

Recent Literature

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Errata

The Taxon Report for the Anegada Island iguana, page 12, Spring Newsletter 7(1) 2004, was authored by Glenn Gerber (San Diego Zoo) and Kelly Bradley (Dallas Zoo).

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Iguana Specialist Group Newsletter

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2004 ISG Annual Meeting

ISG Meeting Minutes
November 15, 2004
Suva, Fiji

Welcome and Introduction - Alberts & Hudson

Bula! Thanks were expressed to Peter Harlow (Taronga Zoo) for the extensive planning and organization of a successful Conservation and Management Plan Workshop for the Fijian Crested and Banded Iguana and also for the fantastic field trip to Yadua and Yadua Taba. The rich cultural experience of staying in a traditional Fijian village, combined with the incredible opportunity to view the spectacular crested iguana in its native habitat will be long remembered. A truly unique experience that was enjoyed by all.



Left to Right, Back Row: Joe Wasilewski, Glenn Gerber, Allison Alberts, Jeff Lemm, John Kunna, Rick Hudson, Ivan Rehak, Robert Fisher. Middle Row: Pita Biciloa, Tandora Grant, Bonnie Raphael, Karen Graham, Joe Burgess, Stacie Hathaway. Front Row: Rick Van Veen, Victor Reynoso, Peter Harlow, Chuck Knapp, Steve Connors.



The Iguana Specialist Group prioritizes and facilitates conservation, science, and awareness programs that help ensure the survival of wild iguanas and their habitats.

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SPECIES SURVIVAL COMMISSION

Session 1: Taxon Updates

ANDROS AND EXUMAS, BAHAMAS - Knapp

2004 Research Update for *Cyclura cychlura cychlura* and *C. c. figginsi*. Charles Knapp (John G. Shedd Aquarium and University of Florida), Audrey Owens (University of Georgia), and Coleman Sheehy, III (University of Florida).

Andros - The 2004 Andros iguana (*Cyclura cychlura cychlura*) research focused on adult reproductive ecology and hatchling survivorship, dispersal, and habitat preference. We were able to monitor nests in termite mounds from previous years every one to three days to observe nesting behavior, verify oviposition dates, and document nest site fidelity. Based on a lack of used termite mounds and defending females, we are confident that nesting did not occur before the May investigation at monitored nests. The first nest of the season was discovered on 8 May. We know of one nesting event after our 13 June departure date. Nesting females ranged from 31 to 46.5 cm SVL (mean = 38.6). A total of 22 nests were excavated with clutch sizes ranging from 5 to 18 (mean = 10.1). Of these nests, six females nested in 2003. One of the repeat females nested in a different mound after the attendant termite mound colony from 2003 died. Another female, after partially destroying her 2003 mound while test digging in 2004, oviposited her clutch in sand. We also uncovered an additional nest oviposited in sand from the same study area. Egg predation by crabs (*Cardisoma guanhumii*) was confirmed from three nests and suspected in four additional nests. The entire clutch was lost in such events.

Hatchlings ranged from 8.1 to 10.6 cm SVL (mean = 9.6) and 31 to 55 g BM (mean = 42.4). Thirty-six hatchlings were affixed with radio transmitters and tracked between 18 and 28 days. Twenty-one of these hatchlings were confirmed eaten by snakes (*Alsophis vudii* and *Epicrates striatus*), one was suspected taken by a bird, one was suspected taken by a fish, and six were

unknowns with stationary underground transmitter signals. A single day over water dispersal distance of 2.3 km was recorded for one hatchling. Of the eight hatchlings alive at the end of the study, six occurred in mangrove habitat > 50% of observable time.

We were told of anecdotal accounts of people selling up to 40 iguanas in April 2004 from a hunting camp on the west side of the island. We also were told of a different group of people selling 10 iguanas from the same camp at the end of 2003. We investigated the camp in May and discovered increased signs of activity from our previous 2000 to 2003 visits. Usually, iguanas are taken back to settlements to be sold alive, but we found evidence that iguanas were killed at the camp. The ground was literally covered with shed iguana skin and we found bones from a minimum of three iguanas. We returned to the same camp in August and noticed that it was used again after our May visit. Although people use the camp as a base for multiple purposes such as crabbing, sponging, fishing, and collecting wood, iguanas are always taken when the opportunity allows. Therefore, the increased activity at the camp concerns us because it represents more iguanas being taken from the wild. Although other transitory camps are used, this camp is a permanent fixture on the west side of Andros and we recommend that it be dismantled and the perpetrators warned that illegal activity will not be tolerated.

We were able to visit South Andros and Mangrove Cay High Schools in September and present iguana education posters that incorporated artwork from the students. We, and the posters, were well received and additional presentations will be made on North Andros in 2005.

Pasture Cay, Exumas - We only were able to visit Pasture Cay for one day in May to study the translocated population of *Cyclura cychlura figginsi*. Of the 16 original founders (11 males, 5 females), we captured seven males and three females. Two additional animals were seen but eluded capture. Since the 2002 translocation, two male iguanas are confirmed dead (2003), and two were not seen or captured in 2004. We are concerned for the largest remaining males on the island. When translocated originally in 2002, the two males captured this past May weighed > 7 kg. In May 2004, the males had lost 2.9 and 3.4 kg of their initial BM and did not appear healthy. We heard from multiple sources at



Iguana Specialist Group and Fiji National Trust Co-Sponsor Conservation and Management Plan Workshop for Fijian Iguanas

On 10-11 November, 2004, the IUCN SSC Iguana Specialist Group and the Fiji National Trust co-sponsored a Conservation and Management Plan workshop for Fiji's native crested (*Brachylophus vitiensis*) and banded iguanas (*B. fasciatus*). The workshop was held on the Laucala campus of the University of the South Pacific, and was attended by 50 participants from both within and outside Fiji. The purpose of the workshop was to develop a comprehensive strategy to guide conservation of Fiji's native iguanas by identifying and prioritizing the actions needed to ensure their future survival. For crested iguanas, a series of key objectives was identified, including prioritization of islands most suitable for long-term survival, implementation of a comprehensive management plan for the Yadua Taba Crested Iguana Sanctuary, recommendations for field research on iguanas and their habitats, development of captive breeding and reintroduction strategies, and establishment of education, awareness, and ecotourism programs. For banded iguanas, about which much less is currently known, a research agenda was developed that focuses on collection of baseline data, genetic studies, and education needs. Results of the workshop will be published early next year.

Following the workshop, participants had the opportunity to visit a traditional Fijian village on Yadua Island, home to the custodians of the crested iguana sanctuary on nearby Yadua Taba. Following a traditional sevusevu ceremony, permission to visit the sanctuary was given, and participants had the rare treat of viewing an extraordinarily dense population of crested iguanas in the wild. After returning to the main island of Viti Levu, the annual Iguana Specialist Group meeting was held in Suva on November 15. The

meeting centered on planning discussions for a number of key taxa, as well as special sessions on public relations and the media, iguana friendly development guidelines, and funding priorities for 2005.

Fiji National Participants:

Bill Aalbersberg (Institute of Applied Sciences, USP); Pita Bicilola (Yadua Taba Senior Ranger, National Trust of Fiji Islands); Ramesh Chand (Kula Eco Park, Korotogo); Indra Devi (National Trust of Fiji Islands); Elizabeth Erasito (National Trust of Fiji Islands); Linda Farley (Wildlife Conservation Society, South Pacific); Philip Felsted (Kula Eco Park, Korotogo); Gunnar Keppel (Department of Biology, USP); Craig Morley (Department of Biology, USP); Clare Morrison (Department of Biology, USP); Alifereti Naikatini (South Pacific Regional Herbarium, USP); Jone Niukula (National Trust of Fiji Islands); Rob Perry Jones (CITES, WWF Fiji); Luke Qiritabu (Department of Environment, Fiji); Avisaki Ravuvu (National Trust of Fiji Islands); Sereima Savu (National Trust of Fiji Islands); Manasa Sovaki (Department of Environment, Fiji); Apisai Tinakoro (National Trust of Fiji Islands); Marika Tuiwawa (South Pacific Regional Herbarium, USP); Teri Tuxson (Mamanuca Environment Society); Di Walker (Mamanuca Environment Society); Dick Watling (Consultant Biologist, Fiji); Praveen Wignarajah (Greenforce and National Trust of Fiji Islands)

International Participants:

Allison Alberts (San Diego Zoo, USA); Joe Burgess (International Iguana Society, USA); Steve Conners (Miami Metro Zoo, USA); Robert Fisher (U.S. Geological Survey, San Diego, USA); Glenn Gerber (San Diego Zoo, USA); Karen Graham (Sedgwick County Zoo, Wichita, USA); Tandora Grant (San Diego Zoo, USA); Peter Harlow (Taronga Zoo, Australia); Stacie Hathaway (U.S. Geological Survey, San Diego, USA); Sara Hicks (Taronga Zoo, Australia); Rick Hudson (Forth Worth Zoo, USA); Scott Keogh (Australian National University, Australia); John Kinkaid (San Diego Zoo, USA); Wendy Kinsella (Taronga Zoo, Australia); Chuck Knapp (Shedd Aquarium and University of Florida, USA); John Kunna (Jamaican Iguana Recovery Project, Jamaica); Jeff Lemm (San Diego Zoo, USA); Bonnie Raphael (Wildlife Conservation Society, New York, USA); Ivan Rehak (Praque Zoo, Czech Republic); Victor Reynoso (Instituto de Biología, Ciudad Universitaria Mexico, Mexico); Jennifer Taylor (NSW National Parks and Wildlife Service, Australia); Rick Van Veen (Jamaican Iguana Recovery Project, Jamaica); Joe Wasilewski (International Iguana Society, USA).

IIF Funding Priorities

Highest Priority for 2005

Crested Iguana - Fund team of Fijian negotiators to visit Yanuya Island to meet with landowners of Monu and Monuriki regarding establishment of captive breeding program and habitat restoration: \$3,000 FJD x 3 trips over 6 months. Potential to fund or match funds through the International Conservation Fund for the Crested Iguana (ICFFCI).

Jamaican Iguana - Maintain field effort in Hellshire and begin baseline surveys for Goat Islands: Rick Van Veen salary (\$12K), new cat traps, PIT tag reader, solar power for field camp, and ongoing health assessments for headstarted animals.

Anegada Iguana - Maintain headstarting and release program (identification of nests and collection of hatchlings, ongoing health assessments for headstarted animals: \$750 for 10 animals plus vet travel, monitoring program for wild population, and vehicle (\$4K earmarked, need additional \$4K – potential to match through IIS/IRCF funds next August).

Turks & Caicos Iguana - Address need for cat eradication on Little Water Cay (implementation of IC recommendations from feasibility study).

Middle Priority for 2005

Ricord's Iguana - Capacity building for local community in Pedernales region and additional surveys in southern coast of Lago Enriquillo. Consult with Jan Ramer for other needs. Potential for Disney funding.

Andros Iguana - Public education initiatives, government involvement in designating protected areas, and full-time educator and evaluation. Potential for Disney funding.

St. Lucia - Seed funds for education component as needed and investigate potential for gene flow between Grand Anse and Louvet. Karen Graham to consult with Matt Morton for other needs.

Lower Priority for 2005

Ctenosaura - Genetics of Gulf of California species: \$5K for fieldwork.

San Salvador Iguana - Await field report from 2004. Consult with Bill Hayes and Ron Carter for other needs. IIS is planning support for this work.

Mona Island Iguana - Consult with Miguel Garcia for project needs.

Exuma Islands Iguana - Pasture Cay population monitoring to determine effect of rats and compare to Alligator Cay.

Fijian Banded Iguana - Survey large inhabited islands for abundance: Kadavu, Ovalau, Gau, and Koro. One week is needed on each island.

Grand Cayman - Salary for Facility Manager, radio-tracking, ongoing health assessments for headstarted animals? Consult with Fred Burton for project needs.

Joint ISG and IIF Meeting 2006

The ISG annual meeting is planned for November 2006 on Andros Island, Bahamas and will be held in conjunction with the annual IIF meeting. The meeting is tentatively scheduled for Nov 5-9 or Nov 12-16. Chuck Knapp will be coordinating the event and will soon provide final dates. The tentative schedule will be: Day 1 - field trip, Day 2 - Recovery Plan Wkshp, Day 3 - Recovery Plan Wkshp continued and 1st part of ISG meeting, Day 4 - ISG meeting continued, and Day 5 - IIF Board meeting.

the Exuma Cays Land and Sea Park (ECLSP) that the winter was unusually cold. John Iverson described the same conditions and reported finding an unusually high number (27) of iguana carcasses. We also found the first iguana carcass from the translocated iguana colony from Alligator Cay in the ECLSP.

The remaining iguanas gained up to 1.15 kg in mass from 2002 and appeared healthy and active. At least 20 burrows were observed constructed in the sand surrounding the island. A minimum of three second-year hatchlings and two first-year hatchlings were detected on the island. We captured one second-year iguana with a BM of 118 g and SVL of 13.7 cm. Rats were again trapped from the island, confirming their presence.

Lee Stocking Island - Sandra Buckner and Chuck Knapp visited Lee Stocking Island to perform a habitat suitability analysis for a potential iguana (*C. c. figginsi*) translocation. The details of the study are outlined in a report drafted by both SB and CK. That habitat is suitable for iguanas and we support a translocation based on our recommendations outlined in the report.

ANEGADA ISLAND - Gerber

***Cyclura pinguis*: 2004 update.** Glenn Gerber (Zoological Society of San Diego) and Kelly Bradley (Dallas Zoo).

For the third year, the Anegada iguana project received funding from the IIF toward fieldwork related to the headstart and release program. Additional support for the project came from the Morris Animal Foundation to support health screening of headstarted animals, and the IUCN/SSC Sir Peter Scott Fund through the ISG for fieldwork, educational initiatives, and publication of a Species Recovery Plan resulting from a workshop held in Miami in April 2004 (see ISG Newsletter 7(1)).

The first release of headstarted Anegada iguanas took place in October 2003, with the release of 24 animals ranging from 4-6 years of age and 750-2050g. These animals have been tracked every month or two since their release and 20 of the animals (83%), including the five smallest animals released, survived their first

year back in the wild (see ISG Newsletter 7(1) for further details). In October 2004, a second group of 24 headstarted animals were returned to the wild using an identical release strategy to that employed in 2003 except that the minimum size of released animals was reduced from 750g to 550g in an effort to determine the minimum size iguana that can coexist with feral cats. As in 2003, 12 iguanas (6.6) with surgically implanted radiotransmitters were released at each of two study sites located in the core iguana area: Windlass Bight (coastal sandy scrub) and Middle Cay (interior limestone woodland). To date, one animal released at Middle Cay has died (only the transmitter was recovered). The other 23 animals released this October are doing well and have established home areas within 400m of their respective release sites. At two months post-release, animals have increased in mass by 5-260g.

In July, a single nest was located in the Windlass Bight area and fenced off. Unfortunately, only two hatchlings were recovered from the nest in October, as only three of the eight eggs laid resulted in emerging juveniles and one of these escaped. However, five additional hatchlings were captured from various locations in October. All seven animals were transferred to the headstart facility managed by the BVI National Parks Trust.

We are grateful to Rick Hudson, Sandy Hurlbut, AJ Marlar, Nina Palmer, and Bonnie Raphael for health screening and surgical implantation of transmitters. For assistance in the field we thank Carol Andersen, Cynthia Bennett, Kim Harding, Elyse Kitterman, Kerri Mitchell, Lee Pagni, and Joe Wasilewski.

BOOBY CAY, BAHAMAS - Wasilewski

Booby Cay Report, *Cyclura carinata bartschi*. Joe Wasilewski, Steve Connors, John Bendon.

A trip to Mayaguana and Booby Cay, Bahamas, was undertaken in October 2004 in order to assess the islands post-hurricanes Francis and Jeanne. Sustained winds were reported at 140mph and storm surges covered parts of the respective islands. Damage was minimal as it seems the people are well prepared for

hurricanes. A small percentage of vegetation (misc trees and shrubs) was destroyed. Iguanas were abundant as on previous trips and during the course of one day 65 animals were observed of all size classes including juveniles. Three beaded animals were seen. The perpetual goat problem exists, with goat tracks covering the entire Cay.

There are plans for major development of Mayaguana. A new airport terminal is near completion. Approximately 2500 second homes are planned along with a hotel/resort with up to 3500 rooms. Presently, the entire population of Mayaguana is no more than 400 people. The plans seem quite an undertaking, but Mayaguana is the last frontier in the Bahamas. The airport expansion already exists with the terminal able to far exceed its present capacity. If development proceeds as planned, it is highly likely there will be an increase in visitation to Booby Cay. This would increase the likelihood of disturbance to the iguanas either directly, or through the introduction of feral predators.

Future Goals:

- * Address the issue of analyzing blood samples.
- * Continue transect surveys and publish population results.
- * Meet with Bahamian officials again to address goat problem.
- * Discuss and analyze feasibility of gaining National Park Status.

CUBA - Rehak

Cuban Iguana Update. Ivan Rehak (Prague Zoo).

The PHVA meeting for the Cuban iguana was held at the Havana Zoo, Cuba, on January 20-23, 2003. Thirty participants representing 14 institutions formulated, on the base of scientific analysis, a plan for conserving the Cuban iguana to assist in saving this unique animal for the future. Cuban iguanas do not represent either a direct threat or any health, hygienic, or epidemiologic problem for man. They are highly important creatures for biologic, scientific, and cultural reasons. Their conservation requirements utterly agree with protection of other important animal and plant populations, especially regarding the dry coastal forest. Conservation

of a healthy coastal ecosystem, its biological diversity, and its natural beauty has great importance, not just ecologically and culturally, but also economically. The Cuban iguana is an ideal flagship species (as the object of admiration, respect, rightful patriotism, and human care) for conservation measures.

During a postconference stay in 2003, I visited some important localities on the Cuban mainland, from the Guanahacabibes in the west to the Sierra Maestra in the east. The present state of Cuban iguanas still gives us hope for the animal's survival. This is supposing that distribution areas will stay protected against ruthless exploitation and that people will be not indifferent to the fate of the animals, but on the contrary, people will grant them protection, support, and help.

PHVA results showed the necessity of scientific and conservation research. I have taken responsibility for helping to fulfil some research tasks, and have submitted a proposal for an international project covering phylogeographic analysis of wild populations in Cuba and its satellite islands, an assessment of genetic variation (within population) in the largest wild populations, assigning the animals belonging to the principal lineages of the global captive population to their geographic origin, evaluating genetic variation and the conservation value of current breeding stocks, determining the principal behavioral factors (social structure and activity patterns) affecting demographical output, determining growth rates, reproductive effort, and other life history traits in captive populations, and relationships between these traits and explanatory variables (origin, inbreeding, mother's condition, feeding strategy, etc.). The realization of the project on an international level was not yet successful with regard to finding a way to export samples for genetic analyses from Cuba. However, in 2004, a similar national project has started to be conducted at Charles University at Prague, Czech Republic, using specimens held in European Herpetological Collections. At present, the samples are being collected and the first results and publications should appear during 2005 - 2007.

According to the decision of the Ambibian and Reptile Taxon Advisory Group of the European Association of the Zoos and Aquaria, the European captive population should be intensively managed as an EEP (European Breeding Program), which I will coordinate.

threat level. By starting with the species that are most endangered, the Alliance aims to create a front line of defense against extinction that will hold until broader scale conservation efforts can restore sufficient habitat to enable populations to rebound. The AZA mission is to pinpoint and conserve epicenters of imminent extinctions.

To be listed a AZE site must meet three criteria:

Endangerment. An AZE site must contain at least one Endangered (EN) or Critically Endangered (CR) species, as listed by IUCN - World Conservation Union.

Irreplaceability. An AZE site should only be designated if it is the sole area where an EN or CR species occurs, or contains the overwhelmingly significant known resident population of the EN or CR species, or contains the overwhelmingly significant known population for one life history segment (e.g., breeding or wintering) of the EN or CR species.

Discreteness. The area must have a definable boundary within which the character of habitats, biological communities, and/or management issues have more in common with each other than they do with those in adjacent areas.

Both the ISG and IIF have signed an MOU with AZE and agreed to participate. It is in our best interest to have key iguana locales listed as AZE sites because those species then become eligible for funding through Conservation International's (CI) Critically Endangered Neotropical Species Fund. Already, and without the benefit our ISG/IIF input, the Jamaican iguana program received funding from CI because the Hellshire Hills ecosystem is listed in the AZE database map. The group discussed other potential candidates for AZE listing including Grand Cayman blue iguana, Utila iguana, and the Fijian crested iguana. The ISG will provide additional recommendations as the intricacies of the criteria for listing become better understood.

Iguana-friendly Development Guidelines

Ideas were discussed for drafting iguana-friendly guidelines for island countries pursuing land development. This initiative was formulated at the TCI Iguana CAMP.

Flora. Natural areas should be incorporated into development; inclusion of iguana food plants; no invasive plants used for landscaping; minimal use of exotics.

Exotic Animals. Containment of pets – leashed dogs and no cats (guidelines tailored to a resort vs. private homes); spay and neutering required; permanent identification and registration required; no pets during construction phase; no livestock or domestic fowl.

Design. Minimal footprint; build into existing landscape; speed control, road signage, golf carts where practical (no ORVs); include footpaths and/or boardwalks to contain foot traffic; protection of nest sites and access to nest sites; work through homeowners associations where applicable.

Conservation and Science. Interpretive materials, educational signage, brochures, opportunities to donate to conservation efforts; no feeding of iguanas, emphasize the danger to iguanas and people; provide training for staff members of resorts (include etiquette for visitors); establish conservation and impact fee (from mitigation funds?) and hold funds in bond in event that feral mammals invade and require eradication; allow (fund?) assessment by iguana biologist before construction; allow (fund?) ongoing biological monitoring during and after construction; enforcement of legislation with penalties for harassment or removal.

A Task Force consisting of ISG members Lee Pagni, Glenn Gerber, and Steve Connors was formed to expand these guidelines and screen existing guidelines for sea turtles for additional ideas.

- * Jamaican iguana recovery program: 3 grants for \$33,000.
- * Anegada field research and conservation: 3 grants for \$37,000.
- * San Salvador iguana, Bahamas: 1 grant for \$7,500.
- * St. Lucia field research and conservation: 2 grants for \$13,000.
- * Ricord's iguana in the Dominican Republic: 1 grant for \$11,000.

The IIF will be restructuring their annual grant schedule for 2005, moving from a spring to a fall time frame. This will allow the IIF Board to periodically meet in conjunction with the ISG, with the first joint meeting scheduled for November 2005 on Andros Island, Bahamas. The IIF web site (www.iguanafoundation.org) is now set up to accept on-line donations and credit cards. The donor side of the web site allows us to manage the growing donor database and to set up new funding drives and campaigns. Currently, the Jamaican iguana is the primary focal point for fund-raising activities. Another high priority need is a vehicle for the Anegada field project. IIF has allocated \$4,000 toward the purchase of a small used truck, contingent upon matching funds from an outside source. The Anegada iguana recovery program is making significant progress, having released 48 headstarted iguanas in two groups in 2003 and 2004, primarily with IIF support. Zoos that regularly provide staff resources to this project include Fort Worth, Dallas, and San Diego. Finally, the IIF received their first Endangered Species permit from USFWS to import ten Grand Cayman blue iguanas for the U.S. captive program. Tandora Grant will return with them in January 2005.



Public Relation Issues and Iguana Conservation

Joe Wasilewski (*Natural Selections*)

The ISG should develop some type of protocol for dealing with film makers. There is potential to raise needed funds to support various projects throughout the Caribbean. The Crocodile Specialist Group has developed a collaboration with a major network and has made scientists available for film making. The company pays a negotiated amount for such a service

on an annual basis. The scientists then develop their own deal in order to compensate them for their time. This is done on an individual basis with charges such as a daily fee for the principal investigator and assistant(s), expenses, per diem, and a donation to the respective project. The same type of agreement should be arranged for the ISG, as film makers are heading away from crocodiles recently and iguanas could be featured extensively.

There is a potential problems with filming iguanas. Along with budgetary problems, iguanas are not as desirable to film as crocodiles. Simply put, viewers expect too much blood and sex. The concept of filming iguanas is an untapped resource and much of the work will take place on location: the respective island. Captive animals could be used to supplement natural history films. Be aware that some film companies will need extensive guidance to portray the appropriate message; editing by the scientists is mandatory.

In Summary:

- * Short films could be produced locally and used by the respective countries in schools in order to raise awareness.
- * Each taxon should be represented in such a manner.
- * Proper editing could produce a film to be sold to an international network equals dollars earmarked for future conservation work.

Session 3: Working Sessions

Alliance for Zero Extinction (AZE)

The Alliance for Zero Extinction is an initiative led by a group of biodiversity conservation organizations to identify and protect the last remaining habitats for the world's most endangered species. The Alliance aims to stem species extinctions, beginning with terrestrial vertebrates whose populations and distributions are best known, and including other species as soon as sufficient information becomes available to assess their

DOMINICAN REPUBLIC - Hudson (for Ramer)

Ricord's iguana, Species Recovery Plan Update. Jan Ramer (Indianapolis Zoo) and Rick Hudson (Fort Worth Zoo).

To develop a regional conservation strategy for the critically endangered Ricord's iguana, a five year (2002 - 2007) Species Recovery Plan was drafted under the auspices of the ISG in November 2002, and a local Ricord's Iguana Recovery Group (RIRG) was formed with the task of implementing the plan. The overall goal was to prioritize the conservation actions necessary to ensure the long-term survival of Ricord's iguana throughout its natural range. In response to one of the objectives in the 2002 SRP, a meeting was organized to revisit the SRP and to adjust priorities and recommendations in response to this new information. Hosted by ZooDom, a group composed of local RIRG and ISG members met on 27 - 28 July 2004 to conduct a second workshop to review progress and update the SRP. Prior to this meeting, some participants were hosted by Grupo Jaragua, where they traveled to the Barahona Peninsula, visiting a newly identified "hotspot" for *C. ricordi* distribution near Pedernales. The discovery of this robust population has important implications for the conservation of this endangered iguana, and was a decisive influence on the direction of the revised SRP. Future work in this region will focus on two main components: capacity building and field research. Plans to cultivate support among the local community (by creating economic opportunities) coupled with a public awareness campaign are taking shape, and preliminary efforts are already underway by Grupo Jaragua to protect this area under the local municipality. A small grant from Riverbanks Zoo Conservation Fund to investigate the socio-economic impact of Ricord's iguana conservation in this area was awarded to Grupo Jaragua and Indianapolis Zoo in early 2004. Field research will be directed at gaining a clearer understanding of the biology of *C. ricordi* (nesting ecology, feeding and habitat requirements, threats) in order to better design an effective conservation strategy. The other priority region for habitat surveys is the south shore of Lago Enriquillo, where a population of Ricord's iguana is suspected to exist but needs to be confirmed. It was also recognized that the population on Isla Cabritos continues to be an important study population, and Indianapolis Zoo and

ZooDom will continue the transect and habitat work they started there in 2003. Baseline biomedical work on all three populations, including genetics, is also recommended. Field studies should include investigating the relationship with the sympatric *C. cornuta*.

The Education objective, including curriculum development and local capacity building initiatives in the Pedernales region, is moving ahead thanks to two grants totaling \$34,000 from the US Fish & Wildlife Service and AZA's Conservation Endowment Fund to the Indianapolis Zoo. Both Grupo Jaragua and ZooDom will be involved with implementing this objective, which strives to create awareness and encourage participation and support among the local community for protecting the newly identified "Pedernales hotspot for *C. ricordi*."

The Captive Management objective recommends new directions for the ZooDom program. For *ricordi*, the emphasis will shift to applied research to better define the factors necessary for successful breeding and management. Incorporation of new bloodlines should be done periodically from the wild using only hatchling or juvenile specimens. It was recommended that the rhino iguana breeding and release program should be scaled back and phased out.

Finally, a strategy for approaching external funding sources over the next two years was developed that includes the International Iguana Foundation, U.S. Fish & Wildlife Service, Indianapolis Zoo, AZA Conservation Endowment Fund, and Disney's Wildlife Conservation Fund.

Many thanks to Alfonso Ferreira and ZooDom for hosting the meeting this summer, and to Sixto Inchaustegui and Grupo Jaragua for their remarkable hospitality during the pre-meeting field trip to Pedernales.

GRAND CAYMAN - Hudson (for Burton and Binns)

Status of the Blue Iguana Recovery Program. John Binns (International Reptile Conservation Fund) and Fred Burton (National Trust for the Cayman Islands).

In 2004, all but one of 84 viable eggs hatched successfully, despite complications imposed by Hurricane Ivan in September. During July and August, "Team Blue," assembled by the IRCF and comprised of 13 volunteers from the US, UK, and Cayman Islands, including representatives from the Indianapolis, Tulsa, Knoxville, and Phoenix Zoos, built 102 juvenile and 30 hatchling cages. Subsequently, Fred Burton and local volunteers constructed 25 iguana retreats used to encourage the fidelity of released iguanas to specific release site locations in the Salina Reserve, which is intended to establish a second reintroduced population now that the QEII Botanic Park is nearing carrying capacity. To date, 13 females have been released and appear to be doing well. The release effort will continue into January.

Dorothea Schwab of Wild Wings Vision continued filming for the Blue Iguana DVD "Too Blue to Lose." Film of Hurricane Ivan's aftermath and effects on iguana habitat will be edited into the original storyboard. One version of the film, aired on the VOX (documentary) channel in Germany on 27 November 2004 and reached an audience of 1.1 million, will be sold internationally along with an English language version (funded by Deutsche Offshore – Cayman Ltd.). John Cleese of Monty Python fame has agreed to narrate the latter, expected to be available in fall 2005. Proceeds from the sale of the DVD will go to the Blue Iguana Recovery Program.

Immediately after Hurricane Ivan passed, Fred Burton, Matt Goetz (Durrell Wildlife Conservation Trust), and Nick Lewis (private sector), made multiple attempts to reach the Botanic Park, but the south road was too heavily damaged and debris-strewn to allow passage. Eventually, emergency services bulldozed through the debris and allowed the team to make their way close enough to hike into the park. Miraculously, although heavily flooded, the facility was intact and all of the iguanas had survived and appeared healthy. Subsequently, cages have been re-outfitted with retreats,

rocks, palm leaves, and branches. Also, construction of six sub-adult cages to make smaller cages available for hatchlings and new cement pens was completed.

Although the overall progress made in 2004 was promising and difficulties associated with the hurricane may actually provide some opportunities for improving facilities and building support, concerns remain. The greatest of these is in finding or generating the funds to pay warden and keeper wages, because, without them, management of a facility with 200+ captive animals will be impossible.

JAMAICA - Van Veen

Jamaican Iguana Recovery Project, 2004 Update. Rick Van Veen and Byron Wilson (University of the West Indies).

Predator Control - John Kunna and Rick Van Veen completed the eighth year of pitfall trapping, monitoring the effect of mongoose 'trapped' and 'non-trapped' areas on population structure and abundance of ground lizards and other animals within the Jamaican iguana's known distribution. Exotic mammal trapping (see Table 1) continued through the year (Jan-Dec) along with an increased effort toward controlling feral cats, dogs, and pigs in the iguana nesting areas. Preparations are also underway to produce locally made mammal traps for the expansion of the current trap grid.

Table 1: Body Count (Feb-Oct 2004)

Predator/Pest	Number Extinguished
Mongoose	61
Cats	7
Rats	46
Goats	3
Charcoal Burners	2
Dogs	3
Pigs	25

International Iguana Society Report

Joe Burgess (IIS)

In the past year, the IIS has focused its funding efforts on the Grand Cayman and St. Eustatius iguanas. In Grand Cayman, \$2,000 was donated to purchase supplies for upgrading and expanding the facilities' iguana enclosures and purchasing a maintenance shed. An additional \$2,300 was donated from the Rob Dorson memorial fund (IIS member who passed away). In St. Eustatius, \$1,000 was donated to purchase and erect signs throughout island (airport, shopping area, hiking trails, and near iguana habitat) which give basic information about *Iguana delicatissima* (see photo). Several IIS members also volunteered their time to help with the iguana translocation project in the Turks and Caicos Islands and the facility upgrade and construction in Grand Cayman.

The IIS is planning to host an auction at the National Reptile Breeders Expo in Daytona in 2006. Auction proceeds will go to the following projects: 1) San Salvador, *C. rileyi*; 2) Jamaica, *C. collei*; and 3) Anegada, *C. pinguis*. The IIS will also host evening iguana talks highlighting several species and will construct informational and educational displays for Expo visitors.

The IIS will undergo a few structural changes in the upcoming year. IGUANA magazine will begin including articles pertaining to other reptiles sympatric with iguanas to appeal to a broader audience and hopefully increase membership. Additionally, although not discussed at the meeting in Fiji, IIS has now been incorporated into the IRCF and is no longer a separate entity.

IRCF will inherit the magazine and the IIS membership.

International Iguana Foundation Report

Rick Hudson (Fort Worth Zoo)

Organized in August 2001, the IIF now has 14 Board members representing a range of partner organizations including Zoos (11), Corporations (Disney), Wildlife Trusts (Durrell) and Foundations (IRCF). The Shedd Aquarium is ready to come on board soon. The IIF just passed a major funding milestone, surpassing the quarter million mark (\$260,439) raised for iguana conservation since 2001. Pledges by Board members account for ~\$45,000 annually and grants and donations represent the rest. The Disney Wildlife Conservation Fund has been particularly generous to the IIF, having contributed \$48,750 through their DWCF grants and \$20,000 in dues for a total of \$68,750. The 2004 DWCF grant (\$16,000) funded the implementation of the Turks & Caicos Iguana Conservation and Management Plan. The IIF is currently administering grants from Morris Animal Foundation and the IUCN/SSC Sir Peter Scott Fund (for Anegada).

Additionally, individual board members responded to various requests for emergency aid or special needs in 2004 by sending funds or staff members to assist. For the Hurricane Ivan relief effort on Grand Cayman, the following partners responded: Woodland Park Zoo, Indianapolis Zoo, Houston Zoo, Sedgwick County Zoo, Audubon Zoo, Zoo Conservation Outreach Group, and Disney's rapid response fund for a total \$11,376 in cash, equipment, and staff support. Earlier in the year nearly \$3,600 was raised for the Blue Iguana Recovery Program by the Herp Department at the Sedgwick County Zoo and the Woodland Park Zoo provided another \$2,000.

For hurricane relief at Jamaica's Hope Zoo, the following responded: San Diego Zoo, Fort Worth Zoo, Disney's rapid response fund, and Sedgwick County Zoo's AAZK chapter, totaling over \$6,000 in funding and staff support. The Hellshire Hills field project benefited from additional support from Audubon Zoo, IRCF, and the Houston Zoo that allowed IIF to provide a \$2,500 match to a Miami Metrozoo grant.

The IIF has awarded at total of \$137,280 in three grant cycles (2002 – 2004) to the following projects:

* Grand Cayman blue iguana recovery program: 3 grants for \$36,000.

ing process of individual headstarted animals can be streamlined. A new protocol has been developed to reduce the number of laboratory tests needed and to perform all relevant tests for individuals on-site within days of release. The pre-release health screening protocol for headstarted animals is: 1) perform a physical exam including weighing; 2) collect whole, heparinized blood and perform a white blood cell count using the Natt and Herricks method and determine packed cell volume and total solids; and 3) collect feces and perform a direct microscopic exam.

In order to monitor the collective health of the captive animals, full work-ups need to be performed on 10% of the captive animals in the facility every year. Some of these can include pre-release animals. The testing includes white blood cell counts (Natt and Herricks), total solids, packed cell volume, direct and floatation fecal exam, fecal/cloacal culture, mineral and chemistry panels, and vitamin D determination.

In addition to the routine health screening, in 2003 and 2004 transmitters were surgically implanted intracoelomically in a total of 48 headstarted *C. pinguis*. Animals were released 10-14 days after the surgeries. Survival of the 2003 cohort at one year is 84% and 100% for the 2004 group at 60 days.

In addition to the testing done using MAF funds, two other species were sampled this year. WCS veterinarian Stephanie James performed health assessments on free-ranging wild Allen Cays iguanas (*C. cyclura inornata*) during John Iverson's field season and Nancy Lung, veterinarian at the Fort Worth Zoo, did the same on free-ranging wild *Cyclura rileyi*. Funding was provided by WCS and the Smithsonian, respectively. This was significant in that health assessments have now been performed on all nine species of *Cyclura*. Final results and comparisons among species are pending.

A medical records survey was conducted via email request. Twenty-eight North American institutions responded, sending medical records encompassing 100 years, 380 medical records, 978 individual entries, and 110 necropsies. Six *Cyclura* species were represented. Of the 114 occurrences of parasites, oxyurids and entamoeba were reported most frequently. Other parasites included external mites, strongyloides, trematodes, cestodes, mesocestoides, trichuris, physeloptera, coccidia, flagellates, balantidium, nyctotheris, and one

possible cryptosporidea. Trauma (lacerations, fractures, lameness) accounted for 118 entries, and there were seven accounts of thermal burns and 9 accounts of hypothermia. Infections (abscesses, pneumonia, and others) were recorded 89 times, including renal failure in 34 accounts, and 50 reproductive events (gravid, oophoritis, salpingitis, egg yolk peritonitis, and egg binding). Calcium/phosphorus/vitamin D related problems (metabolic bone disease, tetany, and hypocalcemia) were reported 32 times, anorexia and lethargy in 22 accounts, one report of bladder stones, and ten accounts of intestinal obstruction/obstipation/sand impactions. No attempts were made to apply statistics to the results.



Husbandry Manual for West Indian Iguanas

Jeff Lemm (*San Diego Zoo, CRES*)

Husbandry manuals are helpful additions to captive animal management programs and are suggested components to IUCN SSC Species Survival Plans. The West Indian Iguana Husbandry Manual was conceived at the ISG meeting in 2002, held in the Dominican Republic. Surveys were sent to researchers working with WI iguanas, as well as institutions working with the animals in captivity. One researcher and 14 captive facilities responded. To date, the husbandry manual contains roughly 25 pages (single-spaced, without photos) that include information on natural history and captive management from these facilities. The Captive Management section consists of short chapters on Population Management, Quarantine, Housing, Capture and Restraint, Reproduction and Nesting, Record Keeping, and an additional husbandry protocol for Lesser Antillean iguanas (*Iguana delicatissima*). Publication is dependent on the arrival of the chapters on Nutrition and Health/Medical. Once the sections are complete and the photos are added, the manual will be translated into Spanish. The estimated size of the completed manual is roughly 50-75 pages. It has yet to be decided if it will be published as a hard copy or a CD.

Reproduction and a New Population - 13 females were observed nesting at the two known communal nesting sites, however, only seven clutches hatched producing 64 hatchlings, all of which were PIT tagged, weighed, and measured. Nineteen of the 64 were radio tracked, 19 went to the Hope Zoo to join the head-start program, and the rest were released. An additional 13 were found to have hatched at a new nest site, and two other potential nest sites were also found. A new population was confirmed in the Wreck Bay area, along with anecdotal evidence of a further communal nesting area. Four captive bred Jamaican iguanas were also produced at the Hope Zoo from a small colony of young adults.

Management Issues - Dr. Byron Wilson now 'heads up' the field project and has continued to expand project interest with regular student field trips and collaboration with other researchers (i.e., feral pig and mongoose parasitology). Management of the Portland Bight Protected Area (PBPA) has now been resolved, with the National Environment Agency (NEPA) delegating the management authority of the Hellshire Hills and Goat Islands to the Urban Development Corporation (UDC). Preliminary discussions with UDC regarding collaboration, conservation, and preservation of the PBPA appear very positive.

Radio-tracking Hatchling Iguanas - 19 iguana hatchlings were radio-tracked between September 2 and November 2. At this point, six remained alive, the fate of three is unknown, and the remaining ten radios were retrieved without the animals suggesting they are likely to have been victims of exotic predators. On three occasions, mongooses were observed actively searching retreat sites that were in use by hatchling iguanas. We finished with dispersal data for 15 animals and home range data for 11 animals. A dietary list of 25 plant species was compiled, and of these 3-4 species of vines appeared to be most important. There was strong retreat site fidelity, and retreat site selection appeared distinctly uniform; hatchlings preferred half-fallen dead hollow trees, 6-15cm in diameter, with a north-westerly aspect. No doubt these are the same resources sought after by illegal forest users (charcoal burners).

Turks and Caicos iguana, *Cyclura carinata carinata*, Research Update. Glenn Gerber and Allison Alberts (Zoological Society of San Diego).

In addition to ongoing support from the San Diego Zoo, grants for the Turks and Caicos iguana project were received from the Disney Wildlife Conservation Fund, through the IIF, and the Steve and Carol Weinberg Foundation. Disney funds are being used to support fieldwork, educational initiatives, and completion, publication, and implementation of the Turks and Caicos iguana Conservation and Management Plan (CAMP) drafted at the 2003 ISG meeting in Providenciales. Lorna Slade, a UK conservationist residing in the TCI, has been contracted to finish the CAMP document and begin implementation. The plan is nearly complete now and scheduled for publication in early 2005. Lorna recently implemented a small-scale trapping program for feral cats on Little Water Cay with assistance from the Turks and Caicos SPCA and the TC National Trust, and a \$2000 contribution from a local developer (Johnstons). In partnership with the NGO Island Conservation, additional funds are being sought to implement an island-wide cat eradication program to safeguard this important population.

Funds received from the Weinberg Foundation are being used to complete nutritional analyses of food plants, dietary analyses of scats, and construction of a detailed habitat GIS for each of the six islands that constitute the translocation program (source islands: Big Ambergris Cay, Little Water Cay; reintroduction islands: French, Bay, Middle, and Six Hills Cays). Each of the translocation and source cays were visited in May to collect data for ongoing studies of survival, growth, reproduction, habitat use, nutrition, and diet. In addition, vegetation surveys were conducted on each cay to quantify the abundance and distribution of plant species and aid the construction of a habitat GIS. In June and August, a nesting study was undertaken on Little Water Cay to quantify reproductive parameters. Twenty nests were monitored during the study, but fieldwork was terminated before all the nests hatched due to Hurricane Frances. Joe Burgess, Todd and Kym Campbell, Mike Fouraker, Rick Hudson, Sue Keall, Andy Keech, Jeff Lemm, Karen Lisi, Bryan Manco, Greg McMillan, JP Montagne, Earnest Rupp, Catherine and Dan Stephen,

Tarren Wagener, and George Waters provided valuable field assistance in 2004.

In spite of the above advances, a significant setback for TCI iguana conservation occurred this year with the announcement of a proposed large-scale development for the Bay Islands National Park. The park, which will be declassified if the development plan is approved, includes two islands with iguanas: Major Hill Cay and East Bay Cay. The latter cay supports between 5,000 and 10,000 iguanas, the largest extant population outside of the Ambergris Cays (the largest of which is presently under development). Worse still, the development plan calls for a causeway connecting the cays to North Caicos, providing easy access for cats and dogs and virtually ensuring the extirpation of iguanas. Our strong opposition to this development has been made.

ST. LUCIA - Graham

St. Lucia iguana Update. Karen S. Graham (Sedgwick County Zoo) and Matthew Morton (Durrell Wildlife Conservation Trust).

Because the Saint Lucian Green Iguana is very difficult to locate throughout its range, population census efforts have been concentrated at the two known nesting beaches, Louvet Beach and Grand Anse Beach. From late February through mid-May, nesting indices were recorded in order to generate a nesting population index for future monitoring efforts. Five active nests were excavated with a mean of 21 eggs (range 17-21). This substantiates the use of hatchling-emergence surges (mean 19.5) to estimate nesting female population size. Three females radio-tagged at Louvet Beach in March were followed back to their home ranges (1.61 km, 1.57 km, and 80 m). A female radio-tagged in September 2003 migrated >2 km to Louvet Beach in May.

Hatchlings were counted at each beach from mid-May through mid-August (est. 1300 at Louvet Beach, est. 140 at Grand Anse). Gender, body measurements, physical appearance, and emergence time were recorded for each hatchling. Forty-seven hatchlings were subjected to racing and climbing trials to test the effects of two transmitter sizes (0.62 g and 1.2

g) on performance. Slight increase in mean race time correlated with increased transmitter size, although tests differences were not statistically significant. Two transmitter sizes were used to radiotrack 19 hatchling iguanas at the Grand Anse and Louvet sites. One male and two females carrying small transmitters traveled over one km. Of these, one female traveled 1.56 km, crossed a ridgeline, and settled near an adjacent beach. In contrast, a male with a large transmitter traveled 400 m to a good food source. Ten animals slipped their transmitters during the study. Three of the recovered transmitters showed slight damage that could indicate predation. Two recovered transmitters were glued dorso-laterally to new hatchlings, a method that we recommend for future studies.

MEXICO - Reynoso

GARP Analysis and Conservation of *Ctenosaura*. Victor H. Reynoso, Rocio Ponce, and Gina González (IBUNAM).

The study objective was to evaluate how much of the actual expected distribution of black iguanas has warranted protection through Mexico's Natural Areas Program. The methods used for this study were:

- Collect data from museum collections.
- Georefer the data with actual distribution coordinates.
- Model GARP potential distribution areas.
- Cut overprediction of models with natural subregions.
- Overlap natural protected areas.
- Cut potential distribution within natural areas.
- Calculate the percentage of pixels of the potential distribution contained within the natural areas.

Analyses were performed for *C. acanthura*, *C. hemilopha*, *C. clarki*, *C. similis*, *C. pectinata*, and *C. macrolopha*.

Species	Predicting Models	Total Pixels	Pixels in Potential Distribution Areas	Pixels in Natural Protected Areas	Ratio
<i>C. acanthura</i>	10	114739	68038	2270	0.03
<i>C. hemilopha</i>	10	10131	9944	446	0.04
<i>C. macrolopha</i>	10	145448	105647	2013	0.02
<i>C. pectinata</i>	10	327695	263923	5745	0.02
<i>C. similis</i>	10	148992	124268	12471	0.10
<i>C. clarki</i>	10	17787	15498	0	0.00

Session 2: General Reports

Cyclura Studbook

Tandora Grant (San Diego Zoo, CRES)

The *Cyclura* studbook contains a record of all animals that have lived in US zoos and some non-zoo facilities. The current living population is (M.F.Unk):

Cyclura cornuta cornuta: 27.23.21 (71) in 20 zoos

Cyclura cyclura figginsi: 1.5 (6) at the LA Zoo

Cyclura nubila nubila: 7.7 (14) in 4 institutions

Cyclura nubila caymanensis: 1.0 at the Atlanta Zoo

Cyclura ricordi: 1.3.14 (18) at ZooDom (Dom. Re-pub.)

Cyclura pinguis: 9.9 (18) at the San Diego and Miami Metro Zoos. The US population consists of 1.2 founders and 2.1 potential founders. There are approximately 56 animals living in the headstart facility on Anegada. 24 were released in October 2003 and 24 were released in Fall 2004.

Cyclura collei: 8.11 (19) in 6 institutions. Approximately 32.25.61 (118) are living at the Hope Zoo in Kingston, including 24 hatchlings from 2003 and 19 from 2004. There were six deaths due to the recent hurricane, but an additional four were captive-hatched in the headstart facility.

Cyclura lewisi: 12.9 (21) in 9 US institutions, 19.19.37 (75) at the Grand Cayman breeding facility prior to the 2004 hatching season. The US population is currently represented by six founders and an importation of 5.5 animals scheduled for Jan 2005 will add an additional six founders. The Grand Cayman facility has 7.5 founders and 3.1.1 potential founders. Headstarting of juveniles from nests in the QEII Botanic Park continues with 52 collected in 2003 and 25 raised in 2002, which are scheduled to be released in December 2004.



ISG Veterinary Advisor Update

Bonnie Raphael (Wildlife Conservation Society)

A grant from the Morris Animal Foundation (MAF) provided funding for three years for the purpose of: establishing baseline health profiles of free-ranging iguanas; performing and establishing protocols for health screening of head-started iguanas; and providing training to local veterinarians. The grant covered five species of iguanas (*C. lewisi*, *C. collei*, *C. c. stejnegeri*, *C. ricordi*, and *C. pinguis*) and involved veterinarians and veterinary technicians from the Wildlife Conservation Society, Indianapolis Zoo, Toledo Zoo, and Fort Worth Zoo.

Initially the health assessments consisted of: physical exam; blood sampling and analysis including white blood cell count, packed cell volume, total solids, chemistries, minerals, and vitamin D; and fecal examination via direct and floatation methods for parasites and bacterial culture.

Samples obtained from free-ranging animals was more limited than originally anticipated. A total of four *C. lewisi*, 10 *C. pinguis*, 19 *C. collei*, 20 *C. c. stejnegeri*, and 23 *C. ricordi* samples were collected and analyzed. Samples collected from captive animals included 62 pre-release and 30 captive non-release *C. lewisi*, 49 pre-release and 25 captive non-release *C. pinguis*, 80 total captive *C. collei*, and 25 total captive *C. c. stejnegeri*.

In February 2004, Drs. Reichard, Ramer, Marlar, Lung, and Raphael met to compare data from all groups. Some of the conclusions regarding the health status of head-started animals are: 1) there are low rates of endoparasitism; the longer *C. lewisi* are held in captivity on dirt substrate, the more likely they are to have endoparasites; 2) there are low rates of *Salmonella sp.* in captive animals; and 3) there were no infectious diseases identified in the animals sampled.

Health screening of headstarted animals needs to be done close to the time of release of those animals. Based on the findings of screens that have already been conducted, it is apparent that the health screen-