

ABSTRACTS OF SCIENTIFIC PRESENTATIONS

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SAN SALVADOR ISLAND, BAHAMAS

Population Genetics of the San Salvador Rock Iguana, *Cyclura r. rileyi*. Ronald L. Carter and William K. Hayes, Department of Natural Sciences, Loma Linda University, Loma Linda, CA 92350 USA.

This study examined the population genetics of the iguana endemic to San Salvador, Bahamas. Blood samples, yielding purified DNA's, were collected from 53 individuals collected from six cays (14 from Green, 6 from Pigeon, 4 from Low, 14 from Goulding, 11 from Manhead, 4 from Guana). One individual from each cay was used in a preliminary study to survey 10-mer primers for Random Amplified Polymorphic DNA analysis (RAPDs). Out of 96 primers surveyed only 24 showed polymorphism. DNA from each of the 53 iguana samples were individually PCR amplified with each of the 24 primers. On average, each primer amplification yielded 5 scoreable bands (total = 70 bands). Fourteen of the 70 bands generated from the 24 primers produced informative polymorphism. Data from banding patterns were analyzed by UPGMA and GensStat-PC 3.3. Nei's gene diversity statistics indicate that individuals from Green Cay have the greatest level of heterozygosity ($H_u = 0.3488$) and that the Pigeon Cay population possesses the least genetic diversity ($H_u = 0.1394$). The other populations show intermediate levels of heterozygosity ranging between $H_u = 0.2346$ and 0.2721 . Chi-square tests indicate significant differences in band frequencies among populations ($p < 0.01$). Cophenetic clustering of primer produced bands indicate that individuals from Green, Guana and Manhead Cays are most similar, and that individuals from Low and Goulding Cays cluster closely together. Banding patterns from Pigeon Cay individuals are most dissimilar from the other populations. The presentation will discuss the techniques involved in RAPDs analysis and the data that suggests population substructuring. Possible implications of these data for genetic resource management of San Salvador iguanas will also be discussed.

Characterization of Feeding Behavior in *Iguana iguana*. Catherine Dickert, Pok-O-MacCready Outdoor Education Center, 112 Reber Road North, Willsboro, NY 12996 USA.

The importance of salt and alkaloid content, and the effect of food color of potential food items in the diet of captive green iguanas were investigated. Food color was found to be an important food characteristic, with red, yellow and orange foods being chosen most often over green, blue and white foods. The salt content of food options was not an important factor in food selection when the concentration of salt on the food item was 3%, the concentration of sea

water. Inconsistent results were obtained in the alkaloid detection section of the study, and whether or not the presence of alkaloids in food items acts as a deterrent to feeding on a plant is not made clear by the results of this study. The behavior of geophagy was also observed in two adult captive green iguanas.

Distribution and Abundance of the Turks and Caicos Rock Iguana, *Cyclura c. carinata*. Glenn P. Gerber, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996 USA.

A population survey of the Turks and Caicos rock iguana was conducted between May and August 1995. Over 100 cays were visited during the survey, encompassing the entirety of the Turks and Caicos. Although historically iguanas likely occurred on all vegetated islands, they have been extirpated from many islands in recent times. In particular, iguanas are absent from most of the islands which are, or have been, inhabited by humans. However, iguanas are still abundant on many uninhabited islands, including a number of the small cays surrounding inhabited islands. The presence of introduced mammalian predators (cats, dogs) and free-ranging or feral livestock (goats, donkeys, horses, cattle) appears to be the most important factor contributing to iguana extirpation or rarity.

Nesting Ecology of the Mona Island rock iguana, *Cyclura cornuta stejnegeri*. Bernd Haneke, 507-D Channel Marker, Mary-Esther, FL 32569 USA.

The Mona Island iguana is a threatened species. The population is thought to be at an all time low due to predation and competition by feral animals. Furthermore, the population appears to be very aged, and there is a high mortality rate in hatchling iguanas due to feral cats. In October and November 1994, I studied the nesting areas of the iguana using a Geographic Information Systems (GIS) based Gap Analysis. This GIS was used to predict unknown nesting sites. Known and predicted nesting sites were subsequently visited and evaluated for their use by iguanas. From this research I was able to establish that nesting success is dependent upon location. Although successful nesting occurs on some beaches, in the interior of the island all of the nesting sites appeared to be completely destroyed by feral pigs. Continued research and direct intervention, for which I offer recommendations, are essential for the continued conservation and survival of the iguana on Mona Island.

Population Surveys, Body Size and Conservation of the San Salvador Rock Iguana, *Cyclura r. rileyi*. William K. Hayes and Ronald L. Carter, Department of Natural Sciences, Loma Linda University, Loma Linda, CA 92350 USA.

The San Salvador rock iguana, *Cyclura r. rileyi*, is a subspecies of one of three Bahamian iguana species, all of which are considered endangered. Virtually extirpated on the main island and on a handful of San Salvador's satellite cays, known remaining populations are confined to six tiny offshore cays and two islets within Great Lake. Lincoln-Peterson population estimates on two cays (based on resightings of marked iguanas) and censuses on other cays suggest a total population of 600-700 iguanas; however, numbers of juveniles are likely underestimated. Body size varies significantly from cay to cay, and appears to be positively correlated with the number of plant species present. Several threats to long-term survival were identified. These include the larvae of an introduced moth that are devastating the prickly-pear cacti which comprise a major food source on several cays, particularly Green Cay; feral rats on Low Cay that may prey upon iguana eggs and juveniles (the population consists almost exclusively of aged adults); and an unknown cause of mortality that recently decimated the Guana Cay population.

***Cyclura* Social Behavior: A Comparative Perspective.** Emilia P. Martins, Department of Biology, University of Oregon, Eugene, OR 97403 USA.

The success of campaigns in which captive iguanids are reintroduced into the wild depends to some degree on the abilities of animals born and raised in captivity to survive in the physical and social environment where they are released. Iguanas of the genus *Cyclura* exhibit an amazing diversity of social behavior, with individuals of some species living relatively solitary lives in the field, and others interacting nearly constantly with other iguanas. This diversity suggests that both cultural and genetic factors have played a role in the evolution of behavior in this genus, and makes *Cyclura* an outstanding model system for studying the evolution of social behavior. An examination of *Cyclura* social behavior and the communicative displays which mediate it in a phylogenetic context shows that there have been several independent evolutionary changes towards complex social behavior, and allows us to identify key species for future work. Future studies of behavioral development in these species will help us to understand the interactions between genes and environment in producing adult behavior, and can aid in the success of reintroduction efforts.

Differential Behavior and Predation in Both Sexes of the Green Iguana (*Iguana iguana*). Jesus A. Rivas and L. E. Levin, Department of Psychology, University of Tennessee, Knoxville, TN 37996-0900 USA and P.O. Box 47106, Caracas 1041-A Venezuela.

Hatchling green iguanas show complex social behavior related to predator avoidance. Field observations on the anti-predator behavior of free-ranging individuals suggested the presence of some cooperative strategies involving sexually dimorphic behavior. Two sets of experiments were performed: 1) exposing both sexes to a model of a predator, and 2) assessing whether the two sexes had differential mortality when facing natural predators. The first tests showed that males performed more risky behaviors and exposed themselves more to the model (Chi square $p < 0.05$). The second set of experiments showed that males were predated more often (Wilcoxon-signed-ranks test, $p < 0.03$). The higher exposure of the males to predators could be the proximate cause for the differences in mortality. A possible ultimate explanation is that males, altruistically, expose themselves more to predators benefiting related females. This is the first record of kin selection, other than parental care, reported in any reptile.

Trade in Live Iguanas. Joseph Ventura, U.S. Fish and Wildlife Service, 16 Hoover Lane, Bethpage, NY 11714.

U.S. Fish and Wildlife Service data (LEMIS) were examined to find trends involving the trade in live iguanas (*Iguana*, *Ctenosaura similis* and *Cyclura* spp.). In general, the trade in live iguanas has increased over the past several years at a remarkable rate. The passing of national legislation in several South and Central American countries has been the main factor regarding changes in the live iguana trade. Until about 1991, the bulk of iguana imports consisted of wild collected green iguanas, supplemented with smaller numbers of wild collected spiny-tailed iguanas. Most specimens came from South American countries such as Peru, Colombia and Guyana. After 1991, this situation was replaced with enormous numbers of hatchling green and spiny-tailed iguanas supplied by the "ranching" operations of a few Central American countries. A discussion of shipping methods, current legislation and violations involving iguanas will follow

OTHER PRESENTATIONS

Personal Experiences with Iguanas

John Bendon

Conservation of Bahamian Iguanas

Sandra Buckner

Outdoor Captive Husbandry of Iguanas

Robert W. Ehrig

Spiny-tailed Iguanas

Bruce Elfström

Common Shoreline Vegetation of the Bahamas

Richard Moyroud

Retrospectives on Conservation of the Mona Island Iguana

Tom Wiewandt

