

14th Annual Meeting of the IUCN Iguana Specialist Group
Guanahacabibes National Park, Cuba
9-11 November 2010

MEETING PROGRAM

Day One: 9 November

Session 1: 9:00 – 10:30 Welcome and Fijian iguanas (*Brachylophus*)

Miguel Antonio García & Glenn Gerber – Opening remarks and introductions

Robert Fisher – Rapid assessment for Fijian iguanas in the northeastern Fijian islands

Peter Harlow – Fijian crested iguana recovery plan update

Peter Harlow – A feral green iguana eradication program for Fiji

Heidi Davis – Captive Fijian iguana genetics & conservation management

10:30 Coffee Break

Session 2: 10:45 – 12:30 Species Recovery Plans, Red Listing, Taxonomic Advisory Group
(presentations followed by discussion)

Lee Pagni – The perils of planning: the good, the bad and the ugly of SRPs

Followed by group discussion on Species Recovery Plans

Tandora Grant – Red Listing update for iguanas

Followed by group discussion on Red Listing and ISG Taxonomic Advisory Committee

Other group agenda items with remaining time

12:30 Lunch

Session 3: 2:15 – 4:00 *Iguana* and *Ctenosaura*

Chuck Knapp – Life history variation for *Iguana delicatissima* populations on Dominica

Caroline Legouez – A conservation program for *I. delicatissima* in Martinique: 2010 report

Stesha Pasachnik – Conserving Roatan's spiny-tailed iguana, *Ctenosaura oedirhina*

Stesha Pasachnik – The outcome of Appendix II CITES listing for the *C. palearis* clade

Catherine Stephen – Iguana exploitation and conservation in CAFTA countries – an overview

4:00 Coffee Break

Session 4: 4:15 – 6:00 Miscellaneous *Cyclura*

Mark Welch – Mating system, inbreeding depression, and the dynamics of a 'natural' population

Kelly Bradley – Pilot study for intra-island translocations of TCI iguanas, *Cyclura carinata*

Joe Wasilewski – Update of *Cyclura carinata* on Booby Cay, Bahamas (5-10 minutes)

John Bendon – Territories of Mona iguanas living near people (5-10 minutes)

Mark Welch – Genetics of *C. collei* and *C. cyclura* (5-10 minutes)

Group agenda items with remaining time

Day Two: 10 November

Session 1: 9:00 – 10:30 Cuba: protected areas, herpetofauna, and *Cyclura nubila nubila*

Maritza García García – The National System of Protected Areas (SNAP) of Cuba

Lazaro Marquez Llauger – The Guanahacabibes National Park: values, threats, and potential

Luis M. Díaz Beltrán – Cuba: a land of reptiles and amphibians

Amnerys González Rossell – Overview of *Cyclura nubila nubila* studies in Cuba

Dorka Cobián Rojas – Monitoring the density of *C. n. nubila* in Guanahacabibes Nacional Park

10:30 Coffee Break

Session 2: 10:45 – 12:30 Cuba (cont.) and *Cyclura* health evaluations

José Luis Collazo – *Cyclura nubila nubila* in the Picúas-Cayo Cristo Wildlife Refuge

Manuel Alonso Tabet – *C. n. nubila* in the Monte Cabaniguán Wildlife Refuge

José Luis Polo Leal – Results in the management and reproduction of *C. n. nubila* in captivity

Chuck Knapp – Health assessment for Exuma Island iguanas (*C. cyclura ssp.*)

Paul Calle – Health evaluations of Grand Cayman iguanas (*Cyclura lewisi*)

12:30 Lunch

Session 3: 2:15 – 4:00 *Cyclura* conservation program updates & discussion of potential new captive propagation initiative for Caribbean iguanas

Byron Wilson – Jamaican iguana recovery program: Nov 2009 – Oct 2010

Masani Accimé – Local community empowerment for conservation of *Cyclura ricordi*

Kelly Bradley – Anegada iguana (*Cyclura pinguis*) conservation program - 2010

Miguel Antonio García – The recovery of the Mona iguana – now and next

Glenn Gerber – Group discussion: headstarting and captive breeding for Caribbean iguanas

4:00 Coffee Break

Session 4: 4:15 – 6:00 ISG agenda and discussion items

Tina Bouse – Introduction of new Program Coordinator for the International Iguana Foundation (IIF) and group discussion of how the ISG and IIF can better work together

George Waters – New ISG website: overview and group discussion

Any remaining group agenda and discussion items: potential future meeting sites, New ISG members, ISG blanket USFWS/CITES import permit, etc.

Day Three: 11 November

Any remaining group business

Red List assessment meetings with Tandora Grant (ISG Red List Authority)

Jamaican iguana recovery plan revisions (Lee Pagni, Byron Wilson, Rick van Veen)

14^a Reunión Anual del Grupo de Especialistas del Iguana de la UICN
Parque Nacional Guanahacabibes, Cuba
9 a 11 Noviembre 2010

PROGRAMA DE REUNIÓN

Primer día: 9 Noviembre

Sesión 1: 9:00 – 10:30 Bienvenidos y las iguanas de Fiji (*Brachylophus*)

Miguel Antonio García & Glenn Gerber – Comentario de bienvenida y presentaciones

Robert Fisher – Evaluación rápida de las iguanas de Fiji en el noreste de las islas Fiji

Peter Harlow – Actualizada sobre el plan de recuperación de la Iguana Crestada De Fiji

Peter Harlow – Un programa de erradicación de la iguana verde feral en Fiji

Heidi Davis – La genética y el manejo conservador de iguanas de Fiji en cautividad

10:30 Descanso para merendar

Sesión 2: 10:45 – 12:30 Los Planes de Recuperación de Especies, la Lista Roja, Grupo Consultivo Taxonómica (presentaciones seguidas de debate)

Lee Pagni – Los peligros de la planificación: lo bueno, lo malo y lo feo de los Planes de Recuperación de Especies

Seguido de debate en grupo sobre los Planes de Recuperación de Especies

Tandora Grant – Actualización de la Lista Roja de las iguanas

Seguido de debate en grupo sobre la Lista Roja y el Grupo Consultivo Taxonómica de ISG

Otros puntos del programa para el grupo con el resto del tiempo

12:30 Almuerzo

Sesión 3: 2:15 – 4:00 *Iguana* y *Ctenosaura*

Chuck Knapp – Variación en la historia de vida para las poblaciones de *Iguana delicatissima* en Dominica

Caroline Legouez – Un programa de conservación de *I. delicatissima* en Martinica: 2010 informe

Stesha Pasachnik – La conservación del Garrobo, *Ctenosaura oedirhina*

Stesha Pasachnik – El resultado del Apéndice II de CITES para el clado de *C. palearis*

Catherine Stephen – Explotación y conservación de la iguana en los países del CAFTA - un resumen

4:00 Descanso para merendar

Sesión 4: 4:15 – 6:00 Varios *Cyclura*

Mark Welch – Sistema de apareamiento, la depresión endogámica, y la dinámica de una población "natural".

Kelly Bradley – Estudio piloto para intra-isla desplazamientos de las iguanas Turcas y Caicos, *Cyclura carinata*

Joe Wasilewski – Actualización de *Cyclura carinata* de Booby Cay, Bahamas (5-10 minutos)

John Bendon – Territorios de la iguana de Mona que viven cerca de la gente (5-10 minutos)

Mark Welch – Genéticas de *C. collei* y *C. cyclura* (5-10 minutos)

Agenda del grupo con el resto de tiempo

Segundo día: 10 Noviembre

Sesión 1: 9:00 – 10:30 Cuba: Áreas protegidas, la herpetofauna y *Cyclura nubila nubila*

Maritza García García – El Sistema Nacional de Áreas Protegidas (SNAP) de Cuba.

Lazaro Marquez Llauger – El Parque Nacional Guanahacabibes: valores, amenazas y potencialidades.

Luis M. Díaz Beltrán – Cuba: una tierra de reptiles y anfibios

Amnerys González Rossell – Panorámica de los estudios sobre *Cyclura nubila nubila* en Cuba

Dorka Cobián Rojas – Monitorando la densidad de *C. n. nubila* en el Parque Nacional Guanahacabibes

10:30 Descanso para merendar

Sesión 2: 10:45 – 12:30 Cuba (cont.) y evaluaciones de salud de *Cyclura*

José Luis Collazo – *Cyclura nubila nubila* en el Refugio de Fauna Las Picúas-Cayo Cristo

Manuel Alonso Tabet – *C. n. nubila* en el Refugio de Fauna Monte Cabaniguán

José Luis Polo Leal – Resultados en el manejo, reproducción y cría de *Cyclura nubila nubila* en cautiverio.

Chuck Knapp – Evaluación de la salud de las iguanas de Exuma (*C. cyclura ssp.*)

Paul Calle – Evaluación de la salud de la iguana azul (*Cyclura lewisi*)

12:30 Almuerzo

Sesión 3: 2:15 – 4:00 Actualizaciones del programa de conservación para *Cyclura* y debate de la posibilidad de nuevas iniciativas para la propagación en cautiverio de las iguanas del Caribe

Byron Wilson – Programa de recuperación de la iguana de Jamaica: Nov 2009 – Oct 2010

Masani Accimé – Empoderamiento de la comunidad local para la conservación de *Cyclura ricordi*

Kelly Bradley – Programa de conservación de la iguana de Anegada (*Cyclura pinguis*) - 2010

Miguel Antonio García – La Recuperación de la Iguana Isla Mona - Actual y siguiente

Glenn Gerber – Debate en grupo: la cría en cautividad y headstarting de iguanas Caribe

4:00 Descanso para merendar

Sesión 4: 4:15 – 6:00

ISG agenda y temas de debate

Tina Bouse – Introducción del nuevo Coordinador del Programa de la Fundación Internacional Iguana (IIF) y debate en grupo para poder lograr un mejor trabajo junto entre el ISG y IIF.

George Waters – Nuevo sitio web de ISG: visión general y el debate en grupo.

Cualquier temas de la agenda y el debate restantes para el grupo: proximas sitios de reunión, los nuevos miembros del ISG, permisos de importación USFWS/CITES para el ISG, etc.

Tercer día: 11 Noviembre

Cualquier negocios restante del grupo

Reuniones de evaluación de la Lista Roja con Tandora Grant (Autoridad de la Lista Roja de ISG).
Las revisiones del plan de recuperación de la iguana jamaicana (Lee Pagni, Byron Wilson, Rick van Veen)

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MEETING ABSTRACTS

In alphabetical order by presenter's (*) last name

Local community empowerment for the conservation of *Cyclura ricordii* in the Dominican Republic and Haiti

Accimé, Masani *

International Iguana Foundation and Grupo Jaragua

The presentation is an update on the Ricord's iguana (*Cyclura ricordii*) Species Recovery Program in the Dominican Republic (D.R.) and Haiti. The species is ranked Critically Endangered by the IUCN and has an extremely limited distribution, known only to exist in south-central Hispaniola. The total range of *C. ricordii* is under 100 km² and they live in sympatry with Rhinoceros iguanas (*Cyclura cornuta*). The *C. ricordii* population is divided into four disjunct subpopulations and the total adult population is estimated to be between 2,000 and 4,000. In 2002, the Ricord's Iguana Species Recovery Plan (SRP) was produced at an Iguana Specialist Group workshop. The Indianapolis Zoo, ZooDOM, IIF, and Grupo Jaragua initiated activities for the conservation program. We have been working to meet insufficient strategic and logistical support to local grassroots organization to achieve conservation goals both in D.R. and Haiti. The goal in Haiti this year has been to establish habitat monitoring and surveillance and working to attain Municipally Protected Status for the species and its habitat to prevent its disappearance. We have begun documenting hatchling movement and survivorship using telemetry and camera-traps and applying methods of estimating population density. In Pedernales, key Ricord's nesting habitat was purchased to secure the future of Ricord's iguanas.

Anegada iguana (*Cyclura pinguis*) conservation program - 2010

Bradley, Kelly ^{*1}; Glenn Gerber ²

¹ Fort Worth Zoo; ² San Diego Zoo Institute for Conservation Research

The Anegada iguana headstart program is in its 14th year. Because of the partnership between the Iguana Specialist Group and the British Virgin Islands National Parks Trust, 125 animals have now been released back to the wild at three locations. We will highlight activities that have taken place during 2010 including: nest surveys and hatchling collection, our annual burrow survey, a tour with the Governor of the BVI, a release of headstarted iguanas into a new site, and preparations for an upcoming importation of iguanas from the headstart facility to the US in order to supplement the SSP captive breeding program.

Investigating intra-island translocation as a conservation strategy for the Turks and Caicos iguana - pilot study March/April 2010

Bradley, Kelly *¹ for Tarren Wagener ¹; Glenn Gerber ²

¹ Fort Worth Zoo; ² San Diego Zoo Institute for Conservation Research

In preparation for the project “Investigating Intra-Island Translocation as a Conservation Strategy for the Turks and Caicos Iguana,” pilot data was conducted in spring, 2010. The objective was to test transmitter attachment methods and obtain preliminary iguana movement data. Six individuals at each of two study sites were processed and equipped with an externally attached radio transmitter adhered by one of two types of glue (3M 5200 marine caulk or eyelash glue). Both glues were tested at each study site with each age and sex class. Following release, all individuals were located at least twice daily for 14 days. Upon recapture, transmitters were removed and the holding ability of the glues was scored. Average transmitter attachment score was 2.25 for eyelash glue (range 0-3.5) and 3.95 for 3M 5200 (range 1.25-5). Preliminary data were obtained on activity patterns, behavior patterns, retreat locations, and retreat use across age and sex classes. A full field season utilizing 24 subjects and an intra-island translocation is planned for spring, 2010.

Health evaluations of Grand Cayman iguanas (*Cyclura lewisi*)

Calle, Paul P. *¹; Bonnie L. Raphael ¹; Catherine McClave ²; Fred Burton ³

¹ Wildlife Conservation Society, Bronx, NY; ² New York Aquarium, Wildlife Conservation Society, Brooklyn, NY; ³ Blue Iguana Recovery Programme, Grand Cayman

Due to the Blue Iguana Recovery Programme’s success, the Grand Cayman iguana (*Cyclura lewisi*) has returned from the brink of extinction in the wild less than ten years ago. The free-ranging population in three locations is expanding, and may reach the species recovery goal within a few years. The Wildlife Conservation Society’s Global Health Program has provided veterinary support for the program since 2001. This includes annual health assessments of 10% of the Grand Cayman captive population, emergency and routine medical care, quantitative parasite monitoring of the breeding population and treatments as necessary, annual pre-release health evaluations, and occasional necropsies. Annual health assessments include fecal culture and parasite screening, complete blood count (CBC), biochemical screen, and physical examination. Pre-release health assessments include packed cell volume (PCV), total solids (TS), white blood cell count (WBC), and physical examination. Health assessments have also been conducted on free-ranging iguanas, including quantitative parasite screens, and some necropsies have been performed. Samples for genetic analyses have been obtained from any individual or lineage in need of evaluation. Importation of biological samples has been conducted in conjunction with the IUCN Iguana Specialist Group and the San Diego Zoo Institute for Conservation and Research.

Captive Fijian iguana genetics and conservation management

Davis, Heidi A. *¹; Leona G. Chemnick ¹; Robert N. Fisher²; Oliver A. Ryder¹

¹ San Diego Zoo Institute for Conservation Research; ² U.S. Geological Survey

Accurate evolutionary systematics and taxonomy of the species of interest is a vital component in successful conservation management programs. At the San Diego Zoo, two Fijian iguanas identified as *Brachylophus fasciatus* were morphologically different from other *B. fasciatus* in the collection. We were asked to determine genetically whether these individuals were a variant of *B. fasciatus*, a hybrid with *B. vitiensis*, or an unknown species. Mitochondrial sequencing of captive *Brachylophus* samples from San Diego and Taronga Zoos and two wild samples collected by Robert Fisher showed these iguanas to be unexpectedly polyphyletic. Recently a paper by Keogh et al. using samples from known islands described a new species of *Brachylophus*. Comparison of our mitochondrial data with theirs showed that our captive founders grouped with *B. vitiensis* or the new species *B. bulabula* instead of *B. fasciatus*, and therefore we believe species identification of captive Fijian iguanas needs further study. Since mitochondrial DNA only reveals matrilineal inheritance, and the few available nuclear microsatellites were not sufficient to assign species in our samples, we propose to analyze new genus-specific microsatellites on captive and additional wild animals. These studies will provide a fuller picture of diversity in *Brachylophus* to inform conservation management strategies.

Rapid assessment for Fijian iguanas (*Brachylophus* sp.) in the Northeastern Fijian Islands

Fisher, Robert *¹; Peter Harlow ²; Jone Niukula ³; Pita Biciloa ³; Sipiriano Qeteqete ³

¹ U.S. Geological Survey, San Diego Field Station; ² Taronga Conservation Society Australia; ³ The National Trust of Fiji, Suva

Currently three living species of endemic iguanas in Fiji in the genus *Brachylophus* are known. These species have restricted distributions within Fiji, although many records are plotted on maps for iguanas elsewhere within Fiji that lack validation of their species identification. Recent records of an invasive large lizard from Qamea Island were confirmed (in 2008) through photographs to be the green iguana (*Iguana iguana*). In early 2010 we undertook surveys for the status of native and invasive iguanas northeastern Fiji. We were able to conduct assessments on 15 islands. We confirmed living populations of two species of *Brachylophus* iguanas on a few islands north of Vanua Levu and discovered that the majority of islands in that region are now not suitable for iguanas. Invasive green iguanas were found to occur on two islands to the east of Taveuni and in sympatry with *Brachylophus* on one island. Relatively large populations of *Brachylophus bulabula* were found for the first time and these were on two islands located between Viti Levu and Vanua Levu; these islands could serve as a protected area for this endangered species. These surveys confirm that the endemic *Brachylophus* habitat is continuing to decline and few populations appear large or stable.

The recovery of the Mona Island iguana - now and next

García, Miguel A. ^{*1, 4}; N. Pérez-Buitrago ⁷; A.O. Alvarez ¹; M.E. Pérez ^{3,4}; R.L. Tremblay ^{4,5}; P.J. Tolson ⁶; C. Figuerola ^{2, 4}

¹ Department of Natural and Environmental Resources, Puerto Rico; ² Department of Biology-University of Puerto Rico-Rio Piedras Campus; ³ Department of Mathematics-University of Puerto Rico-Rio Piedras Campus; ⁴ Center for Applied Tropical Ecology and Conservation-University of Puerto Rico; ⁵ Department of Biology-University of Puerto Rico-Humacao Campus; ⁶ Conservation Department-Toledo Zoo, Ohio; ⁷ Universidad Nacional de Colombia, Sede Arauca, Colombia

The Mona Island iguana is an endemic subspecies classified as endangered and threatened with extinction. Consequently, several initiatives have been implemented for its recovery, including a headstart program and an invasive mammal control program. In addition, comprehensive research has been aimed at assessing critical biological parameters. These approaches seek to prioritize conservation actions and budgets to improve our capabilities of saving this species from extinction. Today, after more than 10 years of relatively intensive recovery efforts, it is necessary to decide which specific actions will be targeted to receive the limited funding allocated to keep this species from disappearing.

Fijian Crested Iguana Recovery Plan update

Harlow, Peter ^{*1}; Jone Niukula ²; Ramesh Chand ³

¹ Taronga Zoo, Australia; ² National Trust for Fiji, Suva; ³ Kula Eco Park, Sigatoka, Fiji

In 2004, the Iguana Specialist Group met in Fiji and a Recovery Plan for the Fijian crested iguana (*Brachylophus vitiensis*) was produced. Not until 2009 did the National Trust of Fiji receive funding from the Critical Ecosystem Partnership Fund to implement this Recovery Plan. Two major components of the Recovery Plan are to translocate crested iguanas from their stronghold island reserve of Yadua Taba to new islands, and to capture and breed those genetically distinct crested iguanas from islands where they are at imminent risk of extinction. In the first year of this project, the previously identified island of Namenalala (43 ha) has been surveyed and found to have suitable vegetation for crested iguanas, and 15 crested iguanas from the island of Monuriki (40 ha) have been captured and are being held for breeding at Kula Eco Park. Additionally, the landholders of Monuriki have agreed to remove goats from the island; 87 goats have been removed so far, with less than 50 remaining to be captured. Once all goats are removed, regeneration of island vegetation is expected to be rapid, and we hope to be releasing head-started, captive-bred crested iguanas back to Monuriki within a few years.

A feral green iguana eradication program for Fiji

Harlow, Peter ^{*1}; Nunia Thomas ²

¹ Taronga Zoo, Australia; ² NatureFiji-MareqetiViti, Suva, Fiji

A feral population of green iguanas (*Iguana iguana*) is now well established in Fiji. At least 11 hatchlings were illegally imported and released by a foreigner living in Fiji in 2000, and are now widely dispersed and breeding in two separate areas on the 34 km² inhabited island of Qamea. There is also a breeding population on the small neighbouring island of Matagi (94 ha), and occasional adults have been seen on the large island of Taveuni, which is only 2.5 km from Qamea. The potential for green iguanas to out-compete the native Fijian banded iguanas is unknown, but when green iguana populations reach large numbers they will certainly be a threat to the subsistence vegetable gardening that is fundamental to the Fijian village way of life. The Fijian government and the Critical Ecosystem Partnership Fund have supplied emergency funding for community consultation and preliminary field surveys, under the direction of the 'Iguana Eradication Campaign Task Force'. The eradication program will concentrate on stopping the human transport of green iguanas to new islands, identify and target iguana nesting areas and use the network of local residents to report iguana sightings to local project coordinators.

Life history variation between disturbed and non-disturbed populations of *Iguana delicatissima* on Dominica

Knapp, Charles ^{*1}; Carolina Perez-Heydrich ²

¹ San Diego Zoo Institute for Conservation and Research; ² Department of Biostatistics, University of North Carolina at Chapel Hill

The Lesser Antillean iguana (*Iguana delicatissima*) occupies less than 10 main Caribbean islands of the northern Lesser Antilles. Few populations are considered stable and most are in decline. Habitat degradation, non-native predators and competitors, hunting, road mortality, and genetic introgression with common green iguanas (*I. iguana*) threaten Lesser Antillean iguanas with extinction across their range. In 2006, the San Diego Zoo Institute for Conservation Research initiated a study on Dominica to investigate survival and life history variation between coastal populations under varying degrees of anthropogenic disturbance. Since 2007, we have captured and processed over 1430 iguanas including 300 recaptures. From this dataset we investigated life history parameters (e.g., asymptotic body size, growth rates, sex ratios, and body condition) between iguanas inhabiting disturbed areas (i.e., villages) versus non-disturbed habitat. Contrary to our hypothesis, iguanas inhabiting disturbed areas demonstrated a significantly larger asymptotic body size and a trend toward faster growth rates (near significant). We also tested the efficacy of road signs and outreach campaigns in reducing vehicle collisions with iguanas. Our results indicate that road signs and outreach campaigns do have an effect on reducing vehicle collisions but a prolonged study is needed to determine if the effect is transient.

Health assessment for Exuma Island iguanas (*Cyclura cyclura inornata* and *C. c. figginsi*)

Knapp, Charles *¹; Kirsten Hines ²; Trevor Zachariah ³; John Iverson ⁴; Sandra Buckner ⁵

¹ John G. Shedd Aquarium, Chicago, and San Diego Zoo Institute for Conservation Research; ² Independent, Key Biscayne, Florida; ³ Brevard Zoo, Melbourne, Florida; ⁴ Earlham College, Indiana; ⁵ Independent, Nassau, The Bahamas

Recently in The Bahamas, tourism and associated food provisioning has emerged as a threat to wildlife because this activity is increasingly common and may pose a risk to the long-term survival of native iguanas. In order to manage and ensure long-term, viable iguana populations we must understand the precise impacts that these activities will have on these animals. In 2010, we expanded an investigation conducted originally in 2008, to investigate the physiological effects of tourism and food provisioning on five populations of iguanas in the Exuma Islands living under different degrees of visitation pressure. Blood samples were collected within three minutes of capture and analyzed immediately using an i-STAT blood gas analyzer to examine several physiological parameters including, but not limited to, glucose, sodium, potassium, ionized calcium, hematocrit, hemoglobin, and pH. At our mobile laboratory we also assessed general physiology using manual complete blood counts (CBC), total solids, and packed cell volume. Plasma was collected and frozen for later analysis of stress hormone level (i.e., corticosterone), biochemical concentrations, and nutritional parameters (e.g., mineral and vitamin panels). Our preliminary results reveal no differences between iguana populations in corticosteroid levels but differences in other blood chemistries including glucose, sodium, and hemoglobin levels. We also expanded our education role in The Bahamas by erecting signs on beaches and visiting Bahamian schools to raise awareness about the conservation concern for native Bahamian iguanas.

A conservation program for the Lesser Antillean Iguana (*Iguana delicatissima*) in Martinique: 2010 actions report

Legouez, Caroline *

National Wildlife and Hunting Agency (ONCFS), Martinique

The 2010-2015 National Actions Plan for the Lesser Antillean iguana is finished and has been approved by the French Committee for Protection of Nature in June 2010. In November 2010, a scientific team will conduct a mark-release-recapture study on Islet Chancel. In addition to tagging new recruits, the field team will draw blood samples and collect biometric data. Do you remember Islet Ramiers and the nine iguanas that were introduced in 2006? In April, Dr. Charles Knapp and his field assistant, Mr. Lindon Prince, came to Martinique to assist in locating these iguanas. Three of them were observed, several were heard, and no hatchlings were found. A cat was seen during this fieldwork and was removed from the island soon after. In April 2010, the National Wildlife and Hunting Agency (ONCFS) launched a survey programme, with the goal of collecting iguana sighting information from people residing in the north of Martinique. To limit the proliferation of *Iguana iguana* residing at Fort Saint-Louis in Fort de France, the ONCFS organized several days of egg destruction on the site. As stated in the Actions

Plan for the Lesser Antillean iguana, an *Iguana iguana* control plan for the French West Indies is in the process of being created. To complete these actions, many communication tools are being created. The ONCFS will participate in the 2010 biodiversity meeting and annual science festival.

The perils of planning - the good, the bad, and the ugly of Species Recovery Plans

Pagni, Lee *

Consultant for San Diego Zoo Institute for Conservation Research

Over the past eight years, the IUCN SSC Iguana Specialist Group has supported workshops to help produce Species Recovery Plans for six species of endangered iguanids. The plans are meant to both guide recovery efforts and document needs for proposals to fund these efforts. In 2007, the International Iguana Foundation (IIF) funded a one-year project to help implement two previously published species recovery plans (*Cyclura pinguis* and *Cyclura carinata*) and to complete the publication for one species (*Cyclura cychlura cychlura*). With the recent publication of the Andros Iguana Conservation Action Plan 2005-2011, the results of the now completed IIF project can be discussed. The similarities and differences of the challenges and outcomes of these three different planning efforts will be presented. The goal of this presentation is to create a discussion with audience members whose experience with the creation and implementation of species recovery plans is vital to help guide and improve future planning efforts.

Conserving Roatán's spiny-tailed iguana, *Ctenosaura oedirhina*, through research, outreach, and education

Pasachnik, Stesha *

Bay Islands Foundation, Honduras

Ctenosaura oedirhina, Roatán's spiny-tailed iguana, is listed as Endangered under the IUCN Red List of Threatened Species due to harvesting for human consumption and its limited and fragmented geographic range. *C. oedirhina* has just been included in CITES Appendix II due to the recent appearance of this and closely related species in the international pet trade. Currently no active means of protection or management exists. Little is known concerning the basic biology and threats to this species. The introduction of a wide-ranging congener, *C. similis*, on a satellite island just off the coast of Roatán, poses a threat to the *C. oedirhina* population, as there is the potential for extreme competition and hybridization if this invasive colonizes Roatán itself. It is crucial that *C. oedirhina* be studied and managed immediately. This entails collecting life history data on this species, including a population estimate and an evaluation of its distribution, evaluating its current threats, creating a management plan in cooperation with local and national organizations, and creating a long-term education and outreach project on Roatán.

The outcome of the Appendix II CITES listing for the *C. palearis* clade

Pasachnik, Stesha ^{*1}; Daniel Ariano ²

¹ Bay Islands Foundation; ² Zootropic

Given that trade was identified within the *Ctenosaura palearis* clade (*C. bakeri*, *C. oedirhina*, *C. melanosterna*, *C. palearis*) we evaluated the potential for listing these species within the appendices of CITES. Our goal was to determine which appendix was most applicable for these species and to evaluate the viability of a CITES proposal for the entire clade, the entire genus, or only selected species (i.e., *Ctenosaura palearis* and *Ctenosaura melanosterna*). In order to achieve these goals we collected data to determine the historical and current quantities of trade and held meetings with the local scientific and administrative authorities to sensitize them to the importance of a CITES proposal. During these meetings, we discussed which strategy would be most efficient for submitting a *Ctenosaura* proposal to the next CITES Conference of the Parties and obtained feedback regarding support for this action. These investigations lead us to create a proposal for the *C. palearis* clade, to be split between Guatemala and Honduras. At the most recent CITES meeting in Qatar our proposals were approved.

Iguana exploitation and conservation in the CAFTA countries – an overview

Stephen, Catherine ^{*1}; Paola Mosig ²; Stesha Pasachnik ³; Leslie Ruyle ⁴; Lee Fitzgerald ⁵; Adrian Reuter ⁶

¹ Utah Valley University; ² TRAFFIC; ³ University of Tennessee; ⁴ University of Georgia; ⁵ Texas A&M University

We conducted a broad-scale survey of various activities surrounding iguana species in the five Central America Free Trade Agreement (CAFTA) signatory countries from May 2009 to May 2010. The purpose of the project was to bring into one document, relevant information to inform future conservation efforts, management actions, and research directions. To this end, we conducted market and breeding facility visits, contacted academics, NGO's, professionals, and government authorities, collected international trade data, and searched the available scientific and grey literature. Findings were compiled into tables and figures, wherever possible, and gaps in available information are identified. Highlights of the project are presented.

Mating system, inbreeding depression, and the dynamics of a 'natural' population

Welch, Mark E. ^{*1}; Jamen W. Berk ¹; Glenn Gerber ²

¹ Mississippi State University; ² San Diego Zoo Institute for Conservation Research

The negative effects of inbreeding depression include heightened mortality and decreased fecundity. In the long-term, selection acting against inbred individuals will hamper a population's potential to adapt. Captive and domesticated populations frequently exhibit clear evidence of inbreeding depression, while it is not as common or more difficult to diagnose in wild populations. This has led many conservation biologists

to argue against its general relevance to population persistence except in extreme cases of reduction in population size. Homozygosity can be used as a measure of inbreeding. In this study it was found that heterozygosity in *Cyclura carinata* at 13 microsatellite loci increased significantly between hatchlings and adults on Little Water Cay in the Turks and Caicos Islands. Further, mass, head-width, and snout-vent length were all positively correlated with heterozygosity in adults. These findings demonstrate that inbreeding depression is a major factor limiting the adaptive potential of this population, and may provide insight to the population dynamics of iguanas in general.

Jamaican Iguana Recovery Programme: November 2009-October 2010

Wilson, Byron *; Rick van Veen
University of the West Indies, Mona Campus, Jamaica

Fieldwork was conducted during every week of the period, including the continuous (daily) operation of our invasive predator-trapping programme, which resulted in the removal of numerous mongooses, cats, and pigs from the core iguana area. Other annual activities such as the release of headstarters and pitfall trap monitoring were also completed. The pitfall trapping experiment has now generated 14 consecutive years of data that will soon be analyzed in the context of global climate change. The 2010 nesting season again demonstrated the dramatic increase in the core nesting population, from a total of 8 nesting females in 1991, to 28 in 2009 and 2010. The 2010 hatching season was similarly encouraging, with a record of 213 hatchlings captured and processed. A major new focus has been the deployment of camera traps, both in the Hellshire Hills and on the Goat Islands. In Hellshire, traps are generating relative abundance measures of native and non-native species, both within and outside of the predator-controlled area. On the Goat Islands, camera traps are used to document the presence/absence of both targeted and non-targeted species, in relation to planned eradication efforts.

14th Annual Meeting of the IUCN Iguana Specialist Group
Guanahacabibes National Park, Cuba
9-11 November 2010

MEETING ABSTRACTS

For Cuban presenters (*) in order presented

1- Título: El Sistema Nacional de Áreas Protegidas (SNAP) de Cuba.

Autor: Dra. Maritza García García

Institución: Centro Nacional de Áreas Protegidas, Ministerio de Ciencia, Tecnología y Medio Ambiente.

Resumen: La ponencia brinda información acerca del actual Sistema Nacional de Áreas Protegidas de Cuba (SNAP), en relación a su estructura espacial, estado legal, estructura institucional y administrativa, nivel de significación, categorías de manejo adoptadas en Cuba, mecanismos de coordinación y control. El sistema de áreas protegidas propuesto para Cuba tiene identificadas 253 áreas protegidas con valores para ser manejadas con fines de conservación bajo alguna de las 8 categorías de manejo establecidas para Cuba, de las cuales 91 son de significación nacional (APSN) y 162 de significación local (APSL). La superficie que abarcan las 253 áreas protegidas identificadas representa 19.93 % del territorio nacional, incluyendo la plataforma insular marina hasta la profundidad de 200 m, quedando bajo cobertura del Sistema el 16,85 % de la parte terrestre. De las 253 áreas protegidas identificadas para el SNAP, 108 son áreas costero-marinas protegidas y 89 tienen superficie sobre el mar, cubriendo 24,81 % de la extensión de la plataforma insular. El Programa MAB de El Hombre y la Biosfera de la UNESCO ha reconocido para Cuba seis Reservas de la Biosfera: Sierra del Rosario (1985), Guanahacabibes, Cuchillas del Toa y Baconao (1987) y Buenavista y Ciénaga de Zapata (1999). La Convención de Ramsar declara también a la Ciénaga de Zapata como primer Sitio Ramsar de nuestro país, y en el año 2002 se incorporaron cinco nuevas áreas: los Refugios de Fauna Río Máximo y Delta del Cauto y las Áreas protegidas de Recursos Manejados Gran Humedal del Norte de Ciego de Ávila, Ciénaga de Lanier, Sur de la Isla de la Juventud y el Humedal Buenavista.

2- Título: El Parque Nacional Guanahacabibes: valores, amenazas y potencialidades.

Autor: Lic. Lázaro Marquez Llauger

Institución: Parque Nacional Guanahacabibes. Centro de Investigaciones y Servicios Ambientales ECOVIDA, Ministerio de Ciencia Tecnología y Medio Ambiente.

Resumen: El Parque Nacional Guanahacabibes se ubica en la porción más occidental de la isla de Cuba (23 880 ha terrestres y 15 950 ha marinas), formado por dos penínsulas cárnicas (de “diente de perro”), llanas, de origen marino, con farallones (20 m.s.n.m.) en la costa sur y manglares en la norte. Forma parte de un distrito fitogeográfico con 704 especies de la flora (15 endémicas locales) y 20 % de endemismos, en formaciones vegetales boscosas, matorrales y complejos de vegetación. En la península habitan 16 especies de anfibios, 35 de reptiles, 192 de aves, 18 de mamíferos, entre los vertebrados terrestres, destacándose reptiles como *Anolis luteogularis*, *Ameiva auberi denticola*, *Leiocephalus carinatus*, *Leiocephalus macropus*, *Anolis quadriocellifer* (especie endémica del distrito), *Cyclura nubila* y *Epicrates angullifer*. En la zona marina se han identificado 109 especies de algas, 27 de gorgonias, 39 de esponjas, 38 de corales,

755 de moluscos marinos (10 exclusivas de Guanahacabibes) y 135 de peces de arrecifes. Entre los valores histórico-culturales resaltan 42 yacimientos arqueológicos de diferente antigüedad, vinculados a antiguas comunidades aborígenes pre-agroalfareras con tradiciones mesolíticas. Los valores naturales y diversidad biológica del área, no escapan a ciertas amenazas como la caza, pesca y tala ilegal, las especies invasoras de la flora y la fauna, el coleccionismo, prácticas incorrectas de pesca comercial y forestal y el desarrollo turístico. El Parque tiene alto valor para la conservación y potencialidades socio-económicas, por la existencia de numerosas especies de la flora de uso maderable, medicinal y melífero. La riqueza de especies de moluscos con desarrollo larvario planctotrófico, hace de Guanahacabibes un centro de emisión de larvas hacia el Golfo de México y costas continentales de Norteamérica. Posee sitios de desove de especies de peces de valor económico y los arrecifes de coral ofrecen oportunidades para el buceo contemplativo.

3- Título: Cuba: a land of reptiles and amphibians.

Nombre: Dr. Luis M. Díaz Beltrán

Institución: Museo Nacional de Historia Natural de Cuba

Abstract: Cuban amphibians comprise 62 species, of which 95 % are endemics. Reptiles are represented by 166 species, and 83 % are endemic to the island. Compared with birds and mammals, both groups constitute the most important part of the Cuban land vertebrates. This presentation is an overview of the herpetofauna of Cuba, focusing attention on the taxonomic composition, distribution, natural history, conservation and main threats.

4- Título: Panorámica de los estudios sobre *Cyclura nubila nubila* en Cuba.

Autor: MSc. Amnerys González Rossell

Institución: Centro Nacional de Áreas Protegidas, Ministerio de Ciencia, Tecnología y Medio Ambiente.

Resumen: La presentación integra de forma general los trabajos que hasta la fecha se han realizado sobre la ecología de *Cyclura nubila nubila* en Cuba. Estos abarcan las cinco grandes zonas geográficas donde vive la especie, pero con diferentes grados de detalles. Los trabajos más frecuentes se refieren a la abundancia (influida por el tipo de hábitat) y a la morfología. En menor medida existen trabajos sobre alimentación y reproducción, en pocas localidades. Un solo trabajo se refiere con detalles al uso y conservación de la especie y otro a su genética y conservación. No existen estudios respecto a la historia de vida de la especie. Se plantea la necesidad de integrar todos estos trabajos y enfocarlos hacia la conservación de las poblaciones de iguana.

5- Título: Densidad de *Cyclura nubila nubila* en la zona de los farallones del Parque Nacional Guanahacabibes, Pinar del Río, Cuba.

Autores: MSc. Dorka Cobián Rojas^{1*}, Amnerys González Rossell² y Vicente Berovides Álvarez³

Instituciones

¹Parque Nacional Guanahacabibes, Centro de Investigaciones y Servicios Ambientales ECOVIDA, Ministerio de Ciencia, Tecnología y Medio Ambiente.

²Centro Nacional de Áreas Protegidas, Ministerio de Ciencia, Tecnología y Medio Ambiente.

³Facultad de Biología, Universidad de La Habana, Ministerio de Educación Superior.

Resumen: Se estima la densidad de la población de *Cyclura nubila nubila* a lo largo de la zona de dos farallones (I y II), en el Parque Nacional Guanahacabibes y se evalúa el impacto antropogénico asociado al desarrollo económico de la Península. Se realizaron conteos directos durante tres años en las etapas de apareamiento y ovoposición. La abundancia se estimó como iguanas/0.9 km (Abundancia Relativa, AR) y como individuos/ha (densidad, D). Para el área total se obtuvo una AR = 7.5 iguanas/0.9 km y una D = 6.6 iguanas/ha. La correlación (r) entre ambas variables fue $r = 0.855$ ($p < 0.001$). En el Farallón II la densidad declinó drásticamente en el año 2006. Las diferencias entre farallones fueron estadísticamente significativas ($p < 0.05$). La tendencia por año para la población de ambos farallones fue hacia la disminución de la densidad, de 8.9 iguanas/ha en el año 2004 a 4.3 iguanas/ha en el 2006. Este resultado se explica por los efectos causados por la construcción del vial la Cabo de San Antonio. El inicio de su construcción coincidió con la disminución de la densidad en los primeros tramos del segundo farallón que fue de 17.2 iguanas/ha en el año 2004 y al inicio de la construcción de la carretera fue de 4.0 iguanas/ha en el 2006. Se discuten estos resultados en términos de la conservación y el manejo de la especie en el área protegida.

6- Título: Diversidad, morfometría y refugios de *Cyclura nubila nubila* en el Refugio de Fauna Las Picúas-Cayo Cristo, Villa Clara.

Autor: Lic. José Luis Collazo

Institución: Refugio de Fauna Las Picúas-Cayo Cristo, Empresa Nacional para la Protección de la Flora y la Fauna, Ministerio de la Agricultura.

Resumen: Se analiza la dinámica de la abundancia de *Cyclura nubila nubila*, considerando los efectos del año, el trimestre y la localidad. Se comparan medidas de tamaño en tres poblaciones, teniendo en cuenta diferencias de hábitat y dimensiones de los refugios excavados en la arena, entre localidades y se correlaciona el tamaño del ocupante con dichas dimensiones. Las estimas de densidad (iguanas/ha) se realizaron en Cayo Obispo, Cayo Verde y otros pequeños cayos) durante tres trimestres (enero-marzo, julio-septiembre y octubre-diciembre) y cuatro años (1997-2000) mediante el conteo de refugios (indirecto) y a través del conteo de individuos en transectos en bandas (directo). Se realizaron mediciones morfométricas en 28 individuos, comparando entre dos hábitat (Yanal y Manigua Costera), los efectos hábitat y sexo. Se midieron cinco variables en 93 refugios (altura mínima y máxima de la entrada, ancho de la entrada, largo y profundidad, todas en centímetros), que fueron comparadas entre localidades y hábitat (Yanal y Manigua Costera). Como resultado se obtiene que las densidades (individuos/ha) fluctuaron entre 14.6 y 21.5 y no se registraron cambios significativos entre cayos, años o estación del año. Los cambios más marcados en densidad se dieron entre años y los menos entre trimestres. El análisis de los efectos del hábitat en las medidas morfométricas muestra que independientemente del sexo, las iguanas de los Yanales tuvieron menos tamaño y por alometría menor longitud de cola y fémur, con diferencias estadísticamente significativas ($F=3.95$; $P < 0.05$). Todas las dimensiones de los refugios fueron afectadas por la localidad y el hábitat, excepto la altura mínima de la entrada.

7- Título: Características generales de la población de iguanas en el Refugio de Fauna Monte Cabaniguán, Delta del Cauto, Las Tunas.

Autor: Dr. Manuel Alonso Tabet

Institución: Refugio de Fauna Monte Cabaniguán, Empresa Nacional para la Protección de la Flora y la Fauna, Ministerio de la Agricultura.

Resumen: Las poblaciones de iguana en el Refugio de Fauna Monte Cabaniguán, viven en un hábitat atípico para la especie, conformado por manglares y vegetación en parches de arena. En este trabajo se analiza la morfometría, abundancia y reproducción, de esta población. El estudio de la morfometría tuvo en cuenta 6 caracteres morfométricos y 4 merísticos; la abundancia se determinó por el método de transectos y la reproducción se evaluó sobre la base de las dimensiones de los nidos y el número de huevos. Esta población resultó ser intermedia en sus caracteres morfológicos en relación a las de cayos y la Isla de Cuba. La densidad media fue de 24,2 iguanas/ha, similar a la de los cayos. Las dimensiones de los nidos estuvieron asociadas a los cambios anuales del nivel de agua del sustrato.

8- Título: Resultados en el manejo y reproducción de *Cyclura nubila nubila* en cautiverio.

Autores: MSc. José Luis Polo Leal^{1*}

Téc. Alexander Arango Leyva¹

Lic. Raúl Campos Talavera²

Institución: ¹Parque Zoológico Nacional, Empresa Nacional para la Conservación de la Flora y la Fauna, Ministerio de la Agricultura.

²Jardín Zoológico de La Habana

Resumen: La iguana cubana *Cyclura nubila nubila*, presenta una buena adaptabilidad a las condiciones de cautiverio en los 24 zoológicos de la isla. Su alimentación consistió en frutas, verduras, concentrados, presas vivas y follaje. Las condiciones de mantenimiento se basaron principalmente en exhibiciones exteriores y pequeños fosos, donde se han registrado casos de puestas pero sin la sobrevivencia de las crías. La reproducción de esta especie en el Parque Zoológico Nacional de Cuba se logró en un período de tres años de estudio y cambio de condiciones de manejo y en los exhibidores en el área de reptiles, a partir de dos parejas de *Cyclura n. nubila*. Los huevos fueron recogidos e incubados artificialmente en el herpetario del centro de rescate, obteniéndose 80 % de nacimientos, con una incubación de 113 días y 100 % de viabilidad. En el manejo de salud veterinaria de los ejemplares hemos encontrado enfermedades producidas por agentes parasitarios y bacterianos. Las enfermedades parasitarias encontramos que fueron producidas por ectoparásitos y endoparásitos. Entre los primeros los agentes causales fueron las garrapatas del género *Rhipicephalus* y *Boophilus* y entre los segundos encontramos a especies de la familia *Oxyridata* y los géneros *Eimeria* e *Isospora*. Otras enfermedades son de origen bacteriano, producidas por diferentes especies como *Salmonella sp.*, *Staphilococo aureus*, *Pasteurella hemolítica*, *Pseudomona fluorecen*, *Pseudomona aeruginosa*, *Citrobacter sp.*, *Klebsiella pneumoneae*, *Klebsiella oxytoca*, *Edwardicella tarda*, *Aeromona hydrophila*, *Arizona sp.*, *Salmonella newport* y *Salmonella sainpaul*.

1- Title: The National System of Protected Areas (SNAP) of Cuba

Author: Dr. Maritza García García

Institution: National Center for Protected Areas, Ministry of Science, Technology and Environment

Abstract: This report provides information about the current National System of Protected Areas of Cuba (SNAP), in relation to its structure, legal status, institutional and administrative structure, level of significance, management categories adopted in Cuba, coordination and control. The proposed protected area system in Cuba has 253 protected areas identified with values to be managed for conservation purposes under any of the 8 management categories established for Cuba, of which 91 are of national significance (APSN) and 162 of local significance (APSL). The area comprising the 253 protected areas identified represent 19.93% of the country, including the insular sea shelf to a depth of 200 m, leaving 16.85% of land cover within the System. Of the 253 protected areas identified for SNAP, 108 are coastal and marine protected areas and 89 on the sea surface, covering 24.81% of the length of the island platform. UNESCO's Man and Biosphere Programme (MAB) has recognized six Biosphere Reserves in Cuba: Sierra del Rosario (1985), Guanahacabibes, Cuchillas del Toa y Baconao (1987) y Buenavista y Ciénaga de Zapata (1999). The Ramsar Convention also declares La Ciénaga de Zapata as the first Ramsar site in our country, and in 2002 incorporated five new areas: los Refugios de Fauna Río Máximo y Delta del Cauto y las Áreas protegidas de Recursos Manejados Gran Humedal del Norte de Ciego de Ávila, Ciénaga de Lanier, Sur de la Isla de la Juventud y el Humedal Buenavista.

2- Title: The Guanahacabibes National Park: values, threats and potential.

Author: Lic. Lázaro Marquez Llauger

Institution: Guanahacabibes National Park. Centro de Investigaciones y Servicios Ambientales ECOVIDA, Ministerio de Ciencia Tecnología y Medio Ambiente.

Abstract: Guanahacabibes National Park is located in the westernmost portion of the island of Cuba (23,880 ha of land and 15,950 hectares of sea), formed by two flat, karst peninsulas (from "diente de perro") of marine origin, with cliffs (20 m) in the south coast and mangroves in the north. It forms part of a phytogeographical district with 704 plant species (15 endemic local) and 20% endemic species in forest vegetation, bushes and vegetation complexes. Terrestrial vertebrates on the peninsula include 16 species of amphibians, 35 reptiles, 192 birds, 18 mammals; reptile species include *Anolis luteogularis*, *Ameiva auberi denticola*, *Leiocephalus carinatus*, *Leiocephalus macropus*, *Anolis quadriocellifer* (endemic to the district), *Cyclura nubila* and *Epicrates angullifer*. 109 species of algae, 27 gorgonians, 39 sponge, 38 corals, 755 of marine mollusks (10 Guanahacabibes exclusive) and 135 reef fish have been identified in the marine area. Among the historical and cultural values 42 different archaeological sites from different eras, ancient Aboriginal communities linked to pre-Mesolithic farming and pottery traditions. The value of nature and biodiversity of the area can not escape certain threats such as hunting, fishing and illegal logging, invasive species of flora and fauna, collecting, illegal commercial fishing and forestry and tourism development. The park has high conservation value and socio-economic potential, by the existence of numerous species of flora used as wood, medicinal and honey production. Species richness of mollusks with planktonic larval development makes Guanahacabibes a production center for larvae into the Gulf of Mexico and continental coasts of North America. It has spawning sites of fish species of economic value to coral reefs and provides opportunities for recreational diving.

3- Title: Cuba: a land of reptiles and amphibians.

Author: Dr. Luis M. Díaz Beltrán

Institution: National Museum of Natural History of Cuba

Abstract: Cuban amphibians comprise 62 species, of which 95 % are endemics. Reptiles are represented by 166 species, and 83 % are endemic to the island. Compared with birds and mammals, both groups constitute the most important part of the Cuban land vertebrates. This presentation is an overview of the herpetofauna of Cuba, focusing attention on the taxonomic composition, distribution, natural history, conservation and main threats.

4- Title: Overview of *Cyclura nubila nubila* studies in Cuba.

Author: Amnerys González Rossell MSc.

Institution: Centro Nacional de Áreas Protegidas, Ministerio de Ciencia, Tecnología y Medio Ambiente.

Abstract: The presentation integrates general work to date that has been conducted on the ecology of *Cyclura nubila nubila* in Cuba. These include the five main geographical areas where the species lives, but with different degrees of detail. The most frequent concerns are abundance (influenced by the type of habitat) and morphology. To a lesser extent there are studies on diet and reproduction in a few locations. One paper deals with the use and conservation of the species in detail and the other with their genetics and conservation. There are no studies regarding the life history of the species. The need arises to integrate all this work and focus on the conservation of the iguana populations.

5- Title: Density of *Cyclura nubila nubila* in the cliff zone of Guanahacabibes National Park, Pinar del Río, Cuba.

Autores: MSc. Dorka Cobián Rojas^{1*}, Amnerys González Rossell² y Vicente Berovides Álvarez³

Institutions: ¹Parque Nacional Guanahacabibes, Centro de Investigaciones y Servicios Ambientales ECOVIDA, Ministerio de Ciencia, Tecnología y Medio Ambiente. ²Centro Nacional de Áreas Protegidas, Ministerio de Ciencia, Tecnología y Medio Ambiente. ³Facultad de Biología, Universidad de La Habana, Ministerio de Educación Superior.

Abstract: Estimates are made of population density of *Cyclura nubila nubila* over two cliff areas (I and II), in Guanahacabibes National Park and human impacts associated with the economic development of the Peninsula are assessed. Direct counts were made for three years during the early stages of mating and oviposition. The abundance was estimated as iguanas/0.9 km (relative abundance, RA) and as individuals / ha (density, D). RA = 7.5 iguanas/0.9 km and D = 6.6 iguanas / ha were obtained for the total area. The correlation (r) between the two variables was $r = 0.855$ ($p < 0.001$). On cliff II density declined sharply in 2006. The differences between cliffs were statistically significant ($p < 0.05$). The annual trend for the population of both cliffs was towards a decrease in density from 8.9 iguanas/ha in 2004 to 4.3 iguanas/ha in 2006. This result is explained by impacts from the construction of the road to Cabo de San Antonio. The start of construction coincided with the decrease in density. In 2004, density at the second escarpment was 17.2 iguanas/ha, and in 2006, at the start of construction of the road, was 4.0 iguanas/ha.

Presentations of Cuban participants

These results are discussed in terms of conservation and management of the species in the protected area.

6- Title: Diversity, Morphometry, and refuges of *Cyclura nubila nubila* in The Picúas-Cayo Cristo Wildlife Refuge, Villa Clara.

Author: Lic. José Luis Collazo

Institution: Refugio de Fauna Las Picúas-Cayo Cristo, Empresa Nacional para la Protección de la Flora y la Fauna, Ministerio de la Agricultura.

Abstract: Abundance dynamics of *Cyclura nubila nubila* were analyzed considering the effects of year, quarter, and locality. Size measurements were compared in three populations, taking into account differences in habitat and size of refuges dug in the sand, between localities, and the size of the occupant were correlated to said dimensions. Density estimates (iguanas/ha) were conducted in Cayo Obispo, Green Cay and other small keys for three quarters (January-March, July-September October-December) and four years (1997-2000) by counting shelters (indirect) and through counting individuals in transects bands (direct). Measurements were taken for 28 individuals and compared between two habitats (Yanal and Manigua Coast), habitat type and sex. Five variables were measured in 93 shelters (minimum and maximum height of the entrance, the entrance width, length and depth, all in centimeters), which were compared among sites and habitats (Yanal and Manigua Coast). The result is that the densities (individuals/ha) ranged between 14.6 and 21.5 and there were no significant changes between keys, years or seasons. The most marked changes in density between years were the least among quarters. The analysis of the effects of habitat on morphometric measurements shows that regardless of sex, the Yanal iguanas were smaller in size and in terms of allometry had shorter tail and femur lengths, with statistically significant differences ($F = 3.95$, $P < 0.05$). All dimensions of the shelters were affected by the location and habitat, except for the minimum height of the entrance.

7- Title: General characteristics of the population of iguanas in the Monte Cabaniguán Wildlife Refuge, Delta Cauto, Las Tunas.

Author: Dr. Manuel Alonso Tabet

Institution: Refugio de Fauna Monte Cabaniguán, Empresa Nacional para la Protección de la Flora y la Fauna, Ministerio de la Agricultura.

Abstract: Iguana populations in the Monte Cabaniguán Wildlife Refuge, live in an atypical habitat for the species, made up of mangroves and vegetation in patches of sand. In this paper we analyze the morphometry, abundance and reproduction of this population. Morphometry took into account 6 morphometric and 4 meristic characters, abundance is determined by the transect methods and reproduction was evaluated on the basis of the dimensions of the nests and the number of eggs. This population was found to be intermediate in morphological characters in relation to those on keys and the Island of Cuba. The average density was 24.2 iguanas/ha, similar to the keys. The dimensions of the nests were associated with annual changes in water level on the substrate.

8- Title: Results of the management and reproduction of *Cyclura nubila nubila* in captivity.

Authors: MSc. José Luis Polo Leal^{1*}

Téc. Alexander Arango Leyva¹

Lic. Raúl Campos Talavera²

Presentations of Cuban participants

Institution: ¹National Zoological Park, National Empresa for the Conservation of Flora and Fauna, Ministry of Agriculture.

² Zoological Garden of Havana

Abstract: The Cuban iguana, *Cyclura nubila nubila*, demonstrates good adaptability to the conditions of captivity in the 24 zoos of the island. Their diet consisted of fruits, vegetables, concentrates, live prey, and foliage. Maintenance conditions were based mainly on external displays and small pits where cases of egg-laying have been recorded but without the survival of offspring. The reproduction of this species in Cuba's National Zoo was achieved from two pairs of *Cyclura n. nubila* over a study period of three years with management changes of exhibit conditions in the reptile area. The eggs were collected and artificially incubated in the herpetarium rescue center, obtaining 80% hatch rate with an incubation of 113 days and 100% viability. Animal health management of the specimens found parasitic and bacterial pathogenic specimens. Parasitic diseases found were caused by ectoparasites and endoparasites. Among the first causal agents were ticks of the genus *Rhipicephalus* and *Boophilus* and among the second we found species in the family *Oxyridata* and the genera *Eimeria* and *Isospora*. Other diseases were bacterial in origin, produced by different species such as *Salmonella sp.*, *Staphilococo aureus*, *Pasteurella haemolytica*, *Pseudomona fluorecen*, *Pseudomona aeruginosa*, *Citrobacter sp.*, *Klebsiella pneumoneae*, *Klebsiella oxytoca*, *Edwardicella tarda*, *Aeromona hydrophila*, *Arizona sp.*, *Salmonella newport* and *Salmonella saintpaul*.