

# Iguana Times

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Adult male Lesser Antillean iguana, *Iguana delicatissima*, on Sint Eustatius, Netherlands Antilles. Photograph: Ann Reichling

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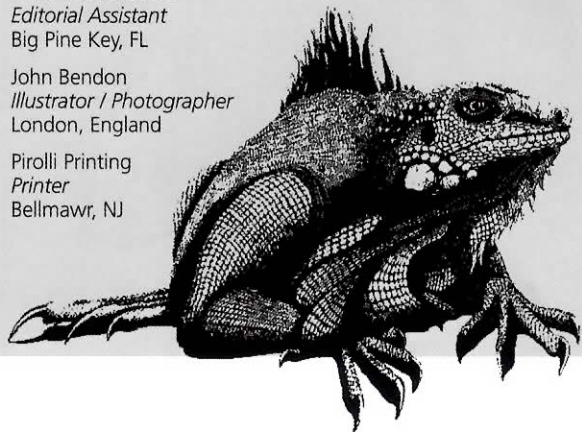
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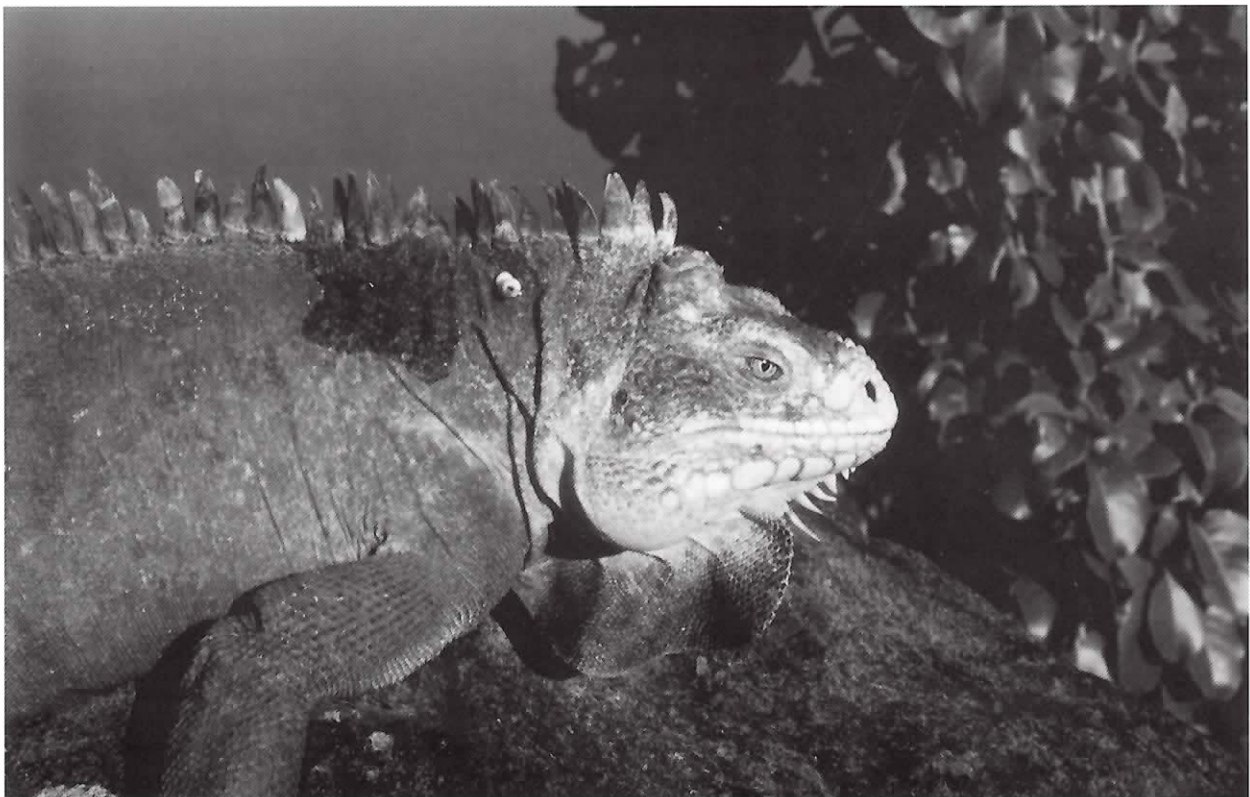
# The Status of the Lesser Antillean Iguana on Sint Eustatius

Steven B. Reichling, PhD  
Curator of Reptiles, Memphis Zoo

“Huge colonies swarm on the Ile Fourche, Les Iles Fregate, and the Ile Chevreau...” That’s how herpetologist James Lazell described the population of Lesser Antillean iguanas, *Iguana delicatissima*, on the small islands just north of St. Barts, in the early 1960’s. Thirty years later they were gone, victims of overhunting by man and overgrazing by an introduced population of goats. Similar problems are occurring throughout the range of this iguana, prompting a status survey and conservation assessment of the population on Sint Eustatius. Last November, a group of biologists interested in this species carried-out the first of what will be a series of studies on Sint Eustatius (“Statia”). Participants were Dr. Steve Reichling (Memphis Zoo), Brian Leysner (CARMABI,

Curacao), Glenn Gerber (Univ. of Tennessee), Catherine Malone (Texas A & M Univ.), and Jaap Begeman (SteNaPa). The survey was funded by the Memphis Zoological Society Conservation Action Network. The following are some preliminary observations.

Six males and five females were captured in the field, and an additional 1.4 captives were examined. Adult females exhibited the gray dorsal coloration and pink or red jowl pigmentation often attributed to males exclusively. In this way the population on Sint Eustatius (representing the St. Kitts bank) resembles the one on Anguilla (the northernmost bank in the species’ distribution) and differs from populations at the southern end of the distribution (e.g. Dominica). We were fortunate to



*Iguana delicatissima* in situ on St. Eustatius. Photograph: Steve Reichling



Juvenile *Iguana delicatissima* on St. Eustatius. Photograph: Steve Reichling

find one hatchling, something rarely seen, and marvelled at how very different in coloration and pattern it was compared to juvenile green iguanas.

All sixteen iguanas actually handled were permanently marked with passive-integrated transponders (courtesy of Fauna & Flora Intl., Mark Day), and by attaching a unique color combination of glass beads to the base of the nuchal crest. In this way, future researchers will be able to individually identify each iguana and measure growth rate, changes in pattern and color, and movements—things we know very little about for this species.

Our primary objective was to estimate density by mark-resight or distance survey methodology. Unfortunately, densities were too low to be quantified by either technique. During approximately 116.5 man hours over 12 days, searching throughout the island, only 23 animals were caught or sighted in the wild! I had visited Statia once before, in 1992 with my wife Ann, and we found the iguanas to be quite abundant at that time. On my return six years later, I was unable to find any

iguanas where they had previously been so dense as to attract attention when escaping through the brush—even when I wasn't specifically looking for them! Clearly, the Lesser Antillean iguana is profoundly less common on Statia than it was six years ago, but we still don't really know just how many remain. A previous population estimate, based on similar experience by Day and Leysner in 1992, was approximately 300 animals. There are probably fewer on Statia today.

Relative densities were estimated as hours searched per iguana seen. The island was subdivided into seven zones which appeared to offer distinct habitat types to iguanas: Quill crater, outer slopes of Quill, foothill scrub around base of Quill, Island Estate development, Cultuurvlakte (central plain), foothills and guts bordering northern hills, and northern hills (Boven, Gilboa, Little Mountain). No iguanas or signs of recent presence were observed in four zones: Quill crater, outer slopes, foothill scrub, and Cultuurvlakte. Hours searched per iguana were: Boven Hills 2.75, bordering foothills and guts 7.3 and island Estates 1.8.

Despite the small sample size, a clear pattern emerged regarding the distribution of Lesser Antillean iguanas on Statia. All iguanas were encountered in one of three areas: the Boven Hills region, the foothills and guts at the margin of these hills, and in the Island Estates development area on the NW slope of the Quill. These localities encompass the most inaccessible parts of the island from the standpoint of threats to the iguanas. Boven Hill and surrounding peaks are physically difficult to access due to the lack of roads and steep slopes with thick, thorny vegetation. Reaching the areas where iguanas live probably requires more motivation than most iguana hunters can muster. The Island Estate properties are retirement villas owned by American citizens, with lushly landscaped yards that are fenced and off limits to local residents hunting iguanas, as well as goats. An effort to search systematically throughout the island was made. Areas where iguanas were easily found in 1992 by Day and Leysner and independently by Reichling, such as the cliffs along Smoke Alley Beach, English Quarter, and the foothill scrub at the SW base of the Quill seem devoid of lizards now. Occasional sightings in these areas by

residents indicate that some remain, but the numbers must be extremely low.

Human predation on Lesser Antillean iguanas for food continues to threaten the population on Sint Eustatius. The problem of feral goats which was noted in 1992 has gotten worse, with over 8,000 animals ranging free over the 11.8 square mile island (a goat to human ratio of 4:1). Reduction of the goat population and corralling the remainder is a sensitive issue which has resisted attempts at being addressed in the past. A feral cat problem, which was not apparent during earlier field work, has developed and may be preventing recruitment of juveniles, although we saw no direct evidence of this. However, the cat population, and its negative influence on iguanas, can be expected to grow unless action is taken. An introduced plant locally known as corallito or coral vine, *Antigonon sp.*, is slowly blanketing large parts of the island, covering native vegetation in a way reminiscent of kudzu in the southern U.S. This plant may represent a serious threat to the total ecosystem of Sint Eustatius, and specifically to iguanas by competing with food plants.



Jaap Begeman examines an adult *Iguana delicatissima* on St. Eustatius. Photograph: Steve Reichling



Venus Bay, St. Eustatius—*Iguana delicatissima* habitat. Photograph: Steve Reichling


Blood samples were collected from 16 iguanas. These will be incorporated into the phylogenetic analyses of the genus *Iguana* and the West Indian iguaniines by Catherine Malone and Dr. Scott Davis (Texas A & M Univ.). Femoral pore samples from males were collected for use by Dr. Allison Alberts (San Diego Zoo) in her analyses.

Three positive developments in the conservation of Lesser Antillean iguanas on Sint Eustatius occurred between the 1992 surveys and the present study. ANGO, the Sint Eustatius National Parks Foundation (SteNaPa), has been established with the responsibility of managing and supervising the marine park and protected lands. SteNaPa Manager Jaap Begeman is a bright and dedicated biologist well-informed on the iguana issue and very interested in the species' protection. In March 1997 a law was passed making it illegal to hunt and kill iguanas on Sint Eustatius, punishable by a 5,000 guilder fine (approximately U.S. 2,860.) However, the law is not universally obeyed. Enforcement of the law usually occurs only when the staff of SteNaPa report a violation. The crater of the extinct volcano, the Quill, and the outer slopes of the old cinder cone above 250 meters has been designated a National Park. More relevant to iguanas was the designation of the Boven-Gilboa Hill/Little Mountain area as a "protected landscape," with further development prohibited. This area appears to support the great-

est number of iguanas on the island. However, goats overrun this region and the landscape is considerably degraded. SteNaPa is currently finalizing a management plan for the Quill, and will then begin to develop one for the Boven Hills area.

When the Sint Eustatius field work was being planned, we hoped to find one of the last healthy populations of Lesser Antillean iguanas in need of protective measures and

management to maintain the situation. Instead we found a dwindling remnant population with good protective measures on paper that are not being effectively implemented. The survey team believes that the most effective target for future efforts should be education and public relations on the island in an effort to inform the local residents and government of the status of their iguanas and need for protection, proposing alternatives or modifications to common practices that are sensitive to the needs of the people. Similar efforts have been carried out successfully through the coordination of Fauna and Flora International.

As the only extant population of *Iguana delicatissima* on the St. Kitts island bank, the Sint Eustatius iguanas are important to the genetic diversity of the species. The current situation on the island is worsening, but there is reason for optimism due to the commitment shown by SteNaPa and the local government in protecting the species. A carefully planned and deftly delivered education campaign will be the key to the long-term survival of iguanas on Sint Eustatius, and implementing this campaign will be a high priority goal among conservationists concerned for this iguana. 

# Where is the Beast of Andros?

*The search for the elusive iguana, *Cyclura cyclura cyclura**

John Bendon

***"We have to hope that there are many iguanas out there, undisturbed amongst the deepness of the brush of the cays in this vast, unexplored land of Andros, but we just don't know..."***

## Port of Miami/22 June 1999

Some of the long-term readers of *Iguana Times* may remember a two page letter I wrote back in 1994 recalling the two years I spent sharing my apartment with a large iguana from the island of Andros in the Bahamas.

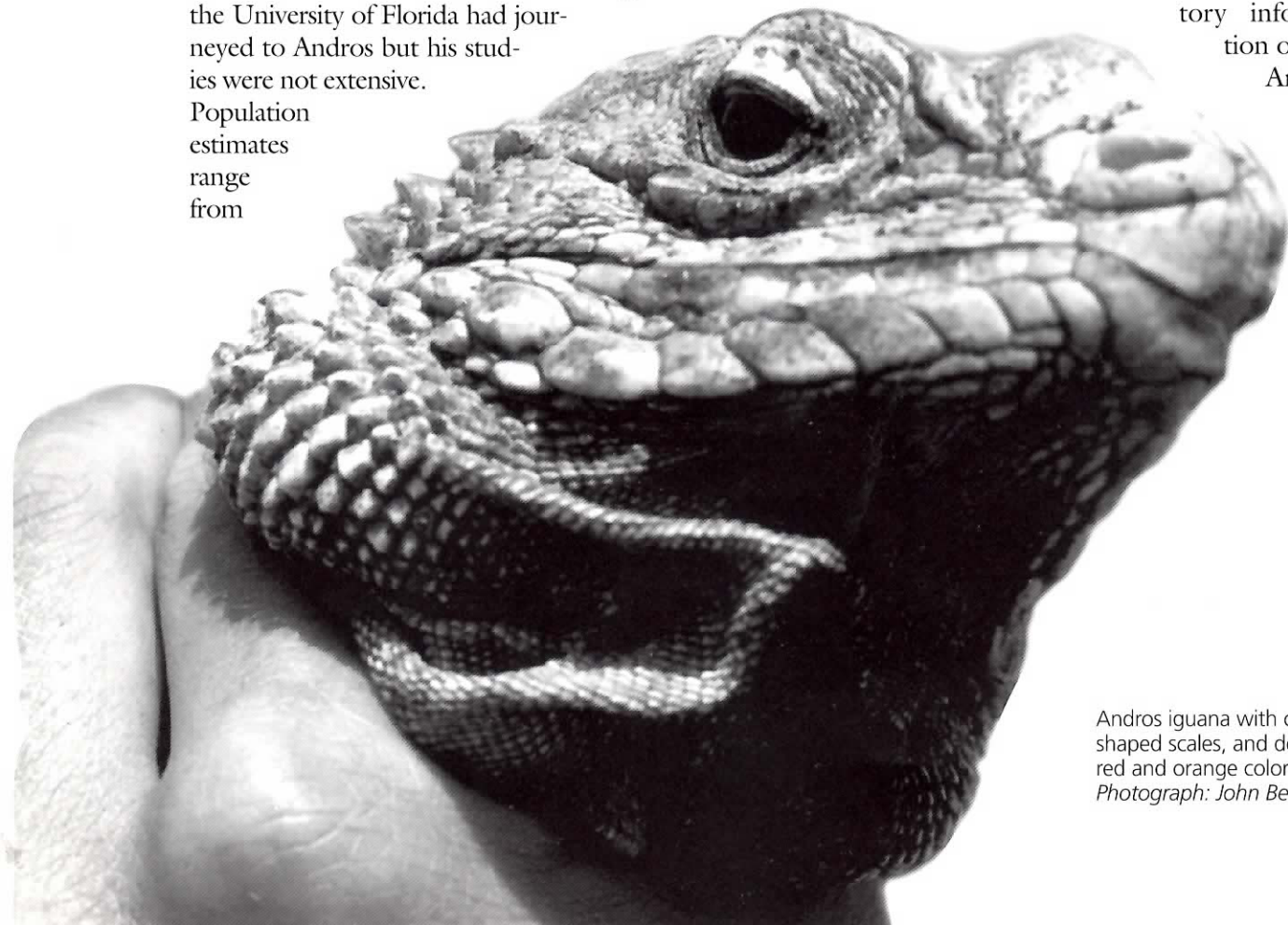
When the animal died in 1987, I vowed that one day I would visit his relatives in their homeland. I also vowed that, if this iguana species needed saving or protecting, I would be ready to help. At that time I inquired about the status of the lizard but no one could give an accurate answer as no expeditions had been launched. Walter Auffenberg of the University of Florida had journeyed to Andros but his studies were not extensive.

Population estimates range from

2,500 to 5,000 but no one has searched all of Andros.

You can imagine my delight when I discovered that the Shedd Aquarium of Chicago, the largest indoor aquarium in the world, was making an exploratory expedition to ascertain the status of these giant, scaly creatures. Depending on the outcome of the trip, a much longer expedition would be undertaken in the future. This trip was led by Chuck Knapp of the Shedd, who studies *Cyclura cyclura cyclura*, *C. c. figginsi*, and *C. c. inornata* (see *Iguana Times*, Volume 7, Number 3). There

is little natural history information on the Andros



Andros iguana with conical-shaped scales, and deep red and orange colors.  
Photograph: John Bendon

iguana and the data collected will be passed on to the scientific community and the Bahamian government.

Andros Island, part of the Bahamas archipelago, is not a single island but rather a collection of several enormous islands and many satellite islands and cays. Much of the area is unexplored and the western portion is mostly uninhabited. The waterways that bisect the island are saline near the coast and become fresher inland. Andros possesses a fresh water table that supplies New Providence with supplementary fresh water. The interior is dense pine woodland, like the Florida Keys, particularly Big Pine Key. The cays are almost completely surrounded by mangroves and marsh. The ground is xeric limestone that is full of sharp-edged holes made by water dissolving away the substrate. It is definitely a very difficult terrain to traverse. There is very little soil on the cays we visited. Vegetation struggles to grow in the limestone holes that have accumulated humus over the decades.



Map: Andros Island.

Above: The xeric limestone shorelines of Andros made accessing the island quite treacherous. Photograph: John Bendon

Right: Mangroves growing around a cay perimeter. Photograph: John Bendon





The eastern coast is protected by the third largest barrier coral reef in the world. Ten thousand years ago the sea level was approximately 260 feet lower. All those small islands including New Providence, Eleuthera, Cat Island, Great Exuma, and Long Island were part of one landmass known as Paleoprovidence. Abaco and Grand Bahama made up another landmass. As the ice melted, the sea level rose and gave rise to the familiar Bahamas chain.

Taking this into consideration, we could assume that the iguanas known as *Cyclura cyclura figginsi*, *C. c. inornata* and *C. c. cyclura* were all one species in that era and later diversified into subspecies when they became stranded in their various locations as the sea level rose.

The animal we are concerned with is known as *Cyclura cyclura cyclura*. The name tells us that it was the first type of the species to be recognized and identified. The misspelling of the species name most likely occurred as an accident but is now standard because original spellings remain the same in scientific literature unless they change taxonomic categories. Cuvier originally described the animal as *Iguana cyclura* in 1829.

### The Expedition Begins

We spent the first night on the boat in Miami and the next day made our way towards Bimini to clear Bahamian customs. The boat, Research Vessel *Coral Reef II*, is maintained and run exclusively by the Shedd Aquarium. Miami is its base and it travels all over the Caribbean taking parties

of schoolchildren, students or researchers to different locations for marine and reptile study and observation. It is a comfortable boat, capable of sleeping sixteen people.

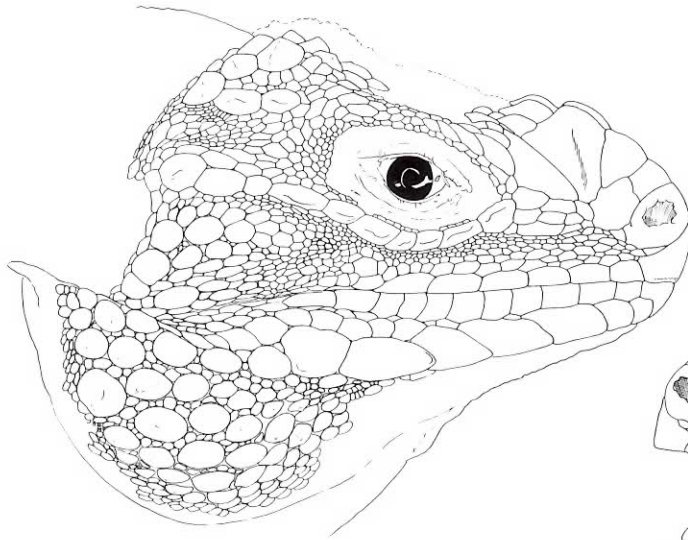
We travelled the second day and night and dropped anchor in the Middle Bight of Andros early the next morning. We awoke to the blue tongue of the ocean and a good breakfast. This was Thursday 24th June, and a local guide accompanied us to show us the cays he thought would be best for finding iguanas.

We had three small boats to transport everyone. Skimming over the flat sea we found ourselves accompanied by two bottle-nosed dolphins, who played and swam under our boat. We saw flying fish and, upon landing at the first cay, two lemon sharks lazily swam in the shallow, clear waters. We were all very excited and set about searching for our first iguanas. After an hour and a half, we were pleased to find our first iguana, a small animal about 2 years old. Later, we went to

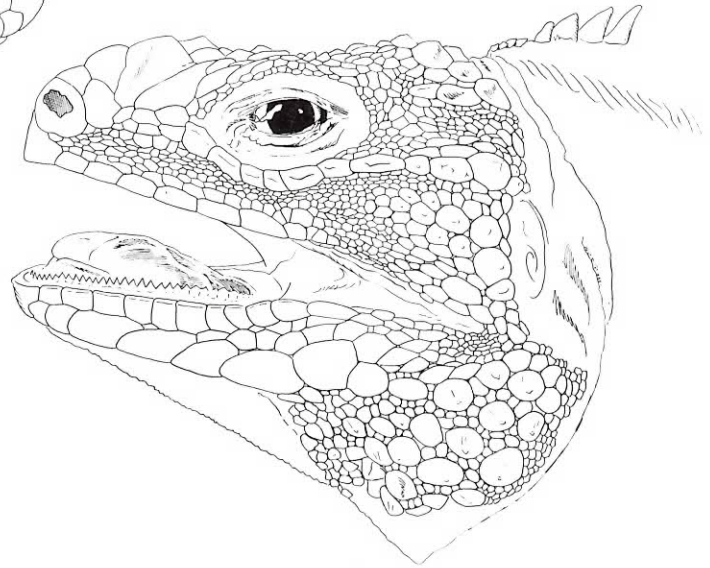


Above: A two year-old Andros iguana, *Cyclura cyclura cyclura*, the first iguana captured during the trip. Photograph: Kim Hasselfeld

Left: After being weighed, measured, and having blood drawn, the iguanas were marked with white paint for future identification. Photograph: John Bendon



Left: Dome-scaled, adult *Cyclura cyclura cyclura*. Below: Dome-scaled adult *Cyclura cyclura cyclura*. Illustrations: John Bendon



a second and third cay but caught no more lizards that day.

On the second cay we initially saw tail drags and lizard scat which caused us to remain optimistic. During our search we heard a loud rumbling in the bush and one participant saw a large iguana at a distance but that was the closest that we came to an iguana. That afternoon we went back to the *Coral Reef* wondering just how many of these beasts there were, and whether we would be able to find them.

On Friday we went to a cay where iguanas were known to have lived in the 1960's. Sixteen people spent a total of 40 man-hours combing the eastern end of the cay with no results. Later we landed at the other end of the cay and videotaped a large specimen. There were no further sightings that day. Chuck captured one iguana on Saturday, a gravid female of 750 grams that had a snout-vent length of 27cm\*. The female was captured next to a termite mound where she was preparing to excavate a nest burrow. Throughout the study we observed many female iguanas resting by their termite mounds and guarding them from other opportunistic females. This unique behavior is displayed because the islands are devoid of suitable nesting substrate and the iguanas are forced to use the mounds for egg incubation. Walter Auffenberg

first reported this behavior and our experience served to confirm his observations.

In the evenings, the group would discuss the plight of this elusive animal. Was it headed toward extinction, decimated by hunters and filling up the stew pots of Andros locals? It is known that the local people hunt iguanas for supplemental food. One day I wore a T-shirt bearing a large line drawing of an Andros iguana head. During an evening foray into a local village, three different men pointed to my shirt and mentioned how tasty iguanas were. Some locals still hunt and eat the animals just as their fathers and grandfathers did. Perhaps time and an integrated educational program will raise awareness of their unique reptilian neighbor. At present, we have only an idea of how many animals might remain undisturbed amongst the dense brush but we cannot know for certain without searching the whole island.

That evening we weighed anchor and headed south hoping for better fortune. The moon was full and its image fell on the churning waves behind the vessel before breaking into fragments of rippling creamy-colored liquid. We travelled

\*Editor's note: the date of the Shedd Aquarium's 2000 Andros trip has been scheduled six weeks earlier to minimize negative impacts on nesting females.

throughout the night until we were approximately halfway down the island. We rose early, ate breakfast and departed for the first cay at 8:30 a.m. Sunday was our lucky day. As we approached the shore, someone cried out "I see an iguana on the beach!" We all disembarked the small boats and came ashore with our nets, cameras, food and water, prepared for an exciting morning's work. Since we had been able to spot an iguana so quickly, there just had to be more.

Our method of catching the iguanas made use of large nets and teamwork. Once surrounded, the animals would eventually run into someone's net. It was tricky at first because they are fast and run an erratic course. Within the hour, three had been caught, tagged, and released. The lizards are always released in the exact same place that they were captured in order to minimize stress on the animal.

To capture iguanas, people ventured into the bush in pairs or trios. Periodically, someone would be spotted in the distance with a pillowcase slung over his shoulder and walking slowly toward our temporary camp. By the end of that day, we had captured and tagged 11 iguanas. The largest iguana of the expedition (6.45 kg) was caught that day.

The large iguanas were very strong and difficult to handle. It required great care and practice to hold an iguana while it was being measured. One of the Shedd personnel was bitten during the measuring process. Luckily, he was fine and no other incidents occurred during the trip.

While roaming the cays, we discovered that the iguanas eat the large crabs that hobble over the shore. Some iguanas such as *C. carinata bartschi* on Mayaguana are known to eat scraps of conch but here, we found scat containing crab claws. These lizards are obviously opportunistic and will consume food items that are convenient. Other known food items include guanaberry and seagrape.

After a successful day, the participants were optimistic that iguanas may still exist in decent numbers. There are many isolated cays on Andros and it will take years to cover them all. Perhaps we surveyed the wrong cays? Still, we must be cautious in our speculation because cays that had previously been inhabited by iguanas no longer appeared to sustain great numbers.

Monday proved to be less productive. We surveyed a very small cay and observed a juvenile iguana, which made a quick dash down a solution



A young adult *C. c. cychlura*, with conical-shaped scales. Photograph: John Bendon



Left: Chuck Knapp (Shedd Aquarium) and Roger Cogan (Phoenix Zoo) insert a microchip into one of the captured iguanas. Photograph: John Bendon

Below: The captain of the *Coral Reef II* holds the largest *C. c. cyclura* caught during the expedition. Photograph: Kim Hasselfeld



hole. A larger cay was nearby so we turned our attention to surveying the interior. We captured a large female (3.75 kg) by a termite mound where we suspected she had recently deposited her eggs, as her belly skin was loose and her tail somewhat thin.

We moved to another cay and continued our search, capturing a first-year juvenile. The fourth cay of the day was quite large with the north coast 10 km away. Here, we captured four additional iguanas. It had been an exhausting day and I remember that night everyone went to bed very early except Chuck Knapp who was writing up notes while I was making maps. It didn't seem to matter how tired we were because we were too excited about the week's findings.

The next day was the last and it turned out to be informative and interesting as we revisited the cay where we had previously captured 11 iguanas. We searched a different area of the cay that was separated from our old position by a narrow waterway. Of the three captures we made that day, the first was the largest. This animal struggled so much that he had to be held in place by Lou Roth, one of the *Coral Reef* captains. Lou is a big guy and the iguana still looks big compared to him.

This was the cay where I discovered (by making maps and asking the others where they caught their animals) that all the nests were around the perimeter. Nothing was found beyond 16 meters from the beach and all were found near termite

mounds. It also appeared that eating landcrabs was a regular pastime for the iguanas. We often saw the crabs walking through the wood.

On that last day, I went off with three other people in the opposite direction from the rest of the party. We were determined to catch a large animal that had been spotted earlier by John, a young student in the party who was very good at diving into the bush. The four of us spent 12 man-hours searching for the elusive lizard. During our search, we spotted a couple of very young juveniles, and some adults but we couldn't seem to catch anything. Then, suddenly, a large iguana appeared, apparently the one John had seen earlier. It was surrounded and eventually bolted for the beach where it ran into the net of a very surprised woman of the party, Marcia. "I got one, I got one!" she exclaimed, and when I crept out of the woods, sure enough she had. It was her first, and she was ecstatic. It was the last iguana to be caught on the trip. John carried it back to camp to be processed. It also turned out to be the largest female caught, measuring 49.5 cm from snout to vent, and weigh-

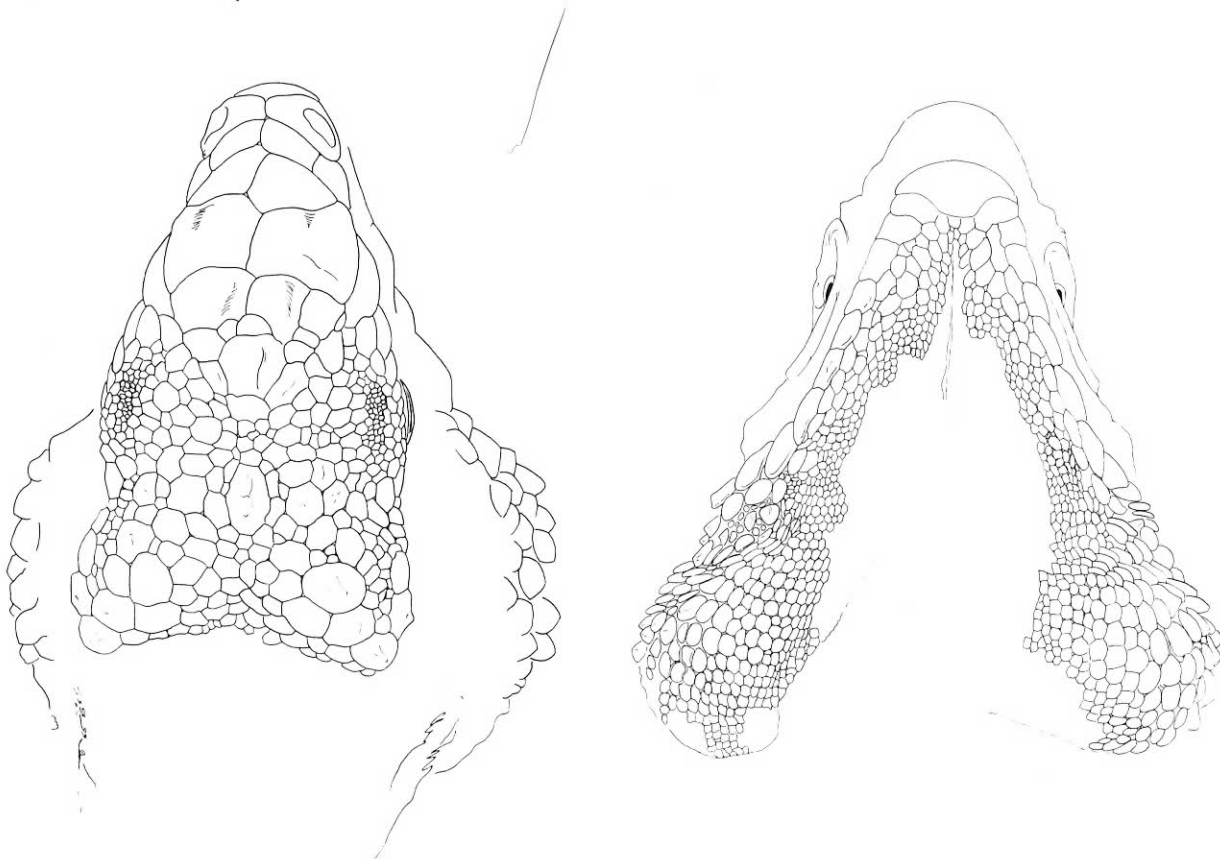
ing 4.75 kg. During the procedure, while sexing the animal, someone remarked that it couldn't be a female as they were smaller than that. "The ones we've seen so far have been smaller," I replied, "but now we know different." This particular animal reminded me of my own Andros iguana, Pinky. She had the same coloring and the same eyes. When I held her, she did not struggle but instead seemed to relax. It was uncanny, as if the creature knew me. Before leaving the cay, I scratched an 'X' on a rock to mark the spot where I had come face to face with Pinky's relatives. I had achieved my goal. I had indeed gone to Andros to make sure they were still alive and running around, and had taken part in something that was the beginning of a project which will go on for years and which will protect and conserve the habitat of these amazing lizards. We all felt sure that there were many more of them on this particular cay. We had crawled through dense brush teeming with mosquitoes and walked for miles. We had been bitten, soaked and exhausted by the sun but despite all that, we were elated that we had found all these iguanas. I, for one, will return next year.

So that was the end of our wonderful experience. Most people spent Wednesday relaxing as the *Coral Reef II* cruised back to Miami. We all departed and went our different ways with a feeling of achievement. I often still think of this very special trip where all the participants had one love in common—those iguanas—and the memories of those ten days will take a long time to fade. Good luck to you, *Cyclura cyclura cyclura*. There are many good people looking after your welfare so I hope your future will be secure.

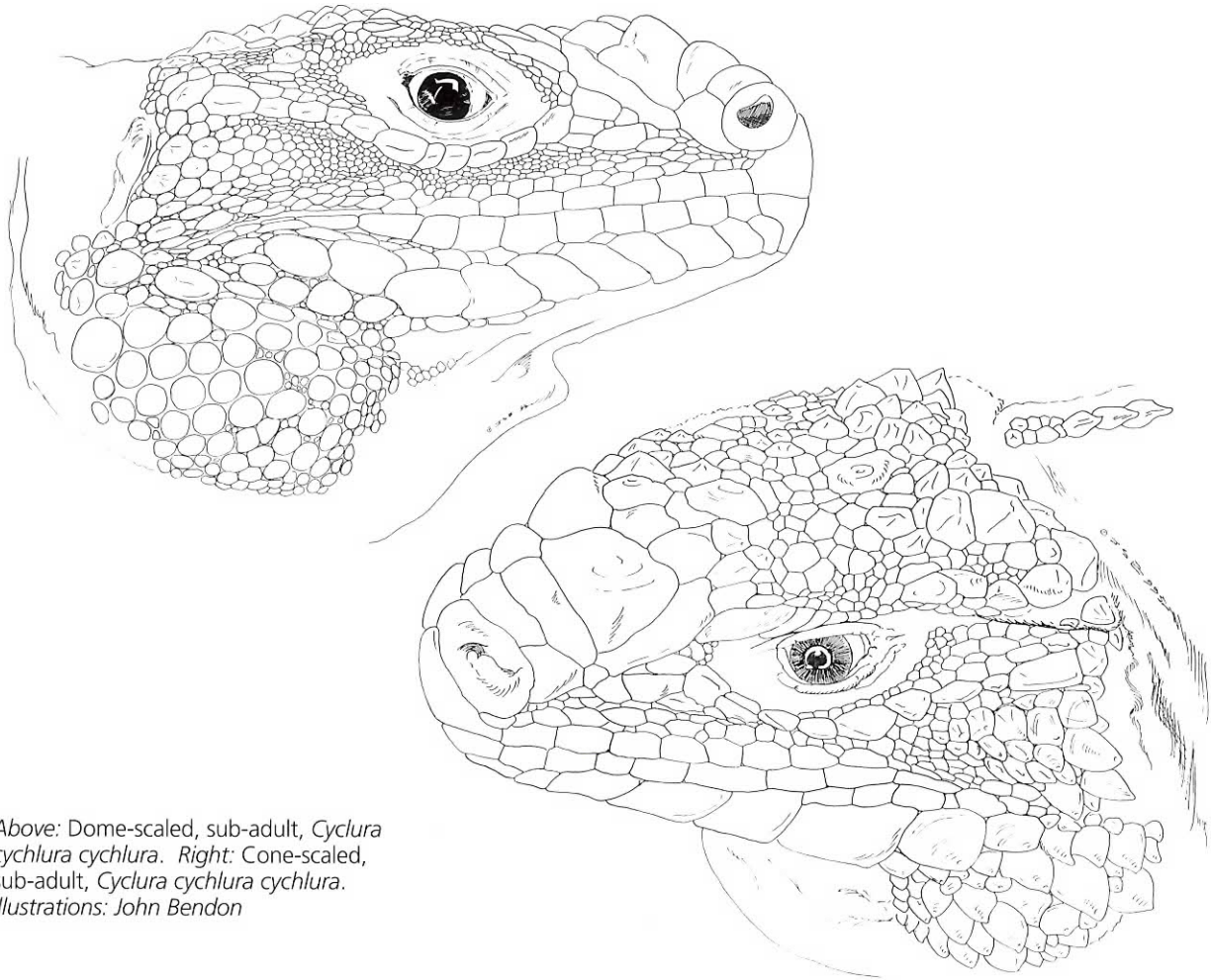
### On Morphological Variations

Having now closely observed and photographed 23 Andros iguanas of varying sizes and ages, I can say that there seem to be two distinct scale formations amongst the lizards in the area that we surveyed. All the animals observed have scales in the same configuration on the head but some lizards have dome-shaped scales while others have conical-shaped scales.

After viewing video footage of an iguana that was not captured, I believe that there is a third variation where the head is much whiter overall with



Left: Dome-scaled, adult *Cyclura cyclura cyclura*, lateral view of head. Right: Dome-scaled, adult, *Cyclura cyclura cyclura*, ventral view. Illustrations: John Bendon



Above: Dome-scaled, sub-adult, *Cyclura cyclura cyclura*. Right: Cone-scaled, sub-adult, *Cyclura cyclura cyclura*.  
Illustrations: John Bendon

black tinges in places on the snout. The Andros iguana that I had at home in the '80s was pale pink and white-faced with black tinges similar to the aforementioned lizard. This might actually be a sign of ill health or age. Certainly my own animal was not a healthy creature. Since we covered only a fraction of the total landmass of Andros it is possible to speculate that there may be further variations.

There was an old, large female Andros iguana at Ardastra Gardens, Nassau, which also seemed different. Her head scales were mostly pale orange and flat. She had access to natural sunlight and was fed a diet of fruit and vegetables as well as some greens and a supplement containing meat. Perhaps this incorrect diet accounted for the color or, alternatively, this could be a fourth variation.

Since all the animals with conical scales and an increased degree of red and orange coloration were considerably smaller and most likely younger

than the other iguanas, another possibility suggests itself. Iguanas, unlike other lizards, have a certain degree of ontogeny. They are not born as tiny reproductions of full adults but actually have infantile proportions, which change as they mature. As we have not seen these *Cyclura* at all stages of development from hatchling to adult, one might hypothesize that the animals with conical-shaped scales are merely at an earlier stage of development than those with dome-shaped scales. Once the blood samples have been analyzed, any genetic differences will show up. If all the data is cross-checked with photographs and cay locations, it might be possible to establish that one type came from one cay and the other type from another. This would show divergence from cay to cay. If two types came from one cay this would lend credence to the growth development theory. More trips are needed to study more specimens.

Another variation I noticed is that dome-scaled lizards have a scale count of 7, 8, or 9 on the very large scales of the lower jaw. The conical-scaled iguanas had 7 or 8 lower jaw scales. An instance of 9 scales was observed in one photograph and 10 scales were counted in one young specimen. This young iguana had dome-shaped scales and a pinkish white head. (This conflicts with my idea of younger animals having conical scales). I have seen these variations in many examples of Cuban iguanas (*Cyclura nubila nubila*) and, indeed, the jowl scales of the Cuban iguana vary substantially.

Can these animals swim from cay to cay? Isolation is an important point in island biogeography. The more isolated groups of the same species are, the more likely they will vary genetically. Gigantism is another point. With unlimited food, space, and sunlight, and a lack of predators, reptiles never really stop growing. The two *Geochelonia* species of tortoise, from Aldabra and from the Galapagos Islands are a good example. Predators now include man and as the larger tortoises are destroyed, the smaller ones remain, telling an incorrect tale that the race is smaller in body size than it really is. We have only seen iguanas up to a certain size. There are stories, or mutterings, from the locals on Andros concerning monster iguanas from four to six feet in length. I have no doubt that, in some totally unexplored part, with the right

conditions, huge, pink-headed creatures may live out long and peaceful lives.

Can iguanas swim from cay to cay? There are certain factors involved: the temperature of the water, the body mass of the iguana and the proximity of the next cay. Komodo Dragons (*Varanus komodoensis*) are known to swim 6 km between islands where they live. A study a few years ago, where the exhaled breath of Komodos was blown into balloons and tested, revealed that they are partly warm blooded. This was linked to the size of the animal. Logically, if there are large iguanas, extra-warm water and cays within 1500 meters, it could be possible to swim the distance without losing too much body heat. Losing heat causes the reptiles to be too slow and stiff to complete their journey. In a small lizard, too much heat is lost too quickly (Newton's second law of thermodynamics) and the trip is not feasible. The other question, of course, is why would they even bother to swim to another cay. They wouldn't be able to see one and wouldn't know that it was there. So the answer is yes, the larger ones can probably do it if conditions are right but, no, they probably don't, unless carried by accident by some floating object or hurled by a hurricane-force wind (probably resulting in death). It is open to speculation.

I eagerly await the results of the blood samples so that we may see if we have a *C. c. cyclura*, which is different from the one with which I am already familiar.



The research vessel, *Coral Reef II*, with all the participants. Photograph: John Bendon

Text, map, photographs and illustrations by John Bendon ©1999 J.S. Bendon, and a kind acknowledgement to Karen Furnweger for her photograph.

Photographs by Kim Hasselfeld ©1999 Shedd Aquarium.

## THE BIG IGUANA CONTEST

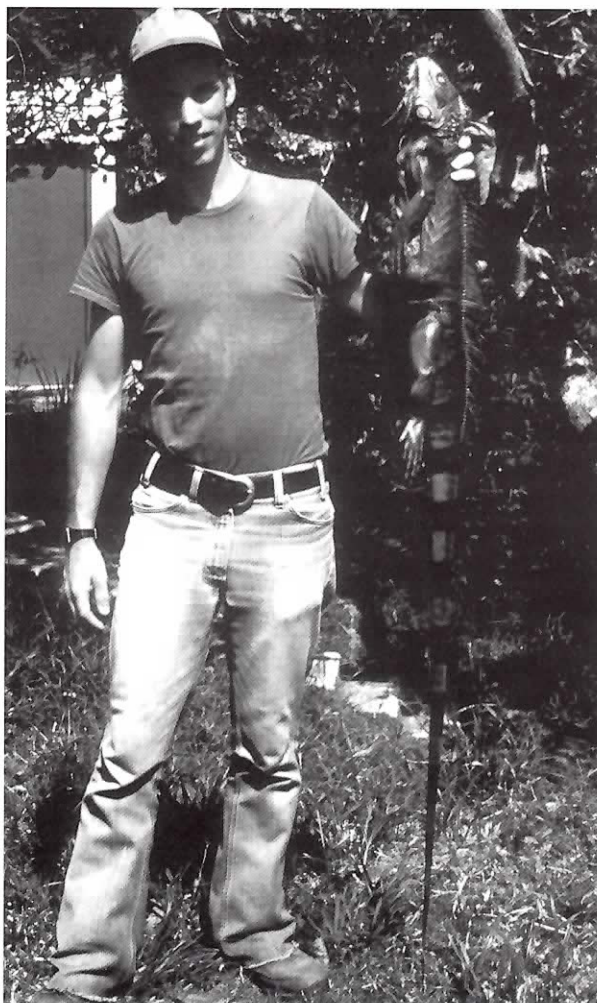
US Geological Survey  
Biological Resources Division  
4512 McMurry Ave.  
Fort Collins, CO 80525-3400

22 June, 1999  
(970) 226-9471  
(970) 226-9230 (FAX)  
gordon\_rodde@compuserve.com

Dear Ms. Gutman,

I enjoyed your ditty on large iguanas and thought I would submit a photo taken of Brian Bock and a large male iguana he encountered in Panama. I would let him speak for himself in this case, but he is in Colombia and is presumably unaware of your request for photos. Naturally this photograph, which was taken around 1982, does not have the requested yard stick, but Brian is about 6'1" tall, which you can verify by contacting him (should that become vital, try vpaez@epm.net.co). As you know, Brian has published a number of important papers on the genetics and biology of the green iguana. I've appended a list of the ones that I know about. Have fun with your contest!

Cheers,  
Gordon Rodda



There were some interesting responses to the Really Big Iguana Contest and I was amazed by the wealth of stories that readers shared with me.

There were many tales of iguanas that are heavier than Asimov and even a few that are longer but there was only one entrant who could come up with any evidence. The winning photo was submitted by Dr. Gordon Rodda and shows a Colombian iguana held by scientist Brian Bock, a man who is 6' 1" tall.

On a sad note, my favorite entrant in the contest wasn't a particularly large animal, but she was a very beautiful and much loved one and I had the privilege of meeting her personally before she passed away. On behalf of the IIS, I would like to extend our condolences to long-time member, Dr. Timothy Durkins, on the death of his 6 year-old Rhinoceros iguana, Sukieman Barbudie. Her death, according to Dr. Nicola Melliar-Smith who performed the necropsy, was due to widespread infection of the liver which

affected all of the internal organs. Please see the Bark Alert in the Iguana Newsbriefs.

One email correspondent from Maryland claimed to have a 6'6" male green iguana but he didn't send me a picture. And then there is the legendary PeeWee who had once belonged to Jayme Gordon. Jayme claimed that PeeWee was 6'11", but every time the story was told, PeeWee seemed to get even longer and, again, there were no pictures. The fishiest story came from a fellow at a New York animal shelter who claimed to have once owned an iguana that weighed 25 lbs. and was 14' long. Any lizard that long and weighing that little would have been a toothpick! It only proves the original premise of my story, that people are exceptionally poor at estimating the length of iguanas.

Dr. Rodda will receive one of our terrific new International Iguana Society T-shirts. Congratulations, Gordon!



## LIZARD LETTERS

### UTILA'S BLACK IGUANA BLUES

Last month when I attended the International Herpetological Symposium in San Diego, I had the pleasure of meeting Dr. Gunther Kohler from the Senckenberg Natural History Museum in Frankfurt, Germany. I have followed Dr. Kohler's work with the black spiny-tailed iguana, *Ctenosaura bakeri*, for several years through the International Iguana Society's publication, *Iguana Times*. *C. bakeri* is known only from Utila Island in the Caribbean Sea off the coast of Honduras. This species was thought to be extinct until its rediscovery in 1994. This was partly due to the fact that almost all of the species in the genus *Ctenosaura* are saxicolous lizards, but *C. bakeri*'s distribution on Utila is limited to the mangrove swamps. Upon the rediscovery, the Senckenberg Nature Research Society and the Frankfurt Zoological Society implemented the "Conservation Project of the Utila Iguana, Honduras." A breeding and research station was built which allows for continuous work on the project. Scientists, conservationists and volunteers have done a wonderful job not only breeding and releasing these highly endangered lizards, but, more importantly, educating the residents of Utila about their unique iguana. Under Gunther's direction, the program has been highly successful.



At the Symposium, we all sat in the darkened room anticipating a fascinating slide presentation about *C. bakeri*. Gunther began by telling us that only hours prior to his talk, he received a message from his team on Utila Island. The owner of Utila Lodge was illegally slashing, burning and draining the mangroves. Gunther urged us to help stop the destruction by writing protest letters to the proper parties on Utila. Needless to say, Gunther had the right audience, and numerous individuals approached

him for additional information. Within days, the CHS posted his "call for letters of protest" on our website. At our next board meeting, I was given permission to send such a letter on behalf of the Chicago Herpetological Society.

I encourage our members to write letters as well. This is an opportunity to help with the conservation of a spectacular iguanid. What a shame it would be to sit by while events are taking place that could expedite the demise of this species. Following is a sample letter which may serve as a guideline. Please note that the approach is one of education, not harsh words. The letters do not need to be formal; notes can be sent expressing concern.

Correspondence should be sent to the mayor of Utila:

Mr. Monterrey Cardenas  
Isla de Utila  
Islas de la Bahia  
Honduras, C.A

with a copy to:

Mr. Jim Engel  
Utila Lodge  
Isla de Utila  
Honduras, C.A.

and:

COHDEFOR  
Dpto. Areas Protegidas y Vida Silvestre  
lug. Angel Barahona  
Apdo. Postal 1378  
Tegucigalpa  
Honduras, C.A.

I have been in touch with Dr. Kohler for several weeks, and he is keeping me posted with the progress of the attempt to halt the mangrove destruction. If you would like to learn more about the Utila Iguana project, you can call me at (773) 477-3645, or access the information on the Internet through the website of the Senckenberg Natural History Museum:

<[http://senckenberg.uni-frankfurt.de/fis/herp\\_ut.htm](http://senckenberg.uni-frankfurt.de/fis/herp_ut.htm)>

or through the CHS website:

<[www.chicagoherp.org](http://www.chicagoherp.org)>

under "Herp Headlines."

All efforts are greatly appreciated.  
Lori King

[SAMPLE LETTER]

(continued on next page)

# LIZARD LETTERS (cont.)

August 21, 1999

Mr. Monterrey Cardenas  
 Mayor Municipalidad  
 Isla de Utila  
 Islas de le Bahia  
 Honduras, C.A.

RE: Destruction of mangrove forests by Utila Lodge

Dear Mayor Cardenas:

It is with great concern that we are compelled to write to you. Recently, we have learned of the destruction of the mangrove forests of Utila Island. This is unfortunate because the mangrove forests harbor a great many levels of life in the ecosystem. Once such important flora and fauna are destroyed, the negative effect throughout your island will be widespread. Often such destruction is permanent - the ecosystem may never fully recover.

This may have a profound effect in several ways for the inhabitants of Utila. It is our understanding that scuba diving, snorkeling, and deep sea diving are among your most popular tourist attractions. Many important fish species inhabit the mangroves or require them for breeding habitat. Destroying their habitat will eliminate these fish and the reason for divers to visit Utila. The program, "Investigation and Conservation of the Utila Black Iguana" through the Frankfurt Zoological Society and the Senckenberg Natural History Museum is becoming quite well-known. The conservation efforts of this group of scientists on behalf of this endangered iguana species are being applauded worldwide. People are becoming increasingly aware that your spectacular iguana exists nowhere else in the world except in the mangroves on beautiful Isla de Utila. This type of environmental program is excellent in generating international interest in the unique qualities of Utila.

We urge you to make every effort to stop the destruction of Utila Island's mangrove forests immediately. Having the foresight to protect what is unique to your island will insure the future of Utila and its residents for generations to come.

*Sincerely,*

*Lori King  
 Board of Directors  
 Chicago Herpetological Society*

*cc: Jim Engel  
 COHDEFOR*

Jerry Cole  
 Purlands Farm  
 Bridport Rd.  
 Dorchester  
 Dorset, DT2 9DS  
 U.K.

Tel: UK 1305 261302

Fax: UK 1305 261446

E-mail: B.J.Herp@natures-image.co.uk

20.09.99

Attn/ I.I.S.

Further to the appeals I put out on your behalf, to help fund work that benefits *Cyclura*, I have just returned from a boozy weekend at the reptile show in Hamm, Germany, with a British contingent of herpers. During the lively evening conversations, *Cyclura* were mentioned, and some piss-taking was given, to the effect that I must be loaded (just a vicious rumor) to be able to give my money away! In reply I was able to tell them what a bunch of tight wads they were (ugly ones at that), and point out that there are always new projects that need funding, so it wasn't too late. At this point Jim Pether told Terry Thatcher he would match anything that Terry put on the table. Terry reached for his wallet and after the moths had cleared, there was a £20 note on the table. Jim, true to his word, matched it. I joined them and so on around the table they gave what they could afford, with only one exception. I would therefore like to thank the following bunch of reprobates for their generosity and a great weekend: Jim Pether, Terry Thatcher, Jon Coote, Ray Hine, Dave & Lyn Appleton, James Blackburn, Steve Deerham, Richard Haigh, Tim Hallen, Roger Pewtress and Mark Wooton. The unmentioned exception I am sure will send you a donation, next time he sells a Blackhead or Chondro, and has some £ in his pockets. I therefore enclose another donation of \$340 for the I.I.S. to use for the benefit of *Cyclura*.

*Best Regards*

*Jerry Cole*

# IGUANA NEWSBRIEFS

## Iguana Smugglers Sentenced

November 18, 1999

NEWS RELEASE:

TWO SOUTH FLORIDIANS SENTENCED FOR ILLEGALLY TRAFFICKING IN WEST INDIES TORTOISES AND RARE AND ENDANGERED IGUANAS

Thomas E. Scott, United States Attorney for the Southern District of Florida and Lois J. Schiffer, Assistant Attorney General for the Environment and Natural Resources Division of the United States Department of Justice, announced today that two South Florida residents, DWAYNE D. CUNNINGHAM, 41, and ROBERT A. LAWRACY, 32, were sentenced in federal court in Fort Lauderdale for illegally trafficking in West Indian reptiles protected under domestic and international law in violation of the Lacey Act (the federal law banning wildlife trafficking) and the federal smuggling and conspiracy statutes.

The Honorable Jose A. Gonzalez sentenced CUNNINGHAM to 14 months in federal prison for his role in the illegal smuggling scheme. His co-defendant, LAWRACY, received a sentence of 24 months in prison. Both were also sentenced to supervised release for a period after they serve their prison terms.

CUNNINGHAM and LAWRACY were found guilty in May of conspiring with one another to violate the Lacey Act, the federal smuggling statute and the international treaty known as "CITES," the Convention on International Trade in Endangered Species of



Fauna and Flora, which is enforced through the endangered Species Act. In addition, CUNNINGHAM was also sentenced on a substantive Lacey Act conviction, for having sold two smuggled Virgin Island Rock Iguanas and LAWRACY was sentenced as a result of being found guilty of importing 49 undersized red-footed tortoises contrary to law.

According to court records and the evidence at trial, from 1992 through 1997 the defendants poached and trafficked in CITES-protected reptile species that originated on various West Indies islands. Several species and sub-species of *Cyclura* (commonly known as Rock or Ground Iguanas), including the White's Cay Rock Iguana and the Exuma Island Rock Iguana, both of which exist only in the Bahama Islands, and the Anegada (British Virgin Islands) Island Rock Iguana, as well as Lesser Antillean Iguanas and red-footed Tortoises, were smuggled into the United States aboard cruise ships touring the West Indies that employed CUNNINGHAM as a comedian and LAWRACY as a dive instructor. The species and sub-species of *Cyclura* are currently threatened with extinction, with wild



Two of the smuggled *Cyclura pinguis* that the defendants stole from Anegada and smuggled into Florida. Photograph: I.I.S.

populations numbering in the low hundreds for the White's Cay and Anegada Rock Iguanas, and are listed on Appendix I of CITES, the highest level of protection available under the international treaty. The Rock Iguanas and Lesser Antillean Iguanas were often marketed for as much as \$1,000 each.

The evidence also established that in an effort to conceal the smuggling of Exuma Island Rock Iguanas, CUNNINGHAM, a former Ringling Brothers Circus clown and entertainer on cruise ships, procured from the United States Fish & Wildlife Service a permit for the "captive breeding" of species listed under the Endangered Species Act to create the impression that his sale of these reptiles stemmed from a viable domestic breeding program rather than the smuggling of wild-caught animals. While some species of Rock and Ground Iguanas have been successfully bred in

captivity, experts testifying at trial noted that the rare species involved in the case were notoriously difficult to propagate in captivity. In fact, the investigating agents determined that of the approximately 20 specimens of one species smuggled by the defendants, the *Cyclura rileyi* from the Bahamas, none survived for more than a relatively brief period in captivity and no off-spring were produced. It was necessary to examine the remains of some of the specimens and conduct DNA testing to establish the actual species of some of the smuggled animals. The President of the Bahamas National Trust testified at trial that public education programs and other conservation efforts in the Bahamas are underway seeking to preserve these unique reptiles, which are featured on a special printing of the Bahamian Dollar, commemorating the 500th anniversary of the discovery of first landfall by

## IGUANA NEWSBRIEFS (cont.)

Columbus in 1492.

In court today the government urged that significant periods of imprisonment result from the convictions, in part due to the substantial numbers of individual specimens illegally taken from some of the small natural populations of these rare species of reptiles. It was argued to the court that although science could not predict whether the loss of so many *rileyi* might doom the species in the future, it could be said with scientific certainty that the loss of so many members of such small populations greatly reduced the genetic diversity of the wild population and placed the species at substantially greater risk of extinction. It was further noted that the United States acts in partnership with the world community in these cases, seeking to preserve the natural heritage of the peoples of the home ranges of these species, such as the Bahamas, who have joined the CITES preservation effort and enacted laws to protect their threatened wildlife.

Mr. Scott commended the Special Agents of the United States Fish & Wildlife Service for their work on this case. Scott, alluding to the multi-billion dollar a year illegal trade in endangered and threatened wildlife, reaffirmed his commitment to the international effort to secure the future of these precious resources by vigorously investigating and prosecuting the poachers and profiteers who disregard the conservation laws and the collectors who fuel the market. Lois J. Schiffer, Assistant Attorney General for the Environment and Natural Resources Division said, "Trafficking in rare species threatens our

environment. We will take whatever steps necessary, here and abroad, to stop the black market in these protected species."

The United States was represented in this matter by Peter Murtha, Senior Trial Attorney, United States Department of Justice, Wildlife & Marine Resources Section and Thomas Watts-FitzGerald, Chief of the Environmental Crimes Section at the United States Attorney's Office in Miami.

Source: U.S. Department of Justice

### Wanna' guana?

**Island's lizards subject of study**

By Terry Allen Williams

Iguanas anyone? Most islanders wish they would just go away. Some are even helping the lizards along.

"They're a pest," said Holly Frazetta-Taylor, who runs and operates Holly's Collectibles in downtown Boca Grande.

"They're all over the place. It's ridiculous. And nobody's doing anything about it. In Pennsylvania they have a deer hunting season. We ought to have an iguana hunting season down here.

"We could arm everybody with BB guns and let people go after them. I understand they make pretty good eating. The tails are supposed to taste like chicken."

This prompted her husband Richard Taylor to break into a verse from a popular song that went something like, "I've been down in Tijuana, even barbecued iguana ..."

As it turns out, there is someone coming to the island who actually wants iguanas. And no, she's not an exterminator.

Liz Pasnak, who works as a Charlotte County 4-H and Wildlife Extension agent, has decided to do an iguana research project in Boca Grande that will begin during the end of May.

Pasnak says that this research will serve as her master's thesis at the University of Florida, and that she intends to map out areas where iguanas are most concentrated on the island and then develop a theory to explain why they are common in some areas and sparse in others.

Pasnak also hopes to determine how future land use changes will affect the number of iguanas on the island.

"It is no wonder the spiny-tailed iguana thrives on the island," said Pasnak. "Except for some climate differences, the Boca Grande habitat is much like the iguana's homeland of coastal Mexico."

Many island residents wish that the iguanas would make their way back to Mexico.

Pasnak said that her initial interest was spurred by a number of "nuisance iguana calls" that she received in the fall of 1996.

"There were quite a few people from Boca Grande who were very upset," she said.

Deb Baker, who lives on Gulf Boulevard, but works at Ruhama's Books in the Sand, said that she sees iguanas on a frequent basis.

Today I went home for lunch at noon and there were three of them. One went up a palm tree, one went under the house, and the other one clawed his way under the deck. I don't know why, but they always have this guilty look in their eyes as if they know they've been doing something bad.

Two summers ago, I had someone watching my house who went out on the deck one day and she said it was like Club Med for iguanas. There must have been 30 of them, lying on the lawn chairs, hanging out, sipping on mixed drinks.

"I've even come home and seen them lying in my bed. That really irritates me."

Janet Thompson has no use for them either.

"Every time I go golfing on the Inn course I see this iguana on the first tee. He hangs out near the maintenance shack on the left. If I hit my ball anywhere near him, I just leave it there. I won't even pick it up. He scares me."

Thompson said that she had heard a rumor that someone who lived on the south end had brought iguanas to the islands as pets and that they had begun to reproduce, a few escaped and the rest, as they say, is history.

No one seems to know for sure how they first got here.

Like many invasive exotic plants, these prehistoric looking animals are not truly indigenous to this area.

Pasnak says that by most accounts, iguanas have been on Gasparilla Island for 20 years, but she has no idea of how they originally came to be here.

Pasnak said that in addition to her study of the iguanas, she will also be researching the relationship between iguanas and the gopher tortoise population.

Iguana feces will be collected to determine their diet, and deceased iguanas will be dissected to examine stomach contents and reproductive status.

Some of Boca Grande's residents have more colorful remedies for the

**IGUANA NEWSBRIEFS (cont.)**

iguana situation.

"They could be caught, killed, and stuffed," said Frazetta-Taylor.

"Maybe I could make them into stuffed dolls."

Stuart Hoeckel mentioned the possibility of some kind of iguana round up. "Like they do for rattlesnakes," he said. "We could do the same thing with the iguanas."

**Bark Alert**

By Dr. Timothy Durkins

There are various bark products on the market that are used by herpers as substrate and for the most part they are safe to use as long as certain precautions are taken. These products should not be used right out of the bag without washing them several times over a period of two weeks until the rinse water runs clear. The dust from these products poses a potential hazard to both herpers and their herps. Once in the vivarium, bark shouldn't be kept wet because pigment will leach out and discolor the animal and may be harmful to the delicate skin of amphibians. Along with dust and pigments, some products may contain highly volatile compounds which, when inhaled, can have a cumulative toxic effect on amphibians.

Investigators from the Vivarium Research Group have also observed depression of the immune system and subsequent death from infection in the rhinoceros iguana (*Cyclura cornuta cornuta*) and in some species of snake housed on bark. Some bark products may also contain mite-sized pests which will swarm over your herp, irritating it. These varminths, once established, are difficult to get rid of and may necessitate removal of

the product and replacement with pre-washed product or other suitable substrate. Particle size can be a problem for some herps. If the wrong grade is used, a herp may accidentally ingest it leading to gut impaction over time, requiring veterinary intervention to save the animal's life. Jagged or sharp edges can puncture or abrade delicate amphibian skin, leading to infection or other dermatologic problems. After washing the product, it should receive a "nose test" for odors and a "squeeze test" to feel for rough edges. The process should be done outside to allow it to outgas properly. Bark derived from such woods as redwood, cedar, aspen and pine are not suitable as substrate due to their highly resinous and aromatic nature. Cypress mulch seems to be relatively inert providing the proper grade is used. To avoid ingestion, always feed in a dish rather than on the substrate.

**Reference:** On the Use of Bark Substrates in Vivaria. *Vivarium*, Vol. 8, no. 2, pp. 56, 1997. Advanced Vivarium Systems Publications.

**Booby Cay Update**

By John Bendon

On 20th October 1999 a trip was made to Booby Cay, Mayaguana to continue the research and population assessment of Bartschi's Rock Iguana. Members of IIS, WIISG (West Indian Iguana Specialist Group), and Steve Conners, curator of Miami Metro Zoo, put their money with the \$1000 raised by John Bendon through the sale of T-shirts and iguana drawings to make this trip. Glenn Gerber of the University of Tennessee

began a population assessment. Although this is not yet finished he believes that there are probably more iguanas on the cay than was previously thought. This is promising news as the project to eliminate the rats will probably not get off the ground. The general opinion is that the cay is too large to be able to be covered completely with efficiency and that it would be impossible to know that all the rats are dead. In this case, just a few rats remaining would start up the whole population again within a year. This means a great waste of money and time, both ill-afforded. It was also voiced at the WIISG conference in Puerto Rico last October, that the poison to be used

would be fatal to any birds (and iguanas) that would come into contact with it. Setting thousands of rat traps without poison (which usually works well) is just not feasible.

It was the goats that came to the forefront as the real menace. And attempts to get the Ministry of Agriculture in Nassau to deal with it have met with agreement, though nothing has yet been done. Another trip is planned for the near future.

**NEWS OF THE SOCIETY**

**Dear members,**

For the past two years our search for a new Editor-in-Chief of *Iguana Times* has been unsuccessful. As a result, editing and producing four issues of *Iguana Times* per year has been more difficult and time-consuming for the all-volunteer staff. After falling behind in its publication schedule, and in an effort to keep you, our loyal members, satisfied, the staff has decided to label this issue, **Volume 8, Number 1: Spring 2000**, and to forego printing any issues dated 1999. Doing so will help us to publish this journal in a timely fashion.

As long as you have remained a current member of the International Iguana Society you have not missed any issues. Thank you for bearing with us and we apologize for any confusion.

Sincerely,



Joe Wasilewski,  
President, I.I.S.

## I.I.S. Bookstore

Photograph courtesy of Jayme Gordon



*As a service to our members, a limited number of publications will be distributed through the I.I.S. Bookstore. The following publications are now available:*

**The Green Iguana Manual**, by Philippe de Vosjoli. 1992. **\$7.00** (including postage); **\$8.75** (non-members).

**Send check or money order** (payable to International Iguana Society) **to:**

I.I.S. Bookstore  
P.O. Box 366188  
Bonita Springs, FL 34136

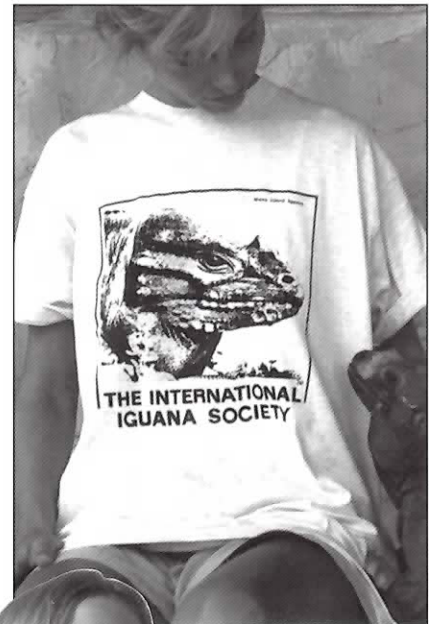
## Help us to keep you informed.

Send us your e-mail address so we can keep you up-to-date on I.I.S. news and events. We'll also be able to let you know when to look for a new issue of *Iguana Times* in your mailbox.

**Send your e-mail address, along with your current name and street address to:** mgut@compuserve.com

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Sizes available: Small, Medium, Large, and X-Large. Specify design **A** or **B**.

**Send check or money order to:**  
International Iguana Society, Inc.  
P.O. Box 366188  
Bonita Springs, FL 34136

# The Newest International Iguana Society T-Shirt

The second in a series  
featuring various species  
of your favorite iguanas!



The second shirt in the series, (pictured here) features the ever-popular green iguana, *Iguana iguana*.

Illustration by John Bendon.

**\$13**

plus \$3 for postage & handling (\$1 P&H for each additional shirt)

Sizes available:  
Medium, Large,  
and X-Large.  
Specify design C.

Send check or money order to:  
International Iguana Society, Inc.  
P.O. Box 366188  
Bonita Springs, FL 34136



Pink-headed Andros iguana,  
*Cyclura cychlura cychlura*,  
with dome-shaped scales.  
Photograph: John Bendon