one of the most critically endangered reptiles in the world. However, recent events provide cause for optimism.

In April 1999 the Hellshire Hills, along with a significant portion of southeastern coastal Jamaica known as the Portland Bight (which includes the Goat Islands, Portland Ridge, Brazilletto Mountains, and encompasses all marine areas out to the 200 meter depth contour) have now received official protection under a management agreement with a local NGO, the Caribbean Coastal Area Management (CCAM) Foundation. The Portland Bight Protected Area has a total area of 724 mi² (1876 km²) making it Jamaica’s largest protected area so far. With the Hellshire Hills having finally been granted protection, attention can now be directed to Great Goat Island, part of the iguana’s former range. Under CCAM’s management plan, the Goat Islands are slated for tourism, including a field station with boats. The plan also includes restoring the iguana population to the island and the time appears right to begin developing plans to establish this as an iguana sanctuary. The year 1999 also brought remarkable nesting results. At least 16 females nested this year and 104 hatchlings are known to have emerged, both record numbers since the project began in 1991. All but six of these were tagged and released to the wild. Efforts next year will be aimed at determining if any of the headstarted female iguanas are contributing to the breeding population. For the first time in the field project’s nine-year history, several juvenile (1-2 year old) iguanas were captured, suggesting that young iguanas are benefiting from the predator removal.
INDY. Male #333 (hatched 1985) was paired with female #422 (hatched 1990). Interactions resulted in a leg injury to the female that was surgically pinned. Upon re-introduction, copulation was observed but eggs were not subsequently produced. “Male” #782 was not paired with any other animals, yet laid a clutch of eggs which were recovered in her enclosure during August 2000. Fertility of the clutch was undetermined due to egg desiccation and degradation. Strategy for the 2001 breeding season will be to continue with the reproductive management of #333 paired with #422, and implement forthcoming recommendations for pairing the newly identified female #782 (Gayle Weber, pers. comm.).

JGSA: Male #605 (hatched 1993) was paired with two females (#535, hatched 1992 and #691, hatched 1994) in January 2000. Separating and re-introducing individuals was needed to manage problems with aggression. The male was observed copulating with both females and both females subsequently laid infertile clutches. Strategy for the 2001 season will be to focus on management of gravid females, nest site design, egg recovery, and artificial incubation (Allen Feldman, pers. comm.).

These results typify the challenges with long-lived, highly social/hierarchical iguanids that exhibit individual preferences and aversions to conspecifics. Individual animal recommendations for pairings are based on reaching the genetic goals for long term management of the population, and success is not achieved as easily as it appears on a computer screen. Strategy for the 2001 season will be to focus on management of gravid females, nest site design, egg recovery, and artificial incubation (Allen Feldman, pers. comm.).

The Shedd Aquarium had a very successful 2000 field season studying rock iguanas (Cyclura cyphlla, C. cychlura, and C. cychlura figginsi) on Andros and in the Exumas. The research was conducted in May with assistance from members of the general public and college students from the Chicago area aboard our research vessel R/V Coral Reef II. The research on Andros was conducted in Middle and South Bights, while in the Exumas we worked on Alligator, Bitter Guana, and Gaulin Cays. Our Andros surveys over the past two years indicate that small populations of iguanas are present on numerous cays in Middle and South Bights. The Middle Bight populations appear small and the iguanas are extremely wary. Through conversations with the locals, we learned that people come down from North Andros to hunt the iguanas in Middle Bight with as much zeal as in the north. Education programs and the presence of a full-time warden in the area may help increase individual numbers and expand the ranges of existing populations.

Our work in the Exumas also went well. We noticed more signs of iguanas on Bitter Guana’s north beach than during all of my previous trips to the cay. The warning sign that we erected on the beach in November 1998 was still standing and in good condition. The sand was washed away from the base of the sign at the middle beach, so we moved it further up the beach and reburied it in the limestone storm berm. We erected an additional sign on Gaulin Cay because the old signs placed by Peggy Hall (former warden of the Exuma Cays Land and Sea Park) were broken and in need of repair. The “no dog” sign that we erected in November 1998 was still present and in good condition.

We are beginning to compile recapture data and estimate growth rates. High-density populations have a conspicuous lower growth rate than low-density populations. Hopefully these data can be compared and used to augment John Iverson’s long-term C. c. inornata data. I continue to get a low number of captures from Alligator Cay, which is inhabited by the translocated C. c. inornata population. Catherine Malone (Texas A & M University) and I are preparing a manuscript on the paternity analysis that was conducted in 1999. I will begin my doctoral work on Andros in May 2001 and will continue working in the Exumas throughout 2001.

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Cyclura cyphlla cyphlla. Photo by Chuck Knapp

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