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Exuma Island iguana, *Cyclura cyclura*
igginsi, on Gaulin Cay, Bahamas.
Photograph: Chuck Knapp

Statement of Purpose

The International Iguana Society, Inc. is a non-profit, international organization dedicated to the preservation of the biological diversity of iguanas through habitat preservation, active conservation, research, captive breeding and the dissemination of information.

Membership Information

Iguana Times, the Journal of The International Iguana Society, is distributed quarterly to members and member organizations. Annual dues for The International Iguana Society are \$25.00 for individuals and Canadian residents, \$35.00 for foreign memberships, and \$35.00 for organizations, which receive double copies of the journal. Additional copies are available at a cost of \$6.00 including postage.

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Members of the I.I.S. are encouraged to contribute articles, letters to the Editor, news items and announcements for publication in *Iguana Times*. General articles can deal with any aspect of iguana biology, including conservation, behavior, ecology, physiology, systematics, husbandry, or other topics. Submission of photographs to accompany articles is encouraged.

Manuscripts based on original research are solicited to communicate recent findings not only to other scientists but to the general public as well. We wish to instill in our readers a greater appreciation for scientific research and a better understanding of how it can contribute to the conservation of threatened iguana populations or the well-being of captive specimens. Research Articles will be subjected to peer review, and should be fairly general in scope (i.e., manuscripts having extremely detailed theoretical or statistical bases should be submitted to more appropriate journals). Manuscripts of any length will be considered, and must be accompanied by an abstract of corresponding length. Authors can expect rapid turnaround time for the reviews and quick publication of acceptable material. Research Articles will be cited as appearing in the Journal of the International Iguana Society, and will be forwarded to the major citation and abstract journals. Research Updates should be comparatively brief and written in non-technical language. They will not be subjected to peer review. Submission of photographs to accompany research reports is encouraged.

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Vanishing Iguanas

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In 1923, Alfred Bailey led a Colorado Museum of Natural History collecting expedition to the Exuma Islands, Bahamas. He added to his itinerary a tiny island called Bitter Guana after hearing stories from the local people about “guanas” living there. Before visiting the cay, he ventured to a picturesque settlement called Black Point. While at the settlement, he noted that the whole town offered to show him the “guanas”

on Bitter Guana. After selecting two men, he was on his way.

Scarcely had he reached the shore when he saw his first iguana. He noticed that the iguanas were not wary and there was no difficulty in securing a few specimens for his collection. At the time, Mr. Bailey did not realize that he was collecting a species unknown to the scientific community. Shortly after the expedition, Thomas Barbour described the new iguana and named it *Cyclura figginsi* after the Colorado museum’s director, J.D. Figgins. The iguana has since been classified as a subspecies of *Cyclura cyclura* and inhabits seven cays throughout the central and southern Exuma chain.

Mr. Bailey noted that the local people highly value the iguana for food. They told him how easily the iguanas were captured in baited crayfish pots. Apparently the local people had been killing the iguanas for years. Since then many observers have warned of the imminent extinction of the iguanas living on Bitter Guana Cay because of hunting.

Seventy-five years later I journeyed to Bitter Guana Cay during a John G. Shedd Aquarium iguana research expedition aboard our research vessel, Coral Reef II. This expedition was one in a series in our ongoing iguana research program, using the aid of public volunteers. Since 1995, the Aquarium has offered the opportunity for members of the general public to assist with collecting data on the Exuma Island iguana, *Cyclura cyclura figginsi*, and an introduced population of the Allen’s Cay iguana, *C. c. inornata*.

Many of Mr. Bailey’s seventy-five year old descriptions of Bitter Guana Cay still hold true today. The towering ten-foot cacti with branching arms imbedded with rigid needles are still present. The beautiful powder-white cliff overlooking a long sandy beach crosshatched with purple-flowered railroad vines still exists. However, as



Cyclura cyclura figginsi on White Bay Cay, Bahamas.
Photograph: Chuck Knapp



Left: Looking at the northwest beach on Bitter Guana Cay.

Below: White cliffs of Bitter Guana Cay.

*Photographs:
Chuck Knapp*



I walked the island, I was saddened and concerned by the lack of iguanas. Periodic tracks were seen, but in far fewer numbers than in earlier accounts. The description of iguanas being taken for food was branded into my thoughts. Only seven iguanas have been observed on the island since 1993. In the early 1920's, Mr. Bailey noted taking nineteen iguanas in approximately one hour!

During an earlier Shedd Aquarium iguana research expedition, we received anecdotal information that the people of Black Point, a community of about 200, still hunt the iguanas and do not realize that they are endangered and protected by Bahamian law. In fact, they are apparently being hunted on Bitter Guana because there is a neighboring cay inhabited by iguanas that has signs posted on the beach. The signs advertise the protected status of the iguanas and since Bitter Guana did not share the same signs, it was assumed they were not protected.

It became obvious that signs had to be erected on Bitter Guana to inform the local people about the protected status of the iguanas inhabiting the island. It was also imperative to inform the locals and transient yachtsman about the importance of keeping dogs off the small, iguana-inhabited islands. Dogs are known to kill adult iguanas and tracks are spotted routinely on the beaches of the cay.

Eighteen months and another Shedd Aquarium expedition later, we returned to Bitter Guana to post signs and monitor the precipitous decrease in the iguana population. Shedd Aquarium and Mrs. Sandra Buckner, President of the Bahamas National Trust, generously donated the signs. The signs were assembled by volunteers

aboard the Coral Reef II and cemented on each of the three leeward beaches.

In addition to posting prohibitory signs, we felt it was imperative to visit the settlement of Black Point and speak with the children about the importance of saving their unique iguana living one and two islands to the north. Sandra Buckner, two volunteers, Captain John Rothchild of the Coral Reef II, and I visited the all-ages school at Black Point to give a presentation on endangered species, focusing on iguanas. We were warmly received by the children and faculty. When asked how many children have seen an iguana, approximately one third raised their hands. Sadly, a teacher whispered to a volunteer that most likely the only time a child has seen an iguana was on their plate!

After our presentation we provided the school with West Indian Iguana Posters, donated by the IUCN West Indian Iguana Specialist Group, and a Shedd Aquarium education packet. The children appeared to garner a new appreciation for their endemic iguana, but only time will reveal if their new insights will help prevent poaching in the future.

In addition to posting signs and visiting school children, our team also studied the remaining iguanas inhabiting the cay. In 1997 we discovered an iguana of extraordinary proportions. Weighing approximately thirteen pounds, the iguana appeared to lumber out of the Jurassic. We again spotted and gave chase to this same iguana during the 1998 expedition, but we were unable to catch him. His size, however, coincides with a captured iguana weighing seventeen pounds from a different cay with a very low-density population. The typical size for an iguana living in a high- or medium-density population is approximately three pounds! We have discovered that these iguanas attain gargantuan sizes when in low densities. We postulate that this phenomenon is caused by an increase in their natural food resources, which includes leaves, flowers, and fruits of a variety of plants.

Shedd Aquarium, working with the Bahamas National Trust, will continue to monitor Bitter Guana Cay and the other populations of Bahamian iguanas. Most cays are not readily accessible by researchers; therefore, it is imperative to routinely



Large male *Cyclura cyklura figginsi* on Leaf Cay. An iguana of similar size has been spotted on Bitter Guana Cay.
Photograph: Chuck Knapp

Right: Warning sign for visitors to Bitter Guana Cay.

Below: Students from the school at Black Point.

Photographs: Chuck Knapp



study the populations to accurately and swiftly detect negative impacts to the islands and their iguana populations. Of equal importance is the contact we make with local people to discuss the conservation and stewardship of their unique iguana species, which is found only in the Exumas and has attracted the attention of scientists and ecotourists as far as 1,200 miles away. With the tangible accomplishments of posting signs and talking to the children, I left Bitter Guana this last time feeling good about our work and the prospects for the iguanas.

The Aquarium's next iguana expedition will be in June of 1999 to the island of Andros. We will attempt to study the mysterious Andros iguana, *Cyclura cyclura cyclura*, on an island that has been described as one of the largest unexplored tracts of land in the Western hemisphere. If you would like information about the expedition, please contact myself or Danielle Dominy, travel program manager, at (312) 692-3317 or ddominy@sheddaquarium.org.



NEWS OF THE SOCIETY

Searching for the Gwaya-Maga in Belize

It was the trip of a lifetime! Our cast of characters: the entire Board of Directors of the International Iguana Society, a handful of scientists, conservationists, writers and artists, and a few of us, just rank and file lizard lovers. Our destination: Belize, a country of some 8,900 square miles south of the Yucatan peninsula in Mexico. Our purpose: the 1999 International Iguana Society Conference.

One of our original intentions for this trip was to engage in two iguana-related conservation projects. The first was to produce and distribute a brochure, co-sponsored with the Belize Zoo and Tropical Education Center, and Red Creek Biological Preserve. Its purpose would be to discourage the local people from hunting green iguanas for food. Because the females are so vulnerable when they are gravid, they are much easier to catch than the males. Hunting male iguanas, however, has much less impact on the iguana population. The local Garifuna name for iguana is *gwaya-maga*. It is also called "bamboo chicken" by Creole Belizeans.

The other project was to translocate a population of spiny-tailed iguanas, *Ctenosaurus similis*, to the Red Creek Biological Preserve. Our "population" was supposed to have been pre-caught by two brave iguana-stalkers before the rest of the group actually arrived. As it turned out, they had only been able to capture two *Ctenosaurs*, and over the course of the next few days we came to understand their lack of success. Time and again we were tantalized by the wily beasts from their unreachable perches high atop trees and buildings from where they could spy

our approach and rocket to the freedom of their burrows.

Day One

By the end of our first day, all 20 conference participants had made their way via Miami, Houston, and San Pedro Sula, Honduras to Belize City. Early arrivals were treated to a side trip to the spectacular Mayan ruin of Altun Ha, a short drive north of Belize City. This well-excavated site was constructed between 1100 BC and AD 900, and consists of 13 temple pyramids arranged in two large plazas, each the size of a football field.

As became our pattern, members of the group found themselves busy tracking down any herps, invertebrates, or other wildlife they could find. We had people who could find the most interesting specimens in the most unusual places, to the immense delight of everyone who had brought cameras.

Back at the airport, we all climbed aboard our chartered yellow school bus for a 3-hour drive south, along the washboard, red-dirt Manatee Road, to our accommodations in the Stann Creek District. There



At 60 ft. high, the Temple of the Masonry Alters is the tallest structure at Altun Ha. Inset: Detail of one of the faces at the foot of the pyramid. Photographs: Mike Ripca

Right: I.I.S. members, Joe Wasilewski, Jim Suskie, Lisa Marshall, Lauron Roark, and Mark Keoppen rest at the top of the Tiger Fern trail, before heading down to see the waterfall.

Below: Overlooking the Cockscomb Range from the top of the trail.

Photographs: Mike Ripca



are few paved highways in southern Belize, and we were only privileged enough to travel on one of them on our next-to-last day. The group was split amongst two sites—the Toucan Sittee Lodge, set amidst lush vegetation along the Sittee River, and the Sandy Beach Lodge, a couple miles east, just outside the village of Hopkins, set on the Caribbean. Both locations were well run and provided delicious local cuisine.

Day Two

Our first full day in Belize was spent at the renowned Cockscomb Basin Wildlife Sanctuary, site of the world's first jaguar preserve. It covers 162 square miles amidst the Maya Mountains in central Belize. Cockscomb actually consists of two smaller basins, each a complete watershed for two of Belize's major rivers, along with Victoria Peak in the Cockscomb Range, the second-highest elevation in the country at 3,675 ft.

Cockscomb hosts a remarkable selection of flora and fauna typical of the tropical rainforests of Central America. We climbed winding trails lined with spectacular 60 ft. cohune palms (*Attalea cohune*), treacherous spiny palms (*Bactris*



mexicana), and sturdy swamp bloodwood (*Pterocarpus officialis*) with broad trunks that look like sets of revolving doors. Over 4,000 species of plants exist in Belize (70 kinds of forests, 68% of which are broadleaf forest).

Cockscomb houses an incredibly diverse group of wildlife,

including jaguar, jaguarundi, puma, ocelot, and margay, as well as Baird's tapir, black howler monkeys, kinkajoo, gibbon, peccary, the king vulture, and of course, iguanas. 55 different mammals, and 300 species of birds live there, along with 54 species of snakes and an abundance of other reptiles and amphibians. On this particular day, we didn't spot many of these animals because our troupe of humans was just too large and boisterous, but we did see a lot of tantalizing tracks and a spectacular 70 ft. waterfall. Some members of the group cooled off with a swim in the pool at the foot of the waterfall.

In the mean time, one of our members, Connecticut emergency physician, Michael Gutman, volunteered to run a clinic for the residents of Maya Centre, a small village at the entrance to the jaguar preserve. Some of these Mayan families had been relocated here from inside the preserve.

Now unable to pursue hunting and milpa (slash and burn agriculture), which formed their traditional way of life, the Mayans living here benefit directly from a portion of the entry fees to the jaguar preserve. They also sell Mayan slate carvings and other crafts at the souvenir shop.

Most of Dr. Gutman's patients had predictable ailments, bruises, belly aches, and itching, but an uncommon number seemed to complain of headache and backache, which had persisted for a number of years. This seemed perplexing to both Dr. Gutman and his assistant, Netti, a young volunteer from Sittee Village—until later when they observed some of the Mayans going about their daily chores. Many were carrying 100 lb. bundles



The 70 ft. waterfall on the Tiger Fern trail in the Cockscomb Basin Wildlife Sanctuary. Photograph: Mike Ripca

of wood on their backs, fastened to a band which they wore across their foreheads!

We were all exhausted after an exciting day, but nevertheless managed to pull ourselves together for our evening speakers. After dinner at Sandy Beach, Steve Reichling, an invertebrate specialist from the Memphis Zoo, began his talk with a show and tell. He had caught a beautiful red-rumped tarantula just outside his cabin, a finding that expanded the range of this animal, having previously only been known to extend throughout Mexico and northern Belize. Steve spoke about the declining populations of *Iguana delicatissima* on the island of St. Eustacius. Steve's experiences will be the subject of an article in the next issue of *Iguana Times*.

Next, Chuck Knapp, from the Shedd Aquarium in Chicago, treated us to the more cheerful results of his studies with a translocated population of *Cyclura cyclura inornata* from Leaf Cay to Alligator Cay in the Exuma Cays Land and Sea Park between 1988 and 1990. From eight initial individuals, a healthy population of 70-80 iguanas has emerged. He also spoke about the work of the Shedd Aquarium with *Cyclura cyclura figginsi* in the central Exumas.

Day Three

The next morning, most of the group loaded up in canoes or boats for a half-day, six-mile trip up the Sittee River. Many spectacular green iguanas were spotted high in the trees. Although these animals must have been 30-60 ft. off the ground, they were large enough that their very high crests could easily be seen. Brown basilisks (*Basiliscus vittatus*), keel-billed toucans, yellow-headed Amazon parrots and Morelets crocodiles were also sighted, as well as a remarkable flight of more than 50 scissor-tailed fly catchers. This is a small, finch-sized bird with flowing tail feathers. In one memorable incident, our famous Joe Wasilewski was spotted by an irate individual on shore while attempting to capture *Ctenosaurs* from the boat with his catch pole. We deliberately tracked this fellow down later. He turned out to be an American from Indiana who now lives in Belize. He had been very concerned about the well-being of the spiny-tailed iguanas. There was a small group of remarkably tame specimens that lives in and around the front porch, with one iguana retreating to a hole in the side of his house. He was



Left: John Bendon, Lisa Marshall, and Carl Fuhri canoeing up the Sittee River.

Below, left to right, front to back: Bill Bowden, Jim Suskie, Chuck Knapp, Georgette Suskie, Angela Saunders, Lauron Roark, and Mariana Urbina cruise back down the river with their guide Evan McDougal.

Photographs: Mike Ripca

relieved when we explained who we were, and what we were doing and graciously accepted an invitation to attend our iguana lectures the next evening.

Before lunch that day, the captured *Ctenosaurs* had colored beads attached to their nuchal crests for future identification. We then traveled to the Red Creek Biological Preserve, which is adjacent to Cockscomb, to release them. The preserve is owned jointly by Bob Ehrig (the founder of the I.I.S.) and his partners, Richard Moyroud and Marcie Ehrig. Still under construction, it will be an ecotourist lodge and iguana sanctuary. Red Creek is an extension of the Cockscomb Basin ecosystem and a biological corridor for wildlife to the Sapodilla Lagoon to the east. After a tour of the varied



ecosystems at the preserve, blood samples were drawn from each iguana, which were then released into their new habitats. The blood samples will be sent for analysis, and the results kept on file to monitor the gene pool of the *Ctenosaur* population at Red Creek. Habitat has been constructed for the *Ctenosaurs* in the remains of an old rock mine. Trees and shrubs have been planted in pockets of soil and boulders brought to the site.

The fate of *Ctenosaurus similis*, locally known as the "wishwilly," is somewhat better than that of the green iguana due to an unusual circumstance. Because of a high water table, Belizean cemeteries are often above ground. *Ctenosaurs* enjoy the readily available basking platforms provided by the sarcophagi, and have become associated with the spirits of the dead in popular folklore.

Dinner that evening was at Toucan Sittee, after which Carl Fuhri did a slide presentation on the status of *Cyclura rileyi cristata*, which was followed by our annual Board of Directors meeting. We kept it short, but we also took care of business, discussing several ways to improve the Society.



Glenn Gerber and John Bendon drawing a blood sample from one of the *Ctenosaurs* released at Red Creek Biological Reserve. Photograph: Mike Ripca



AJ Gutman gives a Baird's tapir some friendly reassurance at the Belize Zoo. Photograph: Mike Ripca

Day Four

The next day we boarded our bus again for a trip to the Belize Zoo. The zoo was started in 1983 with a collection of 17 animals left over from the filming of a wildlife documentary, and now houses a fairly complete collection of native species kept in appropriately landscaped habitats. We finally got to see the jaguars, tapirs and peccaries up close along with toucans, scarlet macaws, the imposing king vulture, the curassow, and many others. Dr. Gutman managed to thoroughly impress the staff of the zoo, as well as the apes, with his remarkably authentic howler monkey vocalizations.

After lunch, we were able to make a quick trip to the Tropical Education Center, and their green iguana breeding project. Gravid female green iguanas caught by locals are bought and brought here to lay their eggs, which are then artificially incubated. The females are then returned to the wild, and the hatchling green iguanas are raised for release.

Our next stop was Monkey Bay Wildlife Sanctuary, a research and teaching facility run by our delightful bus driver and incredibly knowledgeable guide, Matthew Miller. Monkey Bay is truly an inspiration for the conservation-minded: computers are run by solar power, and fuel for cooking comes from biogas composting toilets. The facility teaches conservation and watershed ecology courses at all levels up to university.

On our way back to base, we finally got to travel on a paved highway, much to the relief of our compressed spinal columns! The scenery was absolutely spectacular, with outstanding views of the Maya Mountains, including a portion known as "the Sleeping Giant." Along the way we passed

through the community of St. Margaret, where many of the inhabitants make their living by burning locally mined limestone in large, wood-fired kilns to produce agricultural lime for the ubiquitous Belizean citrus industry.

Upon our return for dinner at Sandy Beach, we were fortunate enough to catch some of the entertainment scheduled by a student group also staying there—three young boys from Hopkins Village (south of Dangriga) playing traditional, hand carved, Garifuna drums.

Dangriga, which, loosely translated, means "here, the sweet water is close at hand," is the largest town in the Stann Creek District, and lies along the banks of the Stann Creek River. The Garifuna settled there in the early 19th century, a unique blend of escaped African slaves and Caribbean Indians.

Following dinner, Glenn Gerber, a Doctoral student at the University of Tennessee spoke to us about his research over the past six years throughout the Caribbean. Glenn has done iguana population surveys on Jamaica, the Cayman Islands, the Netherlands Antilles, and San Salvador, Bahamas, as well as on many of the 200 islands of the Turks and Caicos group. His slide show included *Cyclura* and other iguana species of the area, but also other reptiles, birds and wildlife.

Joe Wasilewski then spoke to us about his trip to Booby Cay with John Bendon last fall. He presented a wonderful slide show on the *Cyclura carinata bartschi* of Booby Cay, that included examples of the flora and fauna, as well as a few interesting slides demonstrating the division of labor between John and himself, while on the trip.

Our last speaker of the evening was our own inimitable John Bendon, iguana artist extraordinaire, and our goodwill ambassador to the Caribbean. John delighted us with some of his magnificent illustrations of *Cyclura*, and a description of some astonishing territorial behavior that he had observed amongst the male *Cyclura carinata bartschi*.

Day Five

On our last full day in Belize, we returned to the jaguar preserve for further explorations. The group split up in several different directions, and predictably, our list of sightings was much lengthier. Among other things, sightings included endless

numbers of leaf-cutter ants, howler monkeys, a gigantic Blue Morpho butterfly, and an 8 ft. long indigo snake.

In the afternoon, a small number of people chose to investigate a Mayan ruin and undertake a fairly challenging hike to a spectacular 230 ft. waterfall. One lucky member from this group ended up being followed briefly by a jaguar! The rest of the conference participants chose to stop at the Old Sittee Serpon Sugar Mill. They found large numbers of bats that spent their days clinging to the lower trunks of the giant Ficus trees at

this site, as well as, inhabiting the aging, massive pieces of machinery that had been used to manufacture sugar. Other animals captured for brief study (and on film, of course) included a tarantula, a beaded lizard (*Xantusiidae lepedophyma flavemaculatum*) and a beautiful pink-spotted boliloglossa salamander.

After dinner that evening, we were joined by another group of about nine Garifuna youths, who provided us with an unexpected treat—more traditional Garinagu percussion and vocal music. Our lovely volunteer nurse from Toucan Sittee provided dancing lessons, and the women from the Sandy Beach Garifuna Women's Cooperative, who had prepared so many delicious meals for us, spontaneously joined in. Most of our group, stimulated by the African rhythms, joined in the dancing as well.

Afterward, we toasted many of our members and took time to thank Bob Ehrig and Richard Moyroud for all of the time and effort spent organizing this incredible trip. A group discussion and informal Directors meeting followed during which we were all urged to go forth and seek new recruits for the International Iguana Society. The party afterwords at "the big house" on the Caribbean was a climactic end to a great evening. *Buite gooyang!*



The whole group gathered for this photo at Red Creek Biological Reserve. *Left to right, First row:* Maximo Navarro, Chuck Knapp, AJ and Michael Gutman, Bill Bowden, Glenn Gerber, Lauron Roark, and Mike Ripca. *Second row:* John Bendon, Georgette and Jim Suskie, Lisa Marshall, and Carl Fuhri. *Third row:* Richard Moyroud, Matt Miller, Bob Ehrig, Steve Reichling, Angela Saunders, Mariana Urbina, and Joe Wasilewski. *Fourth row:* Mark Keoppen, Wendy Townsend, and Jayme Gordon. *Photograph:* Carl Fuhri

Day Six

As we gathered for breakfast and the trip home on our last morning, everyone agreed that this qualified as the "Trip of a Lifetime." All, whether professional or amateur herpers, ended up learning something and making new friends. And many of us vowed to return to Belize to further explore and enjoy its varied ecosystems, culture, and treasures.

The I.I.S. would like to acknowledge the absence of a number of intended conference participants. Both Janet Fuhri, our Fulfillment Coordinator, and Lori King-Nava of the Chicago Herp Society were unable to attend. We all missed them terribly and hope that they can at least derive a little vicarious pleasure from this account of our adventures. And our best wishes to Horst Haneke and Janette Miller who were unable to attend due to illness.



Look for an article highlighting the history of Belize, it's people, flora and fauna, in a future issue of *Iguana Times*. Also look for an extensive collection of color photographs from the trip on our Web site at: www.members.home.net/iis/IISHomePage.html

UPDATE

It Takes Two to Tango on Booby Cay

John Bendon

Introduction

This was to be my third visit to Mayaguana and Booby Cay to see my iguana friends, the *Bartschis*. Under a special permit from the Ministry of Agriculture in Nassau, my colleague Joe Wasilewski, the new President of the International Iguana Society, and I, would endeavor to catch a few iguanas for data analysis. Our goal was to take blood samples for DNA analysis, obtain body measurements, conduct a census, and erect a sign paid for by the I.I.S. (see photos below). This would be the fifth iguana information sign erected on a Bahamian island by the I.I.S. to inform the public of the presence of these rare iguanas.

Our other job, if time permitted, was to clean up the flotsam and jetsam strewn about the cay.

Back to Booby Cay

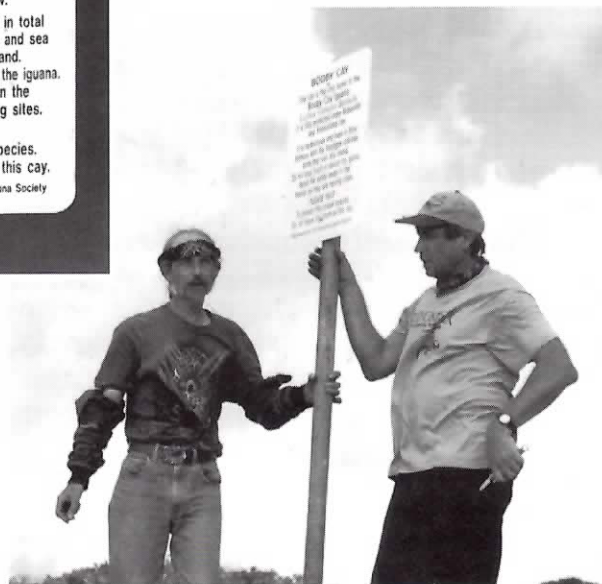
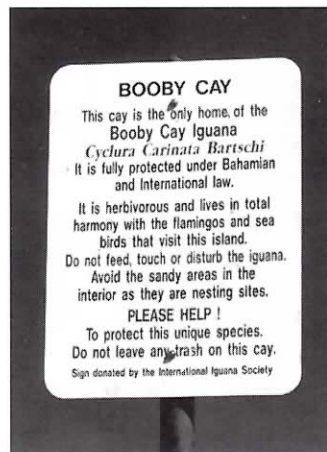
We arose at 5:30 in the morning, 20 October 1998, to a cup of tea. The wind had died out for the moment, as it usually does before dawn in these parts. Our host, Cap Brown, probably the most well-known person on Mayaguana, called us out to the truck to go down to the dock. This particular dock is perhaps 150 ft. long and is composed of what may be as much as 100 years of conch shell waste covered over with concrete.

Cap Brown, cigarette in mouth said, "Lookie here—don' fall out da boat! See you tomorrow!"

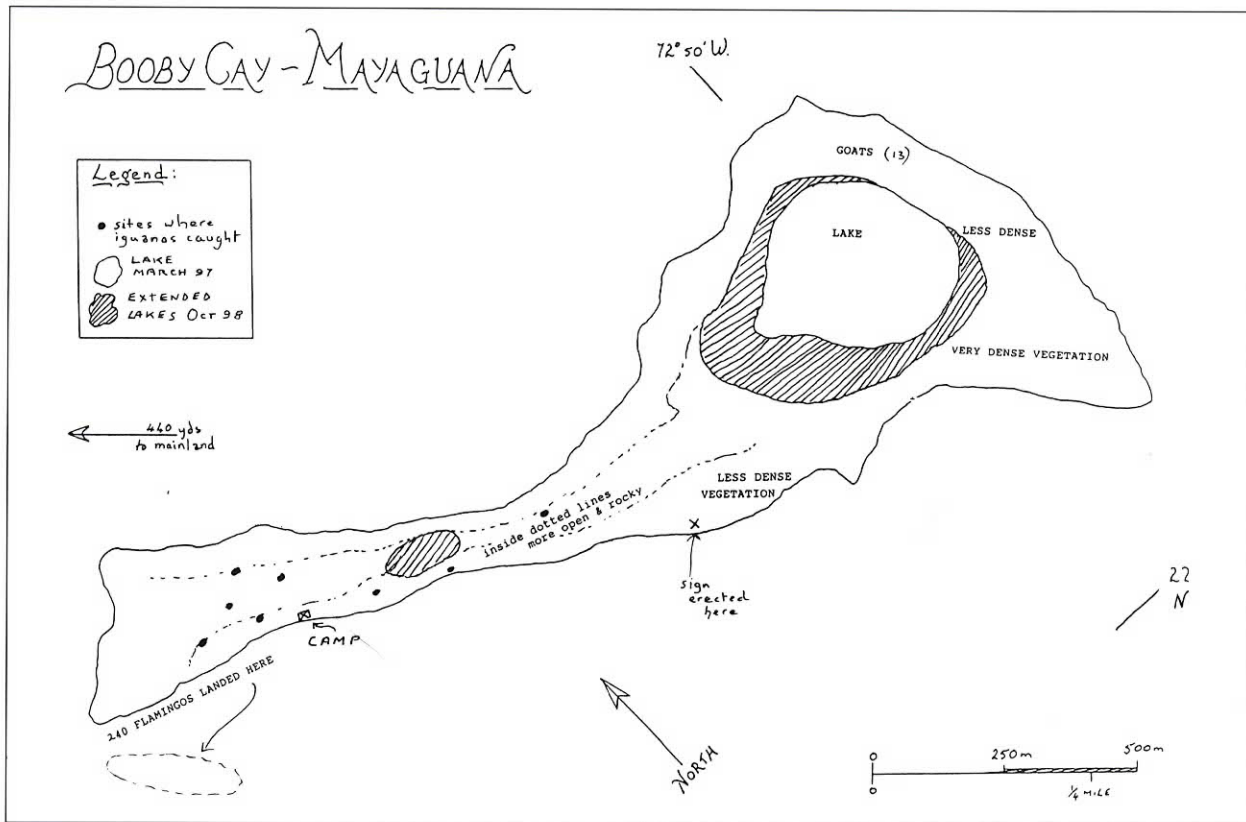
We set out for Booby Cay, skimming and bumping over the waves. Flying fish (*Cypselurus heterurus*) would pop out of the water next to the boat and fly for a few hundred feet before dropping back into the sea. Then they would get up more speed in readiness to propel themselves upwards into the air once more. The average distance for a flying fish to remain above the water is about 300 ft. They are uncanny. To any pursuing predators it must be quite disconcerting, as they

would just vanish from view into the air above. Their 'wings' are greatly enlarged pectoral fins, and in the case of the Atlantic flying fish that we saw, enlarged pelvic fins as well. (Source: Richard Dawkins)

The journey took about one and a half hours. We saw the sun come up and I lost my cap in the wind. Two very tall trees, the invasive Australian pines (*Casuarina*) that have settled all over the Caribbean and in South Florida, appeared on the horizon, denoting Booby Cay. A surprise awaited us. On my first visit I reported the landing of 40 flamingos (*Iguana Times*, Vol. 6, #1). This time there were over 200 of them. It was thought that they came to eat and rest there on their way to Inagua. I only spent a few hours on the cay each time during that first visit. This time we were there for two days and it would seem that these birds are permanent residents, going to and from different sandbars and the cay. They were there all day, occasionally flying around together in a big loop, and were still there at sunset and at first light the next day. This is a nice bonus for the islet of Booby



Inset: The sign on Booby Cay. Above: John Bendon and Joe Wasilewski erecting the sign. Photographs: John Bendon



Cay, which turns out to be quite a paradise for birds.

It has been suggested that an application be submitted to the authorities to have the cay become a national park. Although the 700 Bahamian islands are rife with wildlife, there are only 12 national parks. Unspoiled land such as this, together with its plant life and creatures (except the goats and rats) should be recognized for what it is. The next trip to the cay will find us cataloging all the plant and animal life.

We alighted on the cay and bid good-bye to Cap, who promised to return the next day (barring wind or storms). We only had enough food and water for two days, so the weather had to hold out.

All was quiet on Booby Cay. We dropped our equipment on the beach—Joe went off to photograph the flamingos, and I made a bee-line for where I knew there were burrows. We had arrived before the iguanas awoke and I sat on the ground ready to photograph a head peering out from a hole in the ground. As it happens, I never managed to get a single shot in this way. They would exit their burrows when I wasn't looking. I looked east—one would pop up to the west. I looked west—one would come out to the east—as

if they knew. Once outside their homes they would drag themselves slowly along for a few feet and come to rest, to bask, and get warm enough to eat and to defecate. The same routine occurs every day. Even in October the sun is hot at eight o'clock in the morning. After eating they would sit in the speckled shade of sea-grape bushes which gave them heat and shelter at the same time.

Amongst the things they eat are buttonwood fruit, sea grape fruit, sessuvium, agave (sisal or 'century plant'), opuntia (they have not been observed eating this, but it is a known food of *Conolophus*, the Galapagos Land Iguana, who actually rolls the spiked fruit on the ground to flatten the spines before eating), seven year apple (in season), and others. These are all the same foods eaten by most iguanas in the Caribbean. There is plenty of food on this cay.

Here is an interesting note concerning the iguanas on Booby Cay, the square-acreage of the cay, and their chances at life. On U-Cay in the Exumas, lives *Cyclura cyclura inornata*. This animal is very large, sometimes reaching a weight of twenty pounds, or nine kilograms. The cay itself is about 10½ acres and supports approximately 400 *cyclura*. Booby Cay is approximately 152 acres, not

counting the lakes and any other unusable space. Assuming a similar population density, Booby Cay should be able to support 6,080 *cyclura*.

Looking at Booby Cay, it's hard to imagine that over 6,000 iguanas could live there. On this trip, we counted about 100 iguanas, then using our methods of extrapolation, produced an estimate of about 200-300 total on Booby Cay. A more efficient method, known as distance sampling will be used on the next trip. This method was used by Glenn Gerber of the University of Tennessee, Knoxville in his survey of *Cyclura carinata carinata* of the Turks and Caicos Islands.

How is it that a cay with plenty of room and food, and the perfect climate for reproduction, is so sparsely populated with a species (laying possibly 800 eggs per year) that is the only endemic vertebrate present?

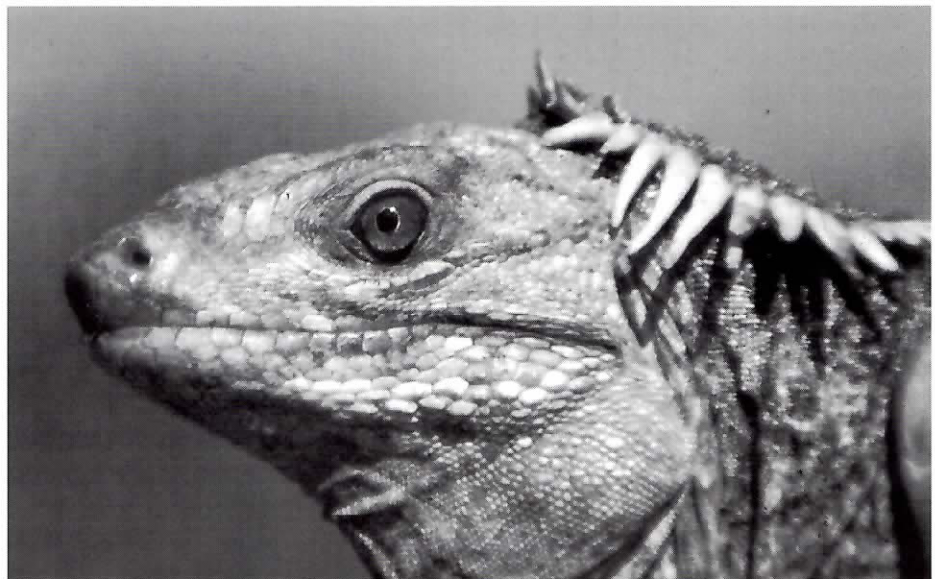
Unfortunately, we know why—there are actually two other, non-native, vertebrates present. First, there are the goats. Although arrangements have been made to remove all of the goats, this has not yet happened. We saw 13 of them while we were there, which is more than I thought existed. They *will* be removed, as the Ministry of Agriculture is most concerned, as are we. They present a great danger to the survival and proliferation of the iguanas, by eating their food, and occupying their natural territory. Their droppings are a source of potential pollution, as there is the danger of iguanas contracting goat-transmitted pathogens. We saw large numbers of goat skulls around the cay, suggesting that several generations have lived and died there. One possible solution is that they will all be shot and eaten. A communication to the Ministry of Agriculture has mentioned the urgency of this matter.

Secondly, and sadly, this time we saw rats. They were seen in the daytime, which implies that there may be many of them, as rats typically operate at night.

I also found their droppings, something I missed the last time.

There was a recent project to remove rats from White Cay, the home of *Cyclura rileyi cristata*, which involved the use of a rodenticide supplied by Zeneca of England, and overseen by Mark Day of Flora and Fauna International. At the meeting of the West Indian Iguana Specialist Group in Florida in October 1998, it was reported that so far this project has been a success. Test bait was put out after the project and no rats were known to have taken it. What is now needed is the same project, albeit on a larger scale, to be carried out on Booby Cay. It is assumed that these goats and rats are the cause of such a small population of lizards. Communications have started concerning this and an update will appear in a future *Iguana Times*. The I.I.S. would be pleased to receive any charitable contributions toward this project. It has so far received over \$1,000, including a large donation from Jerry Cole of B.J. Herpetological Supplies of the U.K., through his charitable company, which has greatly increased the speed at which we are proceeding with the project.

As Joe and I walked around we observed that even at 8:30 a.m. there were fresh tail drags all over the island, including the beach. Iguanas would come out of the brush onto the beach to bask, but would rush off, directionless, when they saw us even from fifty feet away. As such, we



Young male *Cyclura carinata bartschi* displaying a floppy crest and a bulging eye.
Photograph: John Bendon.

thought that they would be difficult to catch, but it wasn't too bad after all. Some smaller iguanas were observed in low branches of trees.

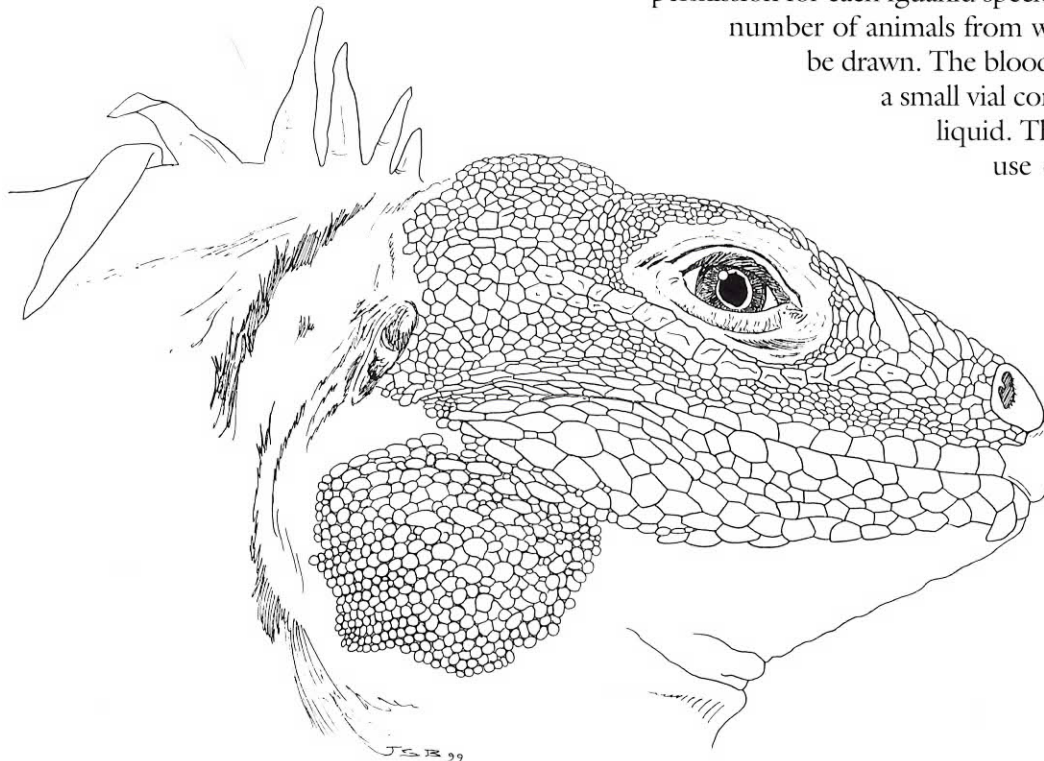
After a small breakfast of fruit, we set out with our nooses and other equipment. A few words about the method used to catch iguanas here: some people think that using a noose to catch wriggling iguanas is detrimental to their health and may injure the animals. As long as it is not done to gravid females—who could abort their eggs—then the method is quick and painless when there are two people and done quickly.

The noose is made from a device used to pick up golf balls out of bushes without getting scratched. It consists of a pole with a cup on the end of it. The cup is cut off and a noose, made out of fishing line ("Berkeley Steelon," 20 lb. weight), is attached. It is a very slippery material and does not stick to itself once the noose is tight. An iguana is then located and stalked. One person waits, completely still, near a bush (if the iguana is inside a bush), or behind a bush (if the iguana is out in the open). The stick is gradually brought nearer and nearer, above the head, the noose being invisible. It is then quickly lowered down over the

iguana's head. The animal immediately takes flight, but can go nowhere, spinning around on its own axis. The second person rushes in and grabs the animal to release the tension on the noose. This all takes about five to ten seconds and at no time is the animal's airway cut off. The fishing line, being slippery and not metallic, does not cut into the neck. The iguanas seem a bit flustered at first but after a few seconds are quite all right.

Next, we sit down and place the animal on its back, taking the shoulders and back in one hand and legs and tail in the other. All body parts are measured, missing digits, etc. are noted, blood is taken, microchips are inserted, and finally, the animal is put into a pillowcase to be hung up and weighed. Then we let it go and it runs off to join its friends, a bit ruffled, but unhurt. This is all done as quickly as possible to avoid stress.

The microchip is inserted just under the skin, in the tail or thigh, with a wide hypodermic, with a 2 mm wide needle. It can then be read with a type of barcode scanner, whose screen displays an I.D.# consisting of about eight numbers. Two ml of blood are drawn from the caudal vein underneath the tail, below the vent. This is the maximum allowed by the CITES permit, which gives specific permission for each iguanid species, and limits the number of animals from whom blood can be drawn. The blood is then put into a small vial containing an inert liquid. This precludes the use of refrigeration, impossible to get on a



Scalation rendering of male *Cyclura carinata bartschi*. Illustration: John Bendon

deserted island, and will keep the blood fixed and fresh for months in any temperature.

We walked around counting lizards and looking for a place to put up a sign. We had a good idea where to put the sign—a part of the beach about 300 yards long where most of the boats land. There's a mountain of conch shells there, years and years of them, left there by fishermen who catch and clean them before returning to Mayaguana. The shells represent 85% of the animals' weight, and a whole boatload of conch in shells could be put, shell-less, into a large bucket. We had to find a place where we could dig, above the shoreline, between the sandy beach and solid rock. We found our place and marked it for later.

We also wanted to investigate the possibility of walking through the shallow water to the mainland, only about 400 yards away, but the tide had to be low and the time had to be found. Joe spotted sharks and wasn't quite sure exactly what kind they were, so we put it off.

There was so much to photograph and do, so many notes to take. At one point I put my glasses down, while I bent down to photograph a lizard in the bushes, then got up and walked off without them. It was not until a half an hour later that I realized what had happened, so I followed my footsteps back to that bush to collect them, only to find nothing but fresh tail-tracks.

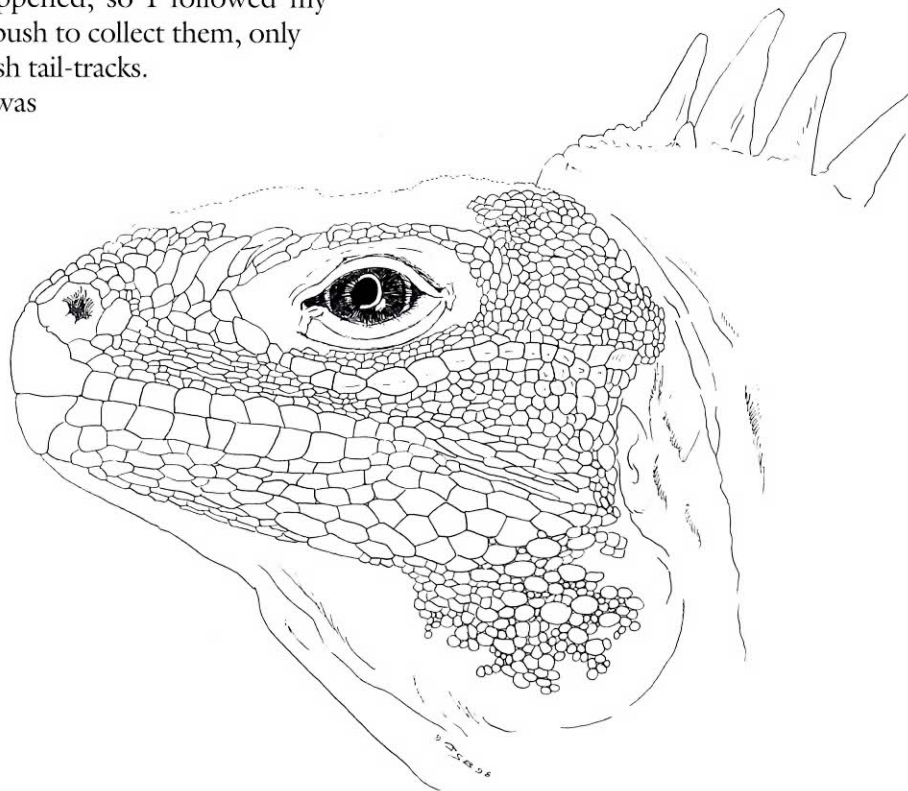
From then on I was unable to read or successfully operate

my manual camera.

I never found my glasses, but kept returning to that same spot in the hope they would appear. (Moral: always carry a spare pair of glasses!)

Pieces of an aircraft, two sea-mines, a bicycle wheel, a plastic gun, and what looked like the nose cone of a rocket were all found on Booby Cay—debris from the Western world, cast there by the sea—left for the birds and the lizards to play with... along with my reading glasses. I had tried on our first day to pick up some of the many light bulbs from the beach, but after half an hour I realized that there were probably in the region of 2,000 or more scattered about the cay. I had to give up and hope they would bury themselves in the sand and not be a hazard to the iguanas.

The rest of the day was spent catching iguanas, mapping, and taking notes. The time went quickly. An hour before dark we carried the sign to the marked spot and erected it, putting it into a hole filled with a mixture of conch shells and concrete. If it didn't work, we'd know the next day. We arrived at our camp about fifteen minutes before night fell.



Scalation rendering of male *Cyclura carinata carinata*. Illustration: John Bendon

We ate a cold meal and sat talking under the stars, then retired to our tent for the night.

The next day was more of the same routine—more photos, more notes, more blood drawn. There are now about 10 iguanas running around with microchips inside them, so that the next time we come and catch more, we will know which ones we have already measured. A CITES permit only allows for one hundred animals from the same species in any one year to have blood drawn. To have two hundred of them logged in our data books would mean we could return in three years and then five years to work out the survival and growth rates, etc.

We went back to check that the sign had set hard in the concrete and it had. After we left we could still see it from 600 yards away.

The Siege of Camp Booby

This is an interesting little aside, so I thought, and deserves a mention. On day one, we saw no evidence of iguanas at our camp. On day two there were four separate tracks, and four iguanas had taken up residence in the immediate bushes and under one tree. I suppose we had disturbed them, but I'm not sure. One was caught with its head in our garbage. It was as if they were taking us for granted. Certainly they were calm enough when we caught them. They are so harmless, it's no wonder they don't survive with people and animals around. So it seems that while we were out catching iguanas, others were at our place enjoying themselves. Good luck to 'em!

Epilogue

A lot of work was accomplished during this trip—many observations made, and we are one more step closer to knowing just how closely these iguanas are related to their namesake, *Cyclura carinata carinata*, on the Turks and Caicos Islands, some 40 miles to the south of Booby Cay.

Several small samples of different kinds of plants and cacti were taken for the Botanical Gardens in Nassau to study and grow. All the blood samples were sent to Nassau to await export permits. CITES permits are always needed for all parts of any endangered listed creature, even blood or feathers. This permit allows the parts to be imported into the United States and allows the samples to leave the country.




Drawing a blood sample. Photograph: John Bendon

A wonderful night was spent under the stars, no moon over Mayaguana this time, just inky blackness pierced with a myriad of pin pricks, glowing white, and a hazy ribbon of the Milky Way strung directly overhead—so many stars they become a ghostly cloud in the heavens.

Bartsch's Rock Iguana is unique. Here, on a very small islet, all this time without visitations from humans is this beautiful iguana sunning itself in the day as its ancestors have been doing here for many thousands of years—unhelped and undisturbed. Will I come here many years hence to see my friends again? I should think so. The way they danced in front of me—I will never forget it.

The time came for us to leave. We saw the boat speeding toward the cay, so we looked around us again at this marvelous little island then packed up the tent and the rest of our belongings, stepped onto the beach to wade out to the waiting boat, looked back once more, and left.

All in all, we had a good two days work. These iguanas are so fascinating, not least because I know that we are the only two people in the world to be dealing with them. After the trip, while relaxing, I would close my eyes and replay our visit with Bartsch's rock iguana, enjoying itself in the bright Caribbean sun and having absolutely no idea that there are so many humans concerned that it should have an undisturbed life and a secure future. See you again soon, my favorite friends. 

October, 1998/Booby Cay, Mayaguana.
All text, maps and photographs ©1998.

LIZARD LETTERS

The Really Big Iguana Contest

“How long did you say this iguana is?” I asked. “He’s 6 ft. long and I’m looking for a good home,” replied the iguanas owner. I answered, “I’m sorry, I just don’t believe you—the length simply can’t be correct. Send me a photograph of Spike with two yard sticks end to end along side of him and I’ll see what I can do for you.”

I’ve heard too many shaggy iguana stories in the time I’ve been operating the Connecticut Iguana Sanctuary, and I find that most people are just not very good at estimating lengths. I remember the lady who was looking to relocate a pair of “5 ft. males.” “That’s pretty big,” I said, “and I’ll bet you anything that one or more of your ‘males’ is a female if they’ve been cohabitating peacefully for as long as you say.” I had that listing on my books for months before I finally went out to visit Fred and Henry. Sure enough, “Freda” and Henry turned out to be 3 ft. and 4 ft. respectively and as soon as I had an accurate description of them I was able to find them a home together in very short order.

And then there was the infamous 17 ft. python. This was shortly after I’d had an article about my iguana rehabilitation work published in the local newspaper. (It did not appear, as some of my colleagues claim, in Martha Stewart’s column entitled “Home Decorating with Live Reptiles”). The author had included my telephone number at the end of the article instead of publishing the address of the I.I.S. as I had asked him. Within a week I’d gotten dozens of calls from people begging me to take in or place their iguanas, but the most urgent call was regarding a snake. “I know this guy who’s been keeping a 17 ft. python in a garbage can for 4 months. Can you find a home for it?” First we had to convince the owner to give up this poor animal. We had to come up with transportation for him to my house and I had to find some more appropriate temporary housing than a garbage can. Just shortly before midnight on that same day that I had received the call, I had four very large

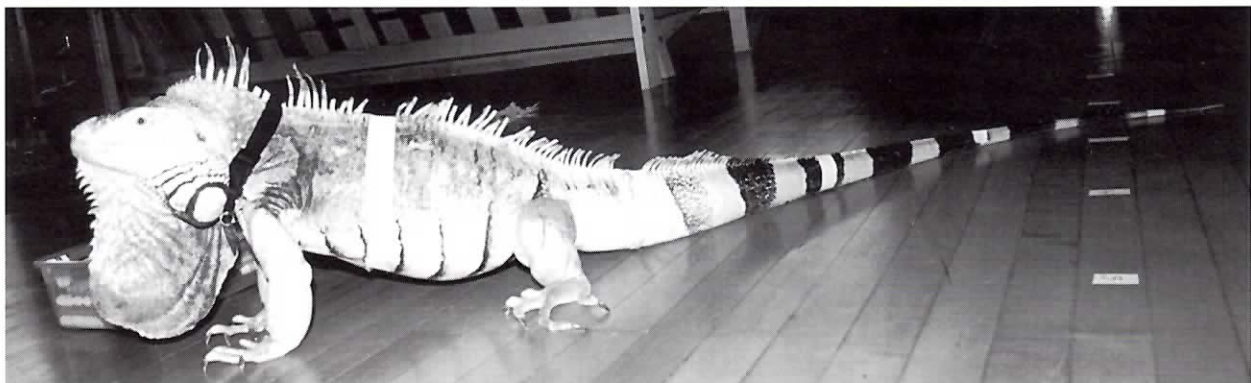
men carry a very large snake through my front door. “Just lay him down on the carpet here, I want to measure this guy” You’d think I’d have better things to do with a snake who hadn’t eaten for 4 months than stretching him out in my front hall! My tape measure and the carpet both quit at 12 ft. We hadn’t, however, been able to uncoil the snake completely and he was clearly longer than the carpet. Even at that, I estimate he couldn’t really have been more than 13 ft long at most. He eventually did find a home, but that’s another story (the Really Big Snake Contest).

But we were talking about big iguanas weren’t we? Anyway, the biggest green iguana I had seen up to this point was one I had taken in several months before. Bunny measured 4 ft. 6 in. when I first saw him, but he was a bit scrawny and bright flaming orange from stem to stern! He’d been fed nothing but shaved carrots for a year and a half and had the worst case of hypervitaminosis I’d ever seen. Once I switched him to a more appropriate diet, his color started to change back and he put on the weight he needed, but I remember that even his shed skin had an orange tint to it at first.

Anyhow, two weeks after that initial phone call, I received the promised photos of Spike in the mail with a letter apologizing for the mistake as he only measured 5 ft., 2 in. So now, instead of a 6 ft. lizard I was looking for a home for one who was only 5 ft.! I tried to interest various potential adopters, but it quickly became apparent that he wasn’t of much interest to the average new iguana parent.

“You know we don’t need any more iguanas in the house. If you want this big guy, you’ve got to find a home for one of the others,” said my husband—and he was right—fifteen iguanas in the house was certainly enough. The numbers actually ended up climbing before I finally located homes for a number of them and was able to plan my trip to Manhattan to pick up Spike.

“How are you going to carry him out to your car? I have some gloves you can borrow. Do you have a carrying case big enough for him?” asked the owner.



5½ foot-long Asimov poses for the contest. Note the tape on him at one foot increments. *Photograph: Michael Gutman*



AJ and Asimov. Photograph: Michael Gutman

Not every woman regularly tosses large lizards over her shoulder and carries them in and out of lecture halls and library auditoriums, but I do. I've never worn gloves while handling iguanas, and I've never met an iguana who didn't enjoy sitting in the back window of my Dodge Neon. None of these things had ever posed a challenge to me before, but somehow I got spooked. I dug out some gloves and an old leather jacket and my husband rigged up some pieces of a big dog crate between the front and back seats of my car to contain "the monster" and off I drove.

Sorry, I hate suspense so I'll just skip to the end of the story. I carried Spike outside without the gloves or jacket. He did get scared in the elevator, but only because of a shrieking neighbor. ("It's alright, sweetheart, the lady won't hurt you," I reassured my charge.) He started out in the back window of my car, but before we had turned the corner to head back out of Manhattan, Spike had managed to slide forward into my lap where he gazed, wide-eyed as a child, at the city he had lived in for 6 years and never seen except through an 8th floor apartment window. He happily remained there all the way home to Connecticut, but I got suspicious as I carried him through my back garden and had to lift up his tail so as not to trip on it. Sure enough, Asimov, as I had resolved to rename this beautiful guy, turned out to be 5 ft., 5 in. long when I measured him and he's definitely the biggest and heaviest (13 lbs.) iguana I have seen to date! He is very gentle and charming and has ended up joining a pre-existing "family" with Bunny (a male) and his three ladies, Irving, Zelda and Marley. All five iguanas happily bask together and, remarkably, the only social tension in the group seems

to be between Irving and the other ladies. She is particularly sweet on Asimov and gets a little nippy if one of the others tries to get too chummy with him. Don't try this at home. Both Asimov and Bunny eventually succumbed to their male territorial imperatives. Bunny chose to relocate to another area of the house, but only after both combatants had sustained considerable damage. The formerly reclusive Asimov gets out regularly to lecture students on conservation issues, to meet the congregation at the synagogue picnic and to educate the public about proper green iguana care. He has made a number of television appearances and most recently appeared before 500 public school students in Hartford where he will be immortalized in clay as a large relief sculpture dedicated to the endangered iguanas of the world.

So, that's my "really big iguana" story. Now I want to hear yours. The literature always says that green iguanas can reach up to 6 ft. in length. Some sources say up to 5 ft. I even have one book that tries to cover all bases by saying 5 to 6 ft. How big is your "Really Big" iguana? I want to see a picture, and I want to see the yardsticks beside the animal to verify any claims. Don't give me any stories about how your grandma used to have a big lizard "back home in the islands" when you were a kid. Call grandma. If Iggy is still kicking, have her get out her tape measure and the Polaroid and she could win a fashionable I.I.S. T-shirt. All tall tales need to be verified photographically. Taxonomic preparations are not allowed to enter because everyone knows that taxidermists, like poets, tend to stretch the truth. The winning photo will be published in *Iguana Times* and lizards of "respectable length" may see their photos appear on our new web site. Please send all entries to:

AJ Gutman
Really Big Iguana Contest
International Iguana Society
133 Steele Rd.
West Hartford, CT 06119

Deadline for entries is June 30, 1999.

Photographs will not be returned unless accompanied by a self-addressed, postage-paid envelope.

LIZARD LETTERS

This is the reply I sent to *Nature* concerning the overwater dispersal of Iguanas, but they have no place to publish it...

Sir — for me, the paper of Censky, *et al.* (1), which relates the discovery of an Iguana raft is not a surprise. I know precise first hand observations made by local scientists and by fishermen who saw frequently, iguanas swimming in the sea, far from the coasts, between the different Guadeloupe Archipelago islands.

To check over-water dispersal, I tried to observe *Iguana delicatissima* at sea. I take males on a boat and allow them to jump in water. One individual jumped on its own, swam for 80 meters, then dove 3 meters deep and stayed 28 minutes under water, then it surfaced and swam, staying for 40 minutes in the water. *Iguana iguana* is able to withstand about 270 minutes under water (2). Even if a raft is a means of over-water dispersal, free swimming of great distances is for iguanas another means of colonization.

Moreover, human transport also explains the islands colonizations. I also have first-hand observations of boatmen throwing living *Iguana iguana* from Les Saintes in a Guadeloupe harbour. This is a common practice because iguanas are so numerous there that they became a pest in the gardens. *Iguana iguana*, which are said (3) to inhabit only some islands of this archipelago, naturally colonized islands where *Iguana delicatissima* was present, competing and hybridizing with them. Now Les Saintes have only *Iguana iguana* and *delicatissima* x *iguana* hybrids.

During hurricanes iguanas are thrown from their trees by the wind and carried to sea as I saw on a film made by Mr. Plassais in Saint-Barthélemy during Luis. Then, they are able to swim long distances. During hurricane Hugo (1989) the water temperature was 28-29° C (4). These temperatures allow iguanas to swim without being cooled and thus unable to move.

Censky, *et al.* (1) suggested that the iguanas seen in Anguilla, Barbuda, and Antigua came from Guadeloupe. Louis Redaud (Parc national Guadeloupe) told me that a raft with about 15 iguanas was seen one week after Luis between Guadeloupe and Antigua. My british colleague Mark Day (Flora and Fauna International) and I collected iguanas tissues and made biometry for nearly all the Lesser Antilles iguana populations, so we are able to locate, without speculations, the real origin of the raft iguanas.

The assertion of Censky, *et al.* (1) concerning the iguana distribution is wrong. It is based on old statements (3). For example both iguana species inhabit Basse-Terre and *Iguana iguana* competes, hybridizes and eliminates *Iguana delicatissima* there. On Martinique both species are also present and

Iguana iguana was introduced by man from Les Saintes at the beginning of the sixties. Thus, it is difficult to say from where the iguanas came when the real iguana distributions are not known.

So this is not because a raft was seen landing on an island that this means of colonization may explain all the terrestrial vertebrate distribution. Man is also responsible for the distribution of a fraction of West Indian herpetofauna.

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75005 Paris
E-mail: mabreuil@club-internet.fr

1. Censky E. J., Hodge K & Dudley J. *Nature* 395, 556 (1998)
2. Moberly W.R., *Comp. Bioch. Physiol.* 27, 21-32 (1968)
3. Lazell J. D. *Bull. Mus. Comp. Zool.* 145, 1-28 (1973)
4. Pagney Bénito-Espinal F. in Hugo genèse, Incidences éographiques et Écologiques sur la Guadeloupe. (Pagney Bénito-Espinal F. & Bénito-Espinal E.) 19-75 (Parc National de la Guadeloupe, 1991)

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Send your e-mail address, along with your name and street address to:
Lizard1@aol.com

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:

Green Iguana, The Ultimate Owner's Manual, by James W. Hatfield. 1996. **\$28.00** (including postage); **\$35.00** (nonmembers). Covers just about everything from birth to death of an iguana. 600+ pp. Limited quantities.

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

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).

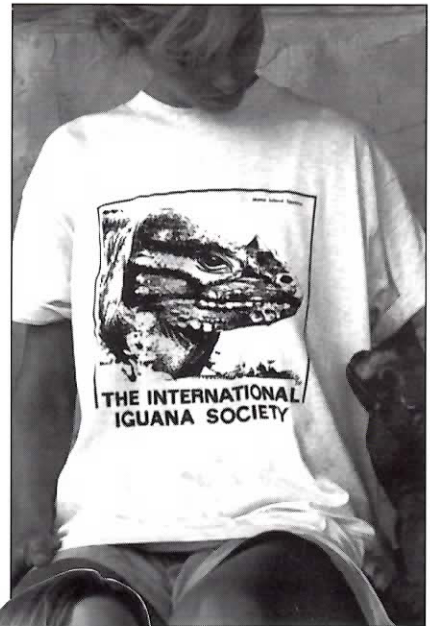
Schwarze Leguane, by Gunther Köhler. 1993. **\$19.00** (including postage); **\$24.00** (non-members). Excellent *Ctenosaur* guide book, photographs, range maps, text in German.

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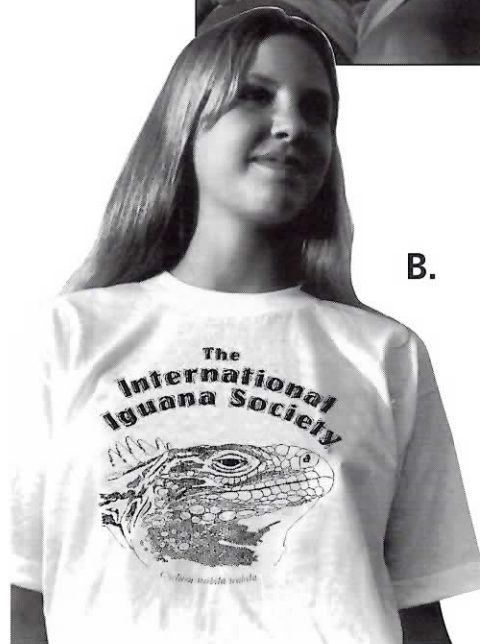
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One of the spiny-tailed iguanas, *Ctenosaurus similis*, released at Red Creek Biological Preserve in Belize. Photograph: Carl Fuhr