IGUANA TIMES

Mona Island Iguana

NEWSLETTER OF THE INTERNATIONAL IGUANA SOCIETY INC.

NOVEMBER 1991 VOLUME ONE NUMBER THREE

$4.00

The San Juan Star

Wednesday, May 8, 1991.

Slaughter of 18 iguanas reported on Mona Island

By JENIFER McKIM
Of The STAR Staff

Department of Natural Resources Secretary Santos Rohena said Tuesday he was "very worried" about the apparent slaughter of endangered ground iguanas on Mona Island.

Rohena also reported wholesale vandalism on the 13,000-acre natural reserve, which lies off Puerto Rico's west coast.

'There has been so much vandalism — we don't know what's left.'

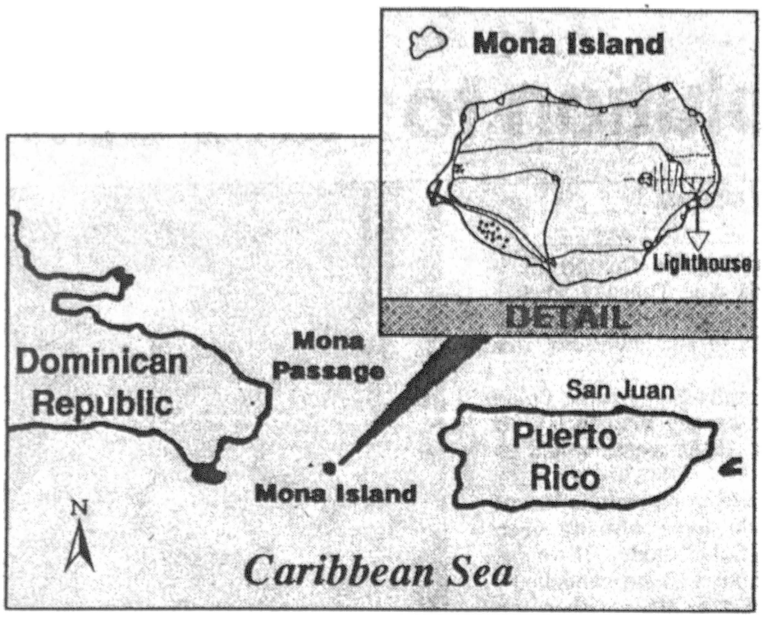
Santos Rohena
Secretary, Department of Natural Resources

"The iguanas are unique to Mona Island," said Rohena, who spent Friday and Saturday visiting the island, located midway between the Dominican Republic and Puerto Rico.

Island fisherman said they found 18 iguanas that had been shot to death. Rohena was given a photo of one bullet-riddled reptile as proof.

The deaths of the 3 to 4-feet long iguanas further accentuate the perilous future of much of Puerto Rico's bird and wildlife — threatened by development, human ignorance and disregard.

See IGUANAS, Page 16



The endangered iguana, like one shown at right on Mona Island, faces a new danger. Reptile carcasses full of bullet holes have been found on the island.

Mona Island Slaughter

The *San Juan Star* reported on May 8, 1991, that 18 Mona Island iguanas, *Cyclura cornuta stejnegeri*, were shot by vandals on Mona Island during the last part of the hunting season for goats and wild pigs. It appears now that the number of lizards killed may have been less than was originally reported. The Puerto Rican Department of Natural Resources found only two carcasses on the island during a recent investigation. The DNR has been criticized in Puerto Rico for being slow to control vandalism on the Mona Island reserve. In response, the Department of Natural Resources has discussed plans to monitor hunters on the island more closely. The DNR estimates that there are 3,500 goats and 400 feral pigs on the island. The pigs destroy iguana and sea turtle eggs, and the goats directly compete with iguanas for food and seriously degrade the natural vegetation. The hunting of feral animals on Mona is beneficial to the iguanas; unfortunately, the presence of hunters on the island has put the iguanas at risk. The slaughter of these lizards is both senseless and unacceptable on this nature reserve. Iguanas have long been extinct on Puerto Rico itself, and the government needs to provide greater protection for its rare and endangered native wildlife.

I.I.S. member, D. Scott Gallagher of Ohio, who has spent considerable time on Mona Island, has offered a $1,000.00 cash reward for information leading to the arrest and conviction of the person or persons responsible for the crime. The International Iguana Society has offered an additional reward of $200.00. The total monetary reward could be an adequate incentive to help solve the killings. At the very least, the people of the Commonwealth of Puerto Rico should realize that members of the I.I.S. are very concerned about Puerto Rico's rhinoceros iguanas.

Sources: Puerto Rico DNR, *San Juan Star*, and Thomas A. Wiewandt

Iguanas From Page 1

The iguanas are one of 45 island species on the federal list of species near extinction. The DNR's own list adds 13 more endangered species. Many of the species on both lists are endemic to Puerto Rico.

Nine percent of all endangered species nationwide are from Puerto Rico.

Rohena also found the empty shell of an endangered sea turtle on the island, as well as shredded cactuses, shattered windows and bullet-scarred walls of the light house there.

Hunting season for goats and wild pigs on Mona island runs from December through April, he said. Hunting of turtles is illegal.

"I would like to establish a dynamic education program and stricter regulations," said Rohena, who ordered an investigation into the killing and vandalism on Mona Island.

He was visiting as part of an island-wide investigation of natural reserves and areas of environmental concern, as he finishes his fourth month as DNR head.

He said Tuesday he would like to impose ". . . jail terms and fines together," which would be "applied with all vigor."

Commonwealth penalties for destroying or killing an endangered species are maximum fines of $500 and/or to six months imprisonment, while federal penalties for the same crime are up to a $50,000 fine and/or one year in jail.

Cover Photo: *Cyclura cornuta stejnegeri.* Thomas A. Wiewandt

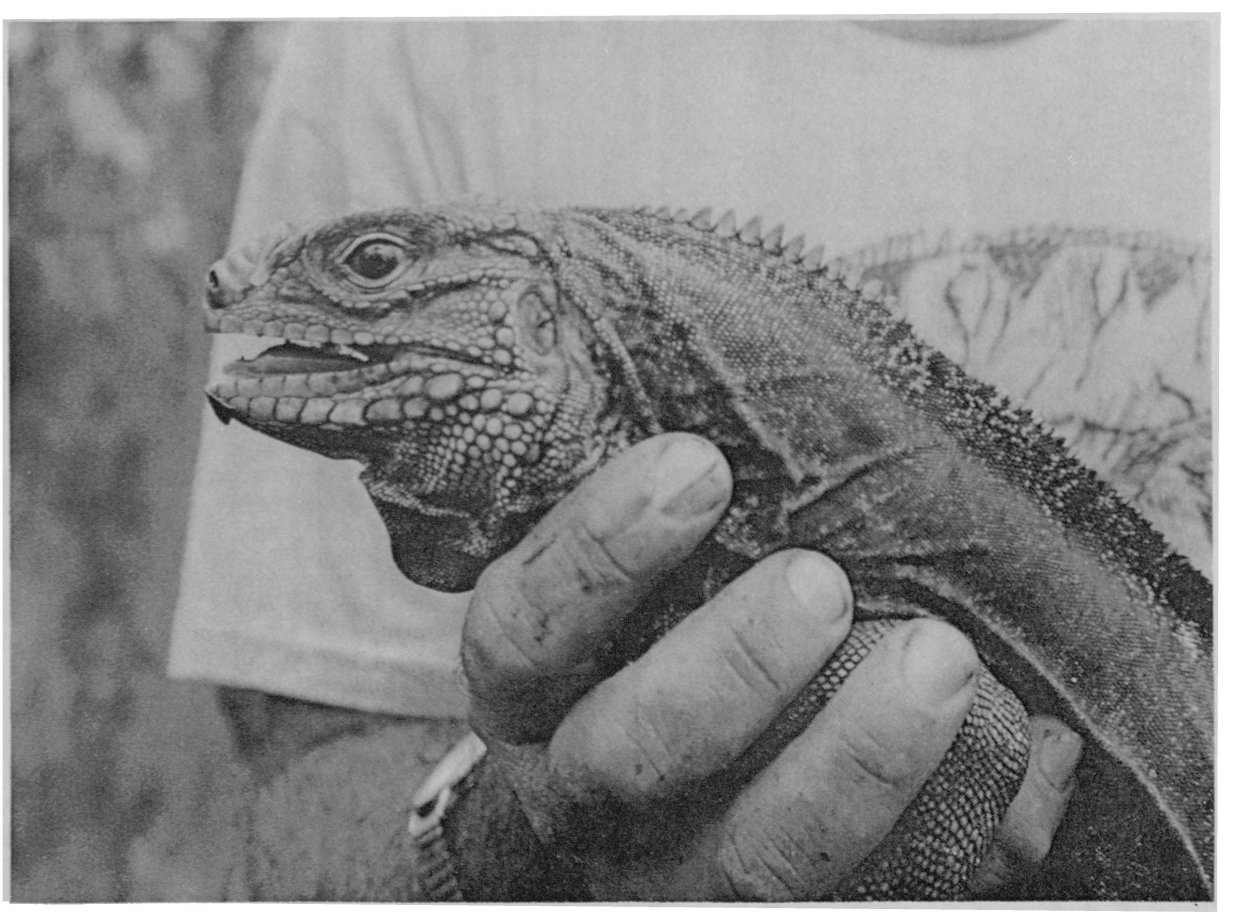
Title Graphics: Paul Mirocha, Purple Street Design, Tucson, AZ.

ADVENTURE ON NORTH ANDROS
ROBERT W. EHRIG

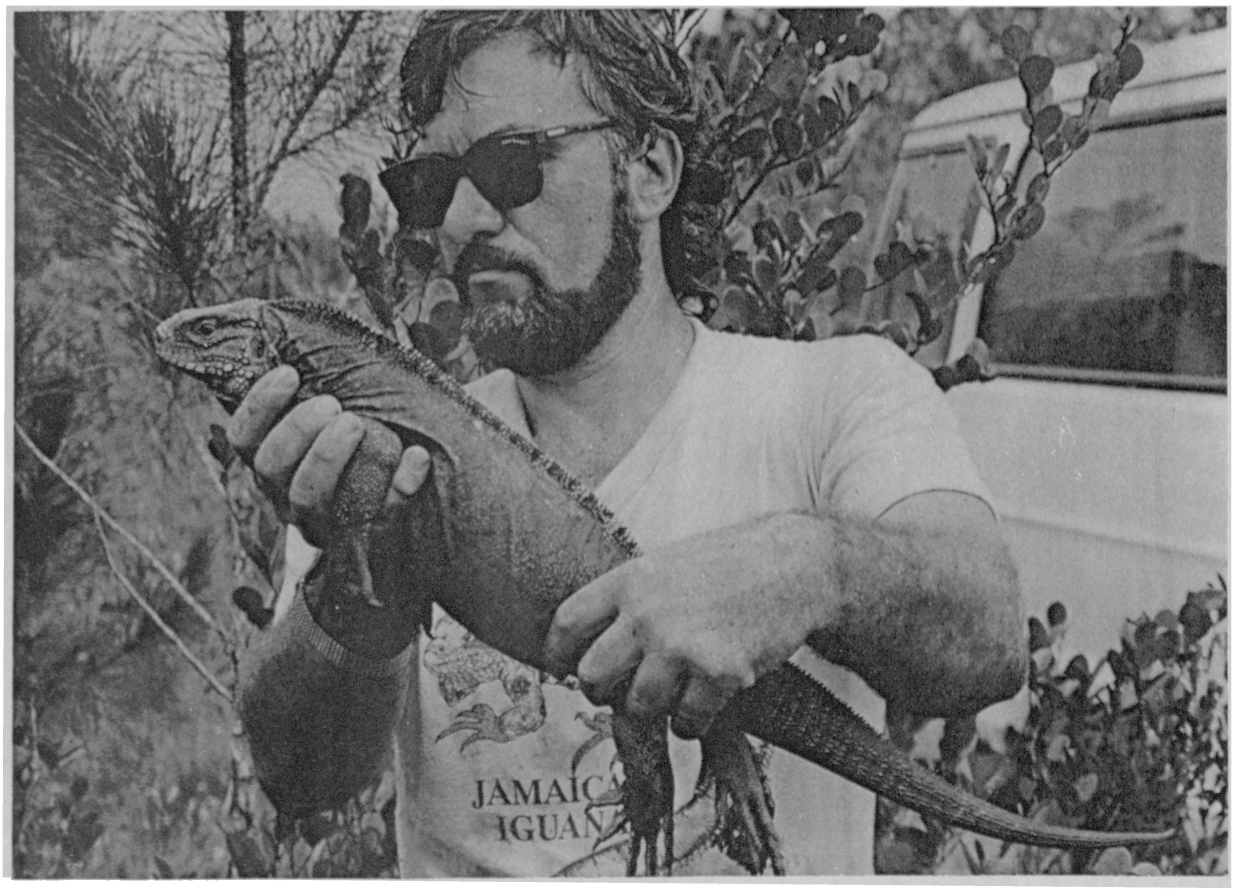
The small plane touched down on the empty Androstown runway. "Andros", the very name conjured up visions of wilderness--the largest Bahamian island and the least explored. Only 130 miles east of Key Largo, the fifth largest West Indian island is home to the largest native Bahamian island animal. The entire west coast is a maze of salt water creeks, sand bars, and mangrove swamp. The interior is a mosaic of hundreds of square miles of pine forest and fresh water wetlands interspersed with hardwood jungle, locally called coppice.

On 13 June 1991, we set out to help assess the current status of the Andros Island Rock iguana, *Cyclura cychlura cychlura*. The Andros iguana is the largest of the iguanas of the Bahamas, growing to just under five feet long and 25 pounds according to Mr. Kingston Brown, a former iguana hunter and renowned boat builder on Andros. The female iguana can lay over 22 eggs, and lays its eggs within termite mounds, the only iguana species known to utilize this method of incubation. African monitors are known to dig into termite mounds, lay their clutch, and allow the termites to reseal the mound. *Cyclura cychlura cychlura* is a blue-gray to brown-gray animal overall with strong pink-orange scalation around the head. Of the three subspecies of *Cyclura cychlura*, the nominate race is the most orange form.

Accompanied by California member Timothy Haack and my wife, Marcie, we were warmly welcomed at Forfar Field Station by director Rachel Cartwright and the staff. Located on Stafford Creek, the station was our base of operation on Andros.



Young specimen of Andros Island Rock Iguana, *Cyclura cychlura cychlura* from North Andros. Note iguana-injured index finger of Robert Ehrig. Timothy G. Haack photo.

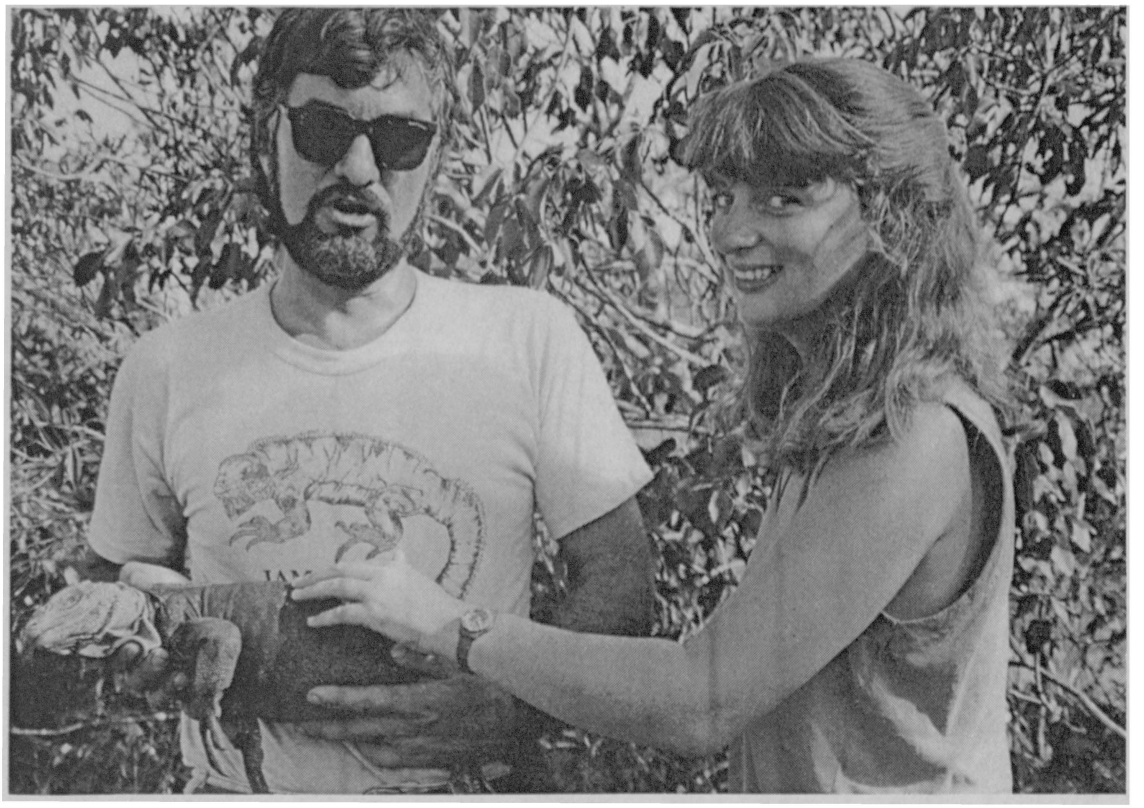


Robert Ehrig holds Andros Island Rock Iguana, *Cyclura cychlura cychlura*. Timothy G. Haack photo.

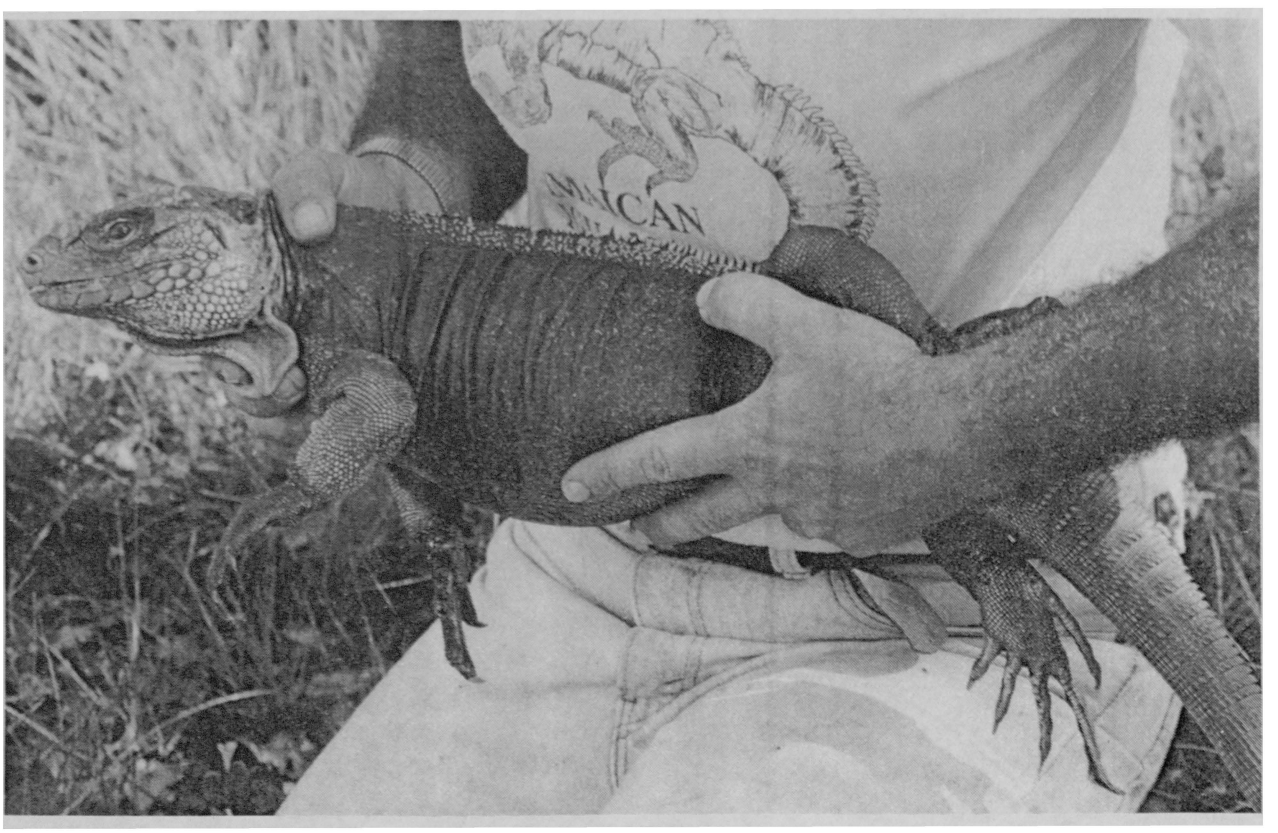
Everywhere we went on North Andros, we were greeted by waves from the local people who recognized the Forfar vans and trucks. Goombay festival in Nicholstown, Andros' largest settlement, was a pleasant diversion from our iguana plans and a source of delicious Bahamian food. Our visit to Red Bays, the only settlement on the west coast of Andros, had a dual purpose. Red Bays is where Bahamians with Seminole Indian blood live and sell beautiful hand-woven baskets. The fronds of the local Silver Palm, *Coccothrinax argentata*, are used. Most of the last iguana hunters on North Andros also live in Red Bays. Although it is illegal to hunt iguana, enforcement is nonexistent. Fortunately, there are fewer hunters than in the past. But this means that feral hogs are becoming more common since hunters primarily hunt hogs. After hunters, the hogs are the greatest danger to the declining North Andros Rock Iguana. Hogs are notorious iguana egg eaters. How the Andros iguana has been able to successfully nest is another mystery.

On 16 June 1991, we left Forfar Station well before dawn on our predetermined course for the interior of the large island. The morning air was crisp from the rain hours earlier. The drive down the logging road was bumpy, but our spirits were high. Bobwhite quail and white crown pigeons were the most common birds in the area. The slash pine forests were very reminiscent of Big Pine Key, my home.

We spotted our first iguana about 8:45 a.m. basking on a level open spot in the forest. He stood his ground as we stopped the van and I approached on foot. Had I been a poacher, the animal would have been an easy target. With the assistance of Tim Haack and the others in our able group, the iguana was herded towards me. Crouched under a poisonwood tree, *Metopium toxiferum*, I was able to grab the animal as it approached. Sexual dimorphism is not apparent in *Cyclura cychlura* in young and middle age animals, although, all very large Allan's Cay iguanas, *Cyclura cychlura inornata*, are male. The 32 inch animal was examined, some preliminary scale data collected, and then it was lectured on being so bold around humans. The



Iguana, R. Ehrig, and Forfar Research Station Director, Rachel Cartwright. Timothy G. Haack photo.



Andros Island Rock Iguana, *Cyclura cychlura*. Timothy G. Haack photo.

iguana had a large v-shaped scar on the left base of its tail, possibly due to a hog encounter. Upon release, it immediately retreated into the bush, probably safer in that it would be more wary of people in the future.

Hog sightings were increasingly common as we traveled. By mid-morning six had been sighted. The largest was about 130 pounds. Their presence explained the extreme abundance of cocoplum, *Chrysobalanus icaco*, in this area. This native shrub has a large edible fruit attractive to both hog and iguana.

Several hours and miles later two more iguanas were spotted. These animals were considerably smaller, and were proof of successful reproduction of this increasingly rare species. One was wary and immediately fled. The other showed some curiosity at our arrival. After an interruption by a brief, but strong, thunderstorm, we continued our trek. Shortly after we turned to begin the long trip back, an iguana ran across the trail ahead of us. Bursting from the vehicle, we pursued the animal to a gap between two boulders. With more luck than skill, I was able to carefully extract the iguana from its hole. After scale counts and measurements were taken, this lizard was returned to its habitat.

Our adventure could not have gone better. We had managed to examine two specimens of a species few have ever seen. On our return to Forfar, we stopped at Marky's Bar for our celebratory beverage. In order to procure service at Marky's, you must first cross the road and knock on the door of the bartender's house, who obliges by opening up the establishment.

The Andros Island Rock Iguana is not currently endangered. This could soon change. On South Andros, there are probably healthy populations. They are only protected by their isolation and the ruggedness of the habitat. On North Andros, *Cyclura cychlura* is already exceedingly rare and continuing to decline. It is largely absent from its prime habitat, the coastal ridge of the east coast of Andros. The future of the iguana and of the natural history of Andros itself is dependent on the people of Andros.

Andros is a West Indian gem, relatively unspoiled, beautiful, and vulnerable. The world's third largest barrier reef frames a land with a large, untapped eco-tourism potential unparalleled in the region. Hopefully, future development of this island will take advantage of its unique natural resources and avoid the mistakes and waste that has occurred through much of the Caribbean.

Special thanks go to Rachel Cartwright and the staff of Forfar Field Station, Timothy G. Haack, Mike Robson, Doug and Jane Wynn, and Kingston Brown.

Literature Cited

Nickrent, D.L. 1988. The Vascular Flora of Andros Island, Bahamas. Kendal/Hunt Publ. Co., Dubuque, Iowa

Articles and Letters Solicited

Members of the I.I.S. are encouraged to contribute articles for publication in the Newsletter, following a format like that shown in this first issue of the Newsletter. The articles can deal with any aspect of iguana biology, ecology, behavior, husbandry, systematics, etc. Members can also submit letters to the Editor for publication in a Letters section of the Newsletter. The Editor.

Letters to the Editor

Dr. Richard R. Montanucci, Editor I.I.S.
Department of Biological Sciences
Clemson Univerisity
132 Long Hall
Clemson, South Carolina 29634-1903 USA

IGUANA NEWSBRIEFS

2nd Annual Captive Breeding Exposition

I.I.S. was well represented at the 2nd Captive Breeding Expo held in Orlando, Florida, at the Twin Towers Hotel on 16, 17, 18 August, 1991. The Expo, sponsored by the Central Florida Herpetological Society, has already become a legendary event. All animals sold at the expo are the cream of American herpetocultural captive breeding efforts. The variety of herps being bred in captivity is most impressive. I.I.S. President, Robert Ehrig, Editor, Richard Montanucci, and VP, David Blair, manned the I.I.S. booth. Central Florida I.I.S. members, Deborah Neufeld, Joan and Michael Fremo, and Jan Truse were instrumental in the successful exhibit. A general membership meeting was held on Saturday night. Eighteen new members joined the society.

Jamaican Update

The Jamaican Iguana Research Group, under the direction of Dr. Peter Vogel of the University of the West Indies, Kingston, has removed a clutch of iguana eggs from a nesting site in the Hellshire Hills. The Jamaican iguana, *Cyclura collei*, is on the verge of extinction due to habitat destruction and predation from mongoose and feral pig. Development schemes are now being planned for the Hellshire area which, if carried through, would doom the iguana. The sixteen eggs are being incubated at the University of the West Indies. The future survival of *Cyclura collei* rests heavily with a captive-breeding program, for success in this endeavor would substantially increase the world population of Jamaican iguanas. I.I.S. hopes for a successful hatch.

Molecular Systematics of the Iguanas

Drs. Jack Sites (Brigham Young University) and John Iverson (Earlham College) are studying the molecular evolution of the family Iguanidae. They have been collecting tissues over the past four years and now have samples from all genera of iguanas (12 species so far), as well as 15 other genera which are near relatives of the Iguanidae. They plan to examine variation in proteins using gel electrophoresis and to study sequence divergence of mitochondrial and ribosomal DNA. These approaches should provide three relatively independent data sets for generating and testing alternative phylogenetic hypotheses for this lizard family. Please contact them if you have live iguanid lizards that must be euthanized. They will remove tissues and return preserved specimens as vouchers. Drs. Sites and Iverson are especially interested in obtaining island *Sauromalus, Iguana* from the Antilles, and *Enyaliosaurus*.

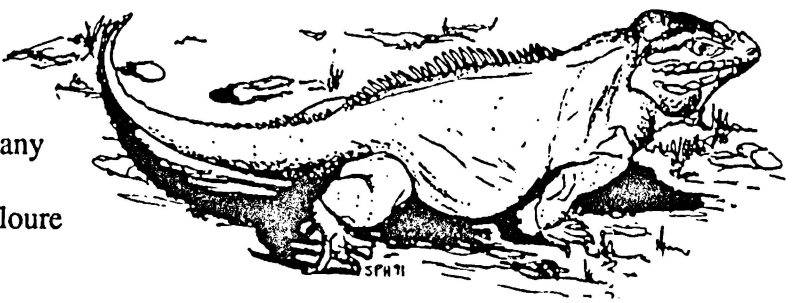
The International Iguana Society, Inc. is an international membership, non-profit organization dedicated to the preservation of the biological diversity of the iguanas through habitat preservation, active conservation, research, and the dissemination of information. Iguana Times, the newsletter of the Society is distributed quarterly to members and member organizations. Additional copies are available at a cost of $4.00 including postage.

The International Iguana Society, Inc.

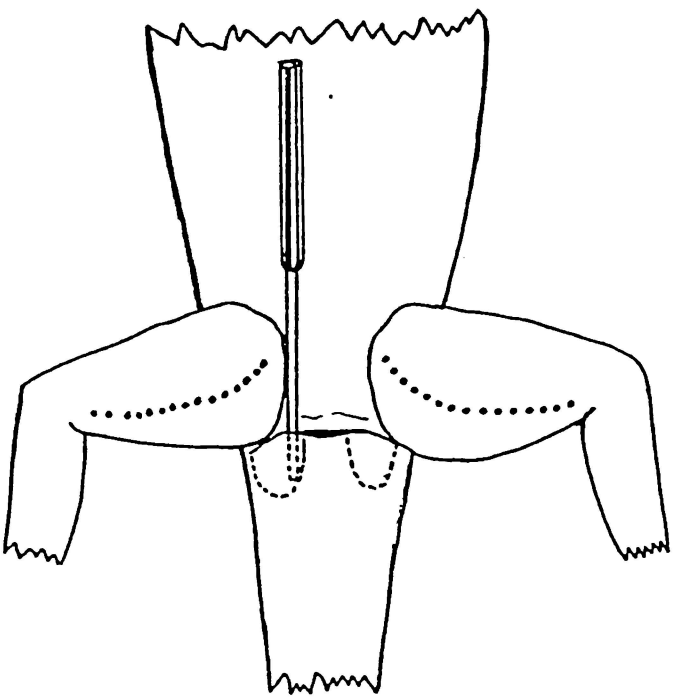
On 2 August, 1991, I.I.S. was one year old as an organization. The Board of Directors considers this a milestone since the idea of the society was only conceived a few months earlier. Through the determination of a small group of iguana advocates, a conservation and education organization was born and it already has begun to make a difference. The credit belongs to our 180 plus members in nine countries and thirty states. This diverse group has shown a remarkable enthusiasm to preserve iguanas. Without them the society could not exist.

The International Iguana Society wishes to thank the following organizations and individuals for their support:

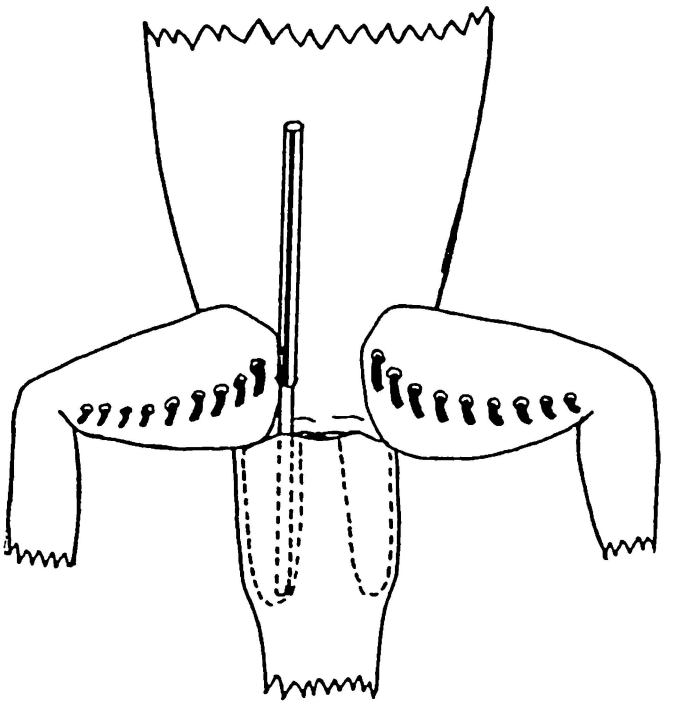
The Southwestern Herpetologists Society
Forfar Field Station, Andros Island, Bahamas
Linda Auernhammer
Stephen Hummel
Wendy Townsend
Pam Monroe and Marc Dubin
Gunther Kohler, Hanau, Germany
Peter and Jeannine Pierson
M.M. Bergmeyer and J.A. Difloure



FEMALE



MALE



SEX AND THE SINGLE SAURIAN

David W. Blair

Iguanas are usually somewhat difficult to sex, particularly when immature. Some of the most distinctive sexual characteristics are applicable only to adults and even then they are sometimes not conclusive. In general, adult male iguanas have larger heads and jowls than females of similar body size. They are often more brightly colored and sport longer crest scales than females which, in most species, also attain a smaller overall size. As male iguanas reach sexual maturity, bulges become prominent on the underside of the base of the tail just posterior to the cloacal opening. These indicate the presence of hemipenes, the male reproductive organs. Femoral pores on the underside of the thighs also become more prominent in males, particularly during the breeding season. Waxy secretions, sometimes over 12mm in length, may form "comb-like" structures from these pores. However, in some species of iguanas within the genus *Cyclura* femoral pores are reduced (*C. ricordi*) or even absent (*C. collei*) in males.

Behavior is also a good indication of the sex in mature iguanas. Males display more often than females, performing slower, more pronounced head bobs often with a rolling side to side motion. After such displays, males will sometimes attempt to mount females with or without actual mating.

An innovative method for sexing some reptiles is to inject a saline solution into the base of the tail. This causes the male's hemipenes to invert and protrude from the cloaca. Unfortunately, this method does not work well on lizards having thick, muscular, or spiny tails such as members of the genera *Ctenosaura* and *Cyclura.*

The most reliable method for sexing iguanas has proved to be by probing. The technique is fairly simple--metal probes are inserted into the cloaca, not at the center, but along either edge of the opening. With light pressure and a rocking back-and-forth motion, the probe is gently directed toward the tip of the tail in an attempt to locate the pockets housing the hemipenes in males. Probes may be inserted dry, but I prefer to use an antibiotic ointment as a lubricant. Probes should be sterilized between use on different animals. Specimens of the same species with comparable snout-vent lengths will probe approximately three times as deep in males as in females. Young animals are more difficult to probe than adults as there is often a constriction at the opening of the hemipenial pocket, making it harder to locate. If the animal in question probes as a male, you can be relatively certain it is a male. Animals probing quite shallow and assumed to be females should be rechecked a second or third time to ensure it is not actually a male in which you were just unable to locate the pockets.

I recommend against probing animals under two or three months old as the membranes within the cloaca are still so delicate that probes may actually puncture through them and slide down the tail between the skin and muscle tissue. I have seen this happen only twice and there has never been any permanent damage or infection resulting, possibly because of the use of antibiotic ointment as the lubricant. The smallest probe (~ 1mm diameter) is normally used on young iguanas. Animals with SVL of 100-125mm will probe approximately 5mm in depth if female and near 12mm if male. Larger diameter probes (2-3mm) are used on older animals from 200-500mm or more SVL. Adult iguanas will usually probe under 15mm in depth if female, and up to 50mm for large males. These figures vary somewhat from species to species, of course, but the ratio of male to female probe depth remains fairly constant.

The ability to accurately sex iguanas is the first important step in establishing compatible groups or breeding pairs of these fascinating saurians. Next to habitat protection, including the removal of feral animals and exotic plants, captive propagation should be one of our most important goals. I hope this information has been helpful and I wish you all great success in your future breeding projects!

Cayman Update

The National Trust for the Cayman Islands has embarked on a captive breeding program for the Grand Cayman blue iguana, *Cyclura nubila lewisi*. Last fall, the Trust hatched 8 iguanas produced by a pair of animals imported from Florida. Unfortunately, the Trust now suspects that some genetic contamination of *Cyclura nubila lewisi* with *Cyclura nubila caymanensis* has occurred in the captive population. Thus all ten animals are suspect and the program has become all the more difficult and complicated.

Edward Louis of Texas A&M University plans to collect blood samples of all *Cyclura nubila lewisi* in captivity on Grand Cayman. Blood samples from *Cyclura nubila caymanensis* on Little Cayman will also be collected. Hopefully analysis of the samples will result in the identification of reliable markers to distinguish the two subspecies.

The National Trust is currently incubating 9 eggs from a wild-caught female that I.I.S. president, Robert Ehrig, was able to acquire for the Trust from a private party on his April 1991 visit to Grand Cayman.

The problems facing the iguana include habitat fragmentation and degradation, predation of hatchlings by feral cats and dogs, and isolated instances of poaching. Despite its rarity on the island (current estimate is 30-50 wild *Cyclura nubila lewisi* individuals), a 4 to 5 year old male was recently road killed on the Queens Highway. This road was constructed in the early 1980's to open the last coastal areas on Grand Cayman's north coast to development.

The National Trust is faced with many challenges with its iguana program. They have a large budget for a public relations campaign on behalf of the iguana. The iguana is still considered an agricultural pest by some islanders. The Trust is constructing captive breeding enclosures at two locations. I.I.S. has offered assistance and hopes the program will be successful.

A Further Clarification

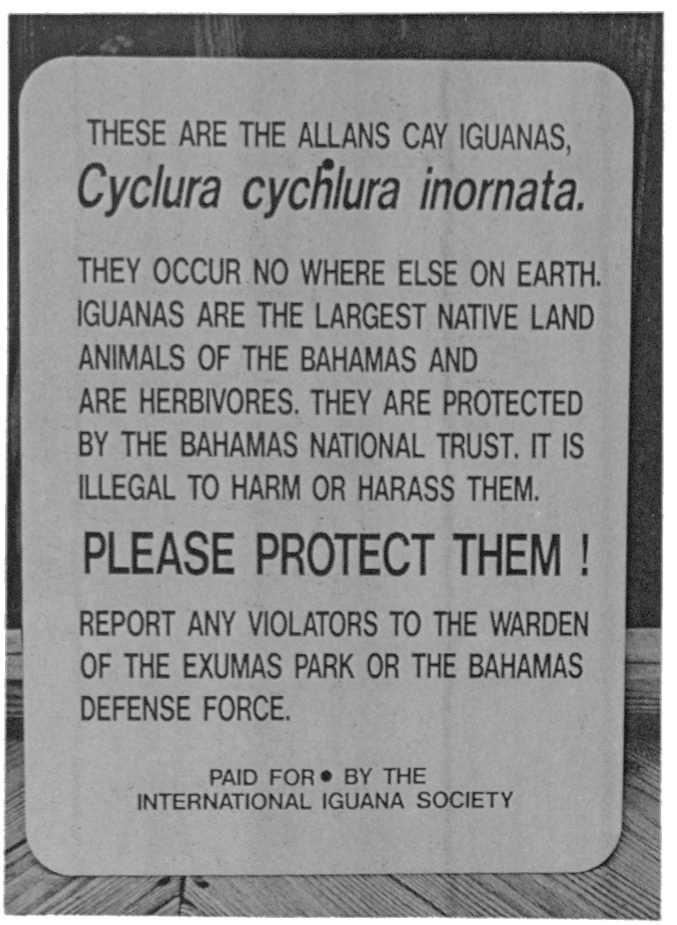
In the last issue of the *Iguana Times*, a newsbrief item entitled "Point of Clarification" mentioned that captive-hatched iguanas at David Blair's Cyclura Research Center might be of hybrid origin between *Cyclura nubila lewisi* and *C. n. caymanensis*. This report in no way was intended to implicate him in any misrepresentation or slipshod management of his breeding program. The suspected genetic contamination between these subspecies did not occur at Cyclura Research Center, and may have taken place some ten years or more ago when only a handful of animals were in captivity anywhere in the world. There has been some suggestion that the hybridization between *C. n. lewisi* and *C. n. caymanensis* may have occurred on Grand Cayman Island approximately 18 years ago in a private collection where both subspecies were being kept. Only with the cooperation of many parties will the current problem be resolved since virtually all *C. n. lewisi* in the United States are genetically suspect. In any case, the Editor sincerely regrets any implication of fault on the part of Cyclura Research Center in the newsbrief.

News Of The Society

I.I.S. has initiated a protection project on behalf of the Allan's Cay Iguana, *Cyclura cychlura inornata*. This project was originally conceived last summer. Permission to install informational signs on the privately-owned islands was recently received. *Cyclura cychlura inornata* inhabits two small islands, 34 nautical miles southeast of Nassau in the Bahamas. The Allan's Cays provide good anchorage in a variety of weather conditions, and as a result, are heavily visited by boaters.

The dense populations on Leaf Cay and U Cay are frequently fed and several dozen animals on each island are absolutely fearless. This provides the opportunity to harass the iguanas, which is against Bahamian law.

The Society has budgeted $500.00 for the construction and installation of two signs. Designed to last ten years or more, the baked aluminum signs on heavy steel post will be mounted on concrete foundations. The signs have just been prepared and the next *Iguana Times* will feature an update.



Rhino Iguanas Hatch

Two clutches of second generation *Cyclura cornuta cornuta* were hatched at Finca Cyclura. The first clutch of two eggs hatched between October 6 and 8, and the second clutch of three eggs hatched on 16 October. The two clutches were produced by sibling females which were hatched in 1987 and reared at Finca Cyclura. These second generation rhino iguanas are believed to be the first produced in the United States.

Cuban Rock Iguana, *Cyclura nubila* (male). Sally Russ Photography photo.

THE CAPTIVE HUSBANDRY AND PROPAGATION OF THE CUBAN ROCK IGUANA, *CYCLURA NUBILA* PART 1. CAPTIVE ENVIRONMENT

ROBERT W. EHRIG

I first became familiar with the Cuban Rock Iguana, *Cyclura nubila*, in the mid-1980's when I purchased a pair from a Florida animal breeding facility. These animals were part of a group of iguanas imported into Florida from the introduced colony on Isla Magueyes, Puerto Rico. In the mid-1960's approximately seven *C. nubila* escaped or were released on Magueyes. This 7.2 ha (18 acre) mangrove encircled island provided excellent habitat. The sandy interior of Isla Magueyes provided many nesting sites and allowed rapid expansion to occur. By 1985, the thriving population was estimated at 157 adults. Dispersing individuals occasionally reach the Puerto Rican mainland, but a range extension to the dry forests of the southwestern part of the island has not occurred. This region was probably home to the endangered Anegada Rock Iguana, *Cyclura pinguis*, until about 150 years ago.

My original pair was soon determined to be two males. But in the next several years four additional animals were acquired. Two of these iguanas were females.

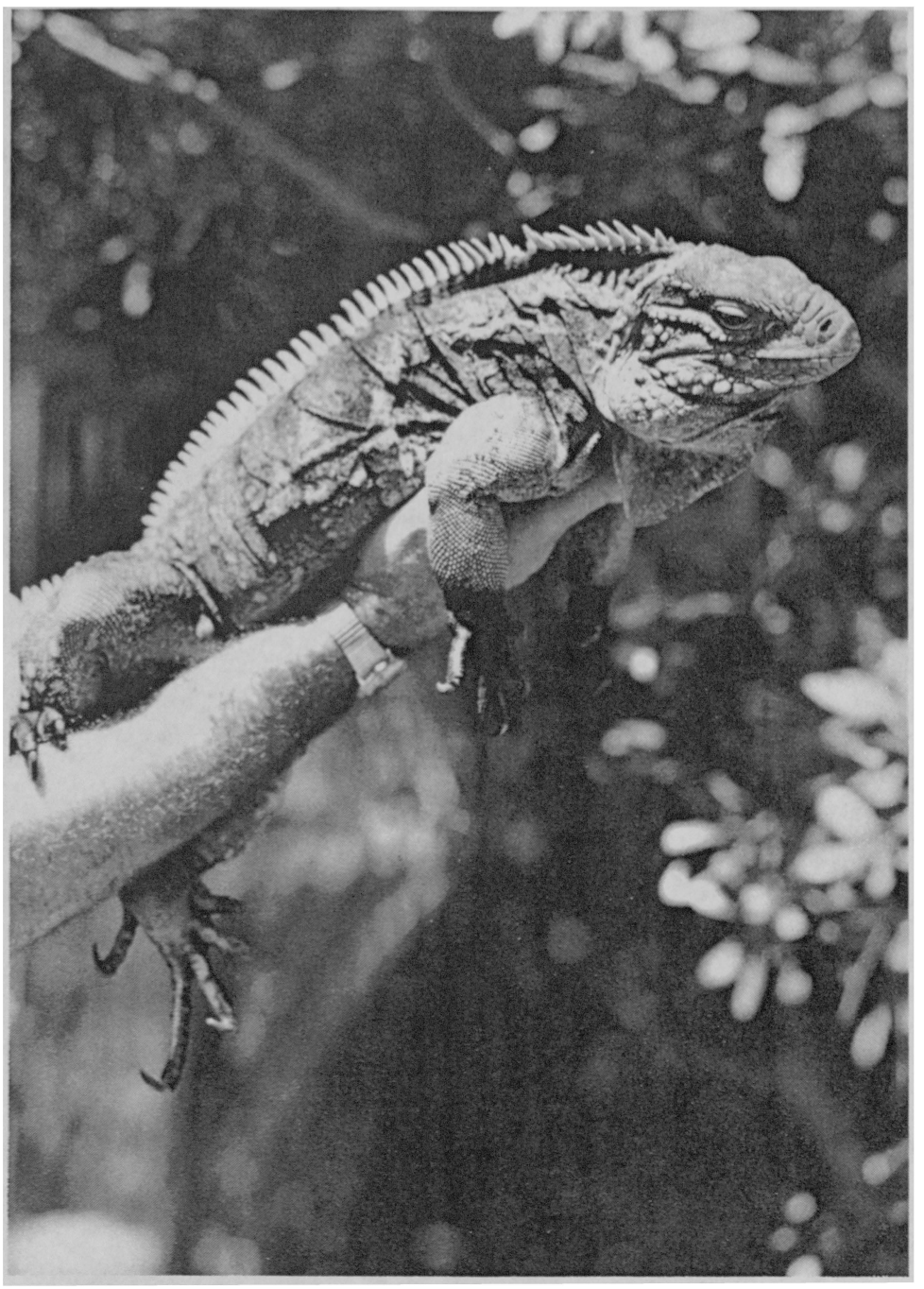
The Cuban Rock Iguana is the largest member of the genus, with males reaching 745mm snout-vent length (almost 30 inches). It also has the largest range of any *Cyclura* originally occurring throughout the 800 mile (1,280 km) long island and on many of the surrounding satellite islands. As with any species with an extensive natural range, *C. nubila* probably has many geographic variations which are presently unfamiliar to us. Like most members of the genus, it inhabits sandy open areas with adjacent eroded limestone ridges and dry West Indian scrub forest. Although commonly found in xeric areas, it also occurs in mesic habitats with strongly seasonal rainfall.

C. nubila is sexually dimorphic with adult males being considerably larger than adult females. Males have massive heads, large jowls, bulkier throatfans, and a pronounced dorsal crest. An adult male commonly has a head twice the size of that of a similar-aged female. Femoral pores of both sexes are small except in breeding males, when waxy secretions occur. *C. nubila* has a background color of tan to brown with strong black chevrons persisting in adults, an uncommon trait in *Cyclura* where juvenile banding usually fades by the second or third year. The front feet are very darkly colored producing a "glove" effect.

The Cuban Rock Iguana is probably the most adaptable species of iguana in captivity. It is generally calmer and more "easy going" than many other species. I have also found it to be an accomplished digger, and individuals have dug tunnels up to 2 meters (6.6 ft) long in my captive enclosures.

At Finca Cyclura, iguanas are kept in pairs in enclosures 8 x 8 ft. (2.43 x 2.43 m), 8 x 10 ft. (2.43 x 3.04 m), and 10 x 10 ft. (3.04 x 3.04 m) with a height of 8 ft. (2.43 m). Larger enclosures 10 x 16 ft. (3.04 x 4.86 m) house two pairs of two different species (*C. cornuta* and *Iguana*, or *C. cornuta* and *C. nubila*). Since *C. cornuta* is sympatric with *Cyclura ricordi* in some locations in Hispaniola, this arrangement has been successful. Iguanas recognize their own species and appear less stressed with other species and genera.

These enclosures were in many instances built around existing vegetation. They generally have wooden shelves and are furnished with large rocks, logs, and tree limbs. These amenities actually increase the amount of space available to animals considerably. If any animal seems to



Cuban Rock Iguana, *Cyclura nubila* (male). Sally Russ Photography photo.

spend most of its time on a high shelf, it is safe to assume it is under pressure from its cagemate. Vegetation, rocks, and partition walls can act as visual barriers to provide relief for subordinate animals.

There is no such thing as an iguana enclosure that is too large. Iguanas transferred from one cage to a larger one, will immediately explore the entire enclosure. They will utilize all the newly available space, increase their activity level, and grow more rapidly.

I consider the optimum captive enclosure to be 150-200 sq. ft. (13.5-18 m^2) of floorspace for one pair of adult iguanas. Half of the floorspace should be coarse sand 18-24 inches (45.8-61 cm) deep and the other half, large rocks cemented together to form several retreats and many basking areas. Rocks should be carefully placed and cemented to avoid possible collapse. Plants are a nice addition, but optional.

In the frost-free lower Florida Keys, insulated and heated shelter buildings are not necessary. In any other area of the southern United States, they would be mandatory. In my case, concrete and rock structures provide adequate shelter. All of my enclosures are facing the south with solid walls on the north. Steel v-drain roofing provides rain protection over 20%-25% of the total area of the enclosure. Iguanas can choose among a variety of conditions and are protected from tropical storms.

On very rare occasions (e.g. Christmas 1989, when Miami temperatures dropped below freezing and Big Pine Key temperatures reached 45°F or 7.2°C), underground retreats are covered with a thick layer of mulch to keep residents well insulated from cold air temperatures. Sub-adults and juveniles are brought indoors to rooms supplied with space heaters. Fortunately, cold fronts are usually of short duration. Big Pine Key is farther south than Nassau, Bahamas, and is at the same latitude as the habitats of a number of iguana species.

Until the last decade, captive longevity statistics for *Cyclura* were generally very grim. Wilke (1982) of the Frankfurt Zoo, calculated an average longevity of only 2.5 years for *C. cornuta* based on 155 individuals in 39 zoos. Wiewandt (1977) speculated that the natural lifespan exceeds 40 years on Mona Island. Lack of sufficient space and natural UV light are the main reasons for failure in maintaining iguanas in captivity.

If we are to keep animals in captivity, it is our responsibility to provide an adequate captive habitat. Our reward is to be able to observe these creatures much as they would be in the wild, but without their apprehension to our presence.

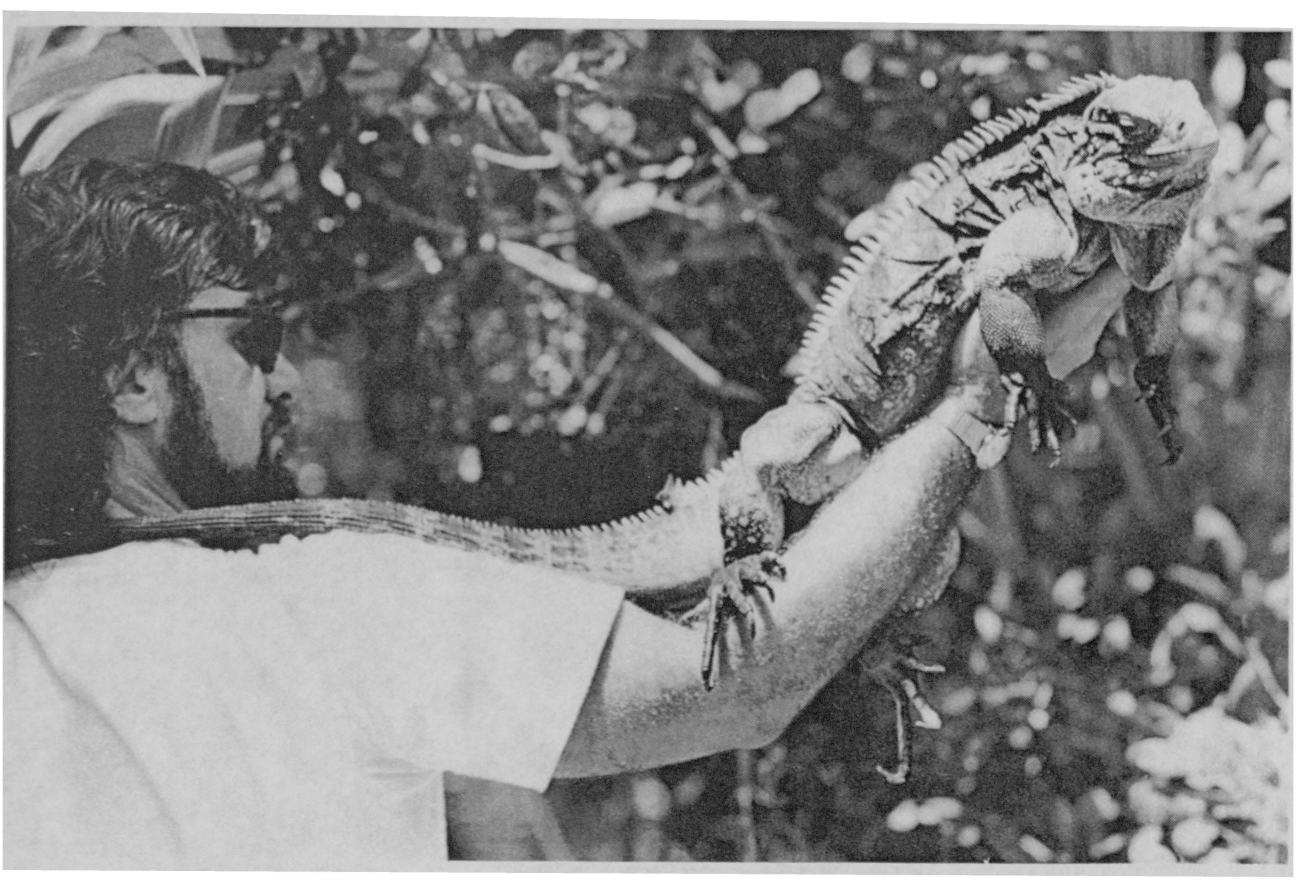
CONTINUED IN NEXT ISSUE

Iguana Nesting Behavior

Robert Ehrig reports unusual nesting behavior of *Cyclura nubila* at Finca Cyclura. For the third consecutive year, a female Cuban iguana has opened up her nest 3 to 5 days after her clutch had begun hatching. All of the eggs were removed from the nest shortly after laying and were incubated indoors. In all cases, the female dug up the tunnel into the egg chamber shortly after young began hatching at the incubation location. This female has been a dedicated nester, guarding her nest site long after laying, and making life miserable for her various mates. In all three years, the female chose the same nesting site, an excavation sometimes used as a den out of the breeding season. It is too early to interpret this behavior, but we wonder if anyone has observed similar activities with any other iguanas.

President Shot

I.I.S. President, Robert Ehrig, was shot by an assailant with a 38 calibre handgun on October 16, 1991, while he was supervising a crew which was removing invasive, exotic vegetation from land owned by the South Florida Water Management District and managed by the Nature Conservancy. The suspect fled the scene and was later apprehended in Key West. He was charged with attempted murder and with discharging a weapon from a vehicle. According to the sheriff's report, the suspect drove up in a pickup truck to where Bob and others were working at about 9:00 A.M. He pulled a handgun and fired it four times, striking Bob once. Bob underwent surgery at Fishermen's Hospital in Marathon to repair a fractured collar bone, and is now recovering nicely. No one else was injured in the incident. Bob knows his assailant, having reported him to authorities previously for placing fill in a wetland area owned by the U.S. Fish and Wildlife Service.



Cuban Rock Iguana, *Cyclura nubila* (male). Sally Russ Photography photo.

SWHS Donation

The I.I.S. gratefully acknowledges the donation of $200 from the Southwestern Herpetologists Society. The SWHS has a tradition of supporting conservation organizations and we are pleased to be a recipient of their generosity. This gift will be used to support ongoing iguana conservation programs in the Bahamas and elsewhere.

IN SEARCH OF THE MYSTERY IGUANA

David W. Blair

During a phone conversation earlier this year with I.I.S. Newsletter editor Richard Montanucci, he briefly mentioned rumors of the possible existence of a population of Rock Iguanas (Genus *Cyclura*) from an area where they had never before been recorded. The unsubstantiated reports told of iguanas which had been seen by local fishermen on one or more of the small cays off the west coast of Long Island in the Bahamas. These cays are only ten miles from Sandy Cay, southernmost cay in the Exuma Island chain on which *Cyclura rileyi cristata* is found. Could these rumors be of another natural population of this species, as yet unknown to science? Was it a recently introduced population? Or was it a new species or subspecies never before described?

I checked the most detailed map I had of Long Island and saw that the western extension is actually a jumble of dozens of cays separated by extremely shallow water, mud flats, and sand bars. Such areas are often very difficult to approach, accessible only to shoal draft boats and often only at high tide. A thorough literature search of numerous publications pertaining to the genus *Cyclura* revealed nothing--no mention of iguanas from Long Island whatsoever.

Several weeks later I was reading Bahama Islands - A Boatman's Guide to the Land and the Water, by J. Linton Rigg (originally written in 1949) and revised by Harry Kline in 1973. In the section on Long Island mention is made of an area near the western tip of the cays named "New Found Harbor." A small hand drawn map indicated two good anchorages between three cays which were labeled "Sandy Cay," "Dollars Cay," and "Long Cay." Mr. Kline talked of laying here at anchor for as long as a week in May "watching the endless parade of sharks maneuvering their way through the anchorage onto the banks." Of the nearby cays he adds, "The ubiquitous curly-tailed lizards rattle through the underbrush and the tracked furrows of iguanas can sometimes be seen." Here it was at last--apparent corroboration of the rumors by a well-known authority on the Bahamas.

I dialed Florida information and was able to get Mr. Kline's phone number. He graciously answered all my questions about the area, but had to admit that he had never actually seen any iguanas on the cays, that he had only assumed at the time that that's what had made the tracks. Somewhat disappointed that I was unable to actually confirm the existence of iguanas, I nevertheless felt there was enough evidence to warrant a visit to the cays myself.

Arriving in Nassau, capital of the Bahamas, the second week in June, I visited the Land and Survey Department where I was able to obtain a very detailed map of the Long Island Cays. The official government maps named the cays somewhat differently than had Mr. Kline's book, labeling them from west to east as "Grapetree Cay," "Sandy Cay," "Dollar's Cay," and "Conch Cay." Several days later I was winging my way on Bahamasair to the small airstrip at the largest settlement on Long Island which has the somewhat ominous name of "Deadmans Cay." The only accommodations to be had in this area are at a small guest house run by the Carrol family. They were able to arrange a car rental for me and my first stop was at the home of a local fisherman who agreed to take me in his small boat to the cays the next morning. When asked about the presence of iguanas there, both he and another fisherman present said they had never seen any on cays off of Long Island. However, they both knew of the existence of iguanas on Sandy Cay in the nearby Exumas.

I left the fisherman's house and began a driving tour of the island, where I was taken by the emerald-green rolling hills and marvelous views of the surrounding turquoise seas. Around almost every turn of the single road that runs the length of Long Island was another picturesque old church. Many of these were built well before the turn of the century and most are still in use. In June the mango trees are in full fruit and the ripe purple or yellow ovals were hanging heavy on every tree throughout the settlements. I stopped at one small roadside stand to purchase some and asked the vendor, an older man who had lived all his life on the island, about the presence of iguanas on the cays. "Oh yea, mon," he said, "Day on all da Cays." Surprised at his answer, I pushed him for specific dates and places he had seen them. He mentioned Sandy, Dollars, and Middle (the local name for Conch) Cays by name and indicated he had seen them as recently as two years ago. "You sure they weren't just curly-tails?" I asked. "Oh no, mon," he insisted. "Day like dis." He indicated with both hands that they were over half a meter long.

The next morning, as I loaded my camera gear into the boat, I had no idea as to what I might actually find, but now at least I had renewed hope that iguanas might really exist on Long Island's Cays. We made our way slowly through the narrow channels running between the cays, heading toward their westernmost tip and the open sea. It was somewhat overcast that day and the wind was moderate. We decided to stop at the furthest cay out and then work our way back, cay by cay, toward Long Island. What had been described by my guide Archie as a half hour trip turned into an hour and a half as the wind came up and the seas rose and we began to leave the protection of the jumble of cays and narrow channels and entered the open ocean. Spray from the waves now soaked us and I hurried to get all of my camera gear into plastic bags.

Finally we landed at the outermost cay called, officially, "Grapetree Cay." As I sloshed ashore, huge gray thunderheads began to approach from the west and we could now hear the crack of thunder and see the jagged flashes of lightning. The cay itself was a wondrous place, almost entirely composed of sand so white that it appeared to be covered by snow. There was a small stand of *Casuarina* trees on the south side of the tiny island in which a large osprey nest, weighing hundreds of pounds, had been constructed. The plump white-crowned pigeons were everywhere on the cay and they shot clumsily out of each bush as I walked by. Only the occasional clap of thunder drowned out the loud, boisterous cries of the black-headed gulls which circled overhead exclaiming their displeasure at our presence. I searched the entire cay but saw no signs of Rock Iguanas. There were lots of lizard tracks, alright, but they belonged to much smaller saurians--probably the "lined lizards" (*Ameiva spp.*) which approach 38 cm (15 inches) in length and are present on almost every cay. Nor were there any iguana scats or signs of browsing on any of the low shrubs. We eventually worked our way back to the boat and headed toward the next cay east, "Sandy Cay." These two cays are nearly connected to each other by a mile long strip of sand dunes topped with occasional mangrove trees, but there is one narrow and very shallow channel separating them. In fact, locals talk of both cays as one, calling them collectively "Sandy Spit." We stopped and searched Dollars Cay and Conch Cay in turn, but the story was the same--no sign of iguanas. Obviously my search of Long Island's cays was by no means exhaustive, for there are dozens of cays we did not visit. From the number of local fisherman and spongers that I interviewed, however, I am now of the opinion that there are no iguanas off of Long Island. The confusion probably exists because of the proximity of iguanas on Sandy Cay in the nearby Exumas and the fact that one of the Long Island cays is also called Sandy Cay. Rumors certainly were further fueled by the passage about iguana tracks in the book, Bahama Islands, which over the years must have been read by thousands of people.

Of course, I was somewhat disappointed in not finding any rock iguanas this trip but it was a great experience that I'm sure I will repeat many more times in my life. There are so many islands in the West Indies that no matter how many you visit, there will always be another remote, isolated cay where you may yet find that "mystery iguana."

I.I.S. Bookstore

As a service to our membership, a limited number of publications will be distributed through the I.I.S. Bookstore. We believe this will become a valuable source of information. The following publications are now available:

No. 01 **The General Care and Maintenance of the Green Iguana**, by Philippe de Vosjoli. 1990. $4.40 (including postage); $5.50 (non-members).

No. 02 **Guide to the Identification of the Amphibians and Reptiles of the West Indies (Exclusive of Hispaniola)**, by Albert Schwartz and Robert Henderson. 1985. $19.00 (including postage); $27.00 (non-members).