

# CBSG NEWS



Volume 17 / Number 2 / July 2006

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*Newsletter of the  
Conservation Breeding  
Specialist Group,  
Species Survival  
Commission, The World  
Conservation Union  
(CBSG/SSC/IUCN)*

**FROM THE CHAIRMAN:**

## **The Crisis**

Imagine how people (including you!) would react if the IUCN-The World Conservation Union announced that 50% of all bird species in Europe were declining significantly, at least 25% were at imminent risk of extinction, and even for species that would persist the numbers of populations and individuals would be greatly diminished over the next decade. Europe would be facing the prospect of silent mornings, with most of the songbirds gone, not to mention the severe damage to ecosystem functions such as control of insects and dispersal of seeds. Moreover, imagine that the devastation being seen in Europe was also expected to occur throughout the Americas, Asia, Africa, and Australia. I am certain that such an announcement would elicit immediate alarm – among the media, the governments, the conservation organizations, and much of the citizenry – with calls for immediate action on a scale not before experienced in the conservation community.

Fortunately, no such disaster has occurred among the birds of Europe (although certainly many species are threatened and much conservation work needs to be done to prevent some extinctions). Unfortunately, just such a scenario is unfolding for amphibians. Significant losses have recently occurred in North and Central America and in Australia; Europe and Africa are being impacted; and the threatening processes (including a devastating new disease) can be fully expected eventually to decimate also the amphibian faunas of Madagascar. The Andean region of South America, large parts of Asia, and other areas that have as yet been spared only because they have been lucky enough not yet to have been invaded by the chytrid fungus. We don't have silent mornings, but in many places we now have silent nights, as most of the frogs are gone. The damage to ecosystems will be severe, as in many regions amphibians are even more important components of the ecosystems – in terms of numbers of species and biomass – than are birds. The evolutionary and ecological diversity of amphibians is not often well recognized, but the loss of frogs and salamanders (and the even less known caecilians) could be considered equivalent to losing all birds and reptiles.

Is the world reacting with appropriate alarm and action to the current amphibian situation? Certainly the responses have not yet come close to meeting the scale of the crisis, but there are some very hopeful signs. Recently, the media are starting to pay attention. I am hopeful that governments will soon devote the attention and resources that this crisis demands of any responsible authority. The IUCN

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### The Crisis

restructured the SSC Amphibian Specialist Group and has given it the mandate to help stem the losses of amphibian species. CBSG, WAZA, several regional zoo associations, and many zoos and aquariums have raised the alarm and are taking action individually and collectively.

Is the problem hopeless – the task beyond our ability to do anything meaningful to stem the losses? We don't yet know how to stop the chytrid fungus in the wild (much more research into the disease and its impacts on amphibians is desperately needed), but we do know how to counter other ongoing threats such as habitat loss and over-harvest. The task – given to the *ex situ* conservation community by the Amphibian Conservation Action Plan of the IUCN's Species Survival Commission – of mounting emergency rescues of species that cannot be currently safeguarded in their natural habitats is huge but not insurmountable. If each zoo and aquarium that is a member of WAZA or one of its member associations will commit the resources to secure the future for one amphibian species, then every species that will depend on *ex situ* conservation will be saved. If each visitor to a WAZA zoo contributes just 2 cents (US\$ 0.02) for amphibian conservation, then we will have all the funds that we need. Of course, many institutions will work collaboratively, so that a group of 20 might together provide the needed survival assurance centers for 20 species, but each institution should be able to commit to the equivalent of saving at least one species. The larger institutions will do more, while the smallest zoos may be able to contribute only through communicating to visitors about the crisis. It should also be recognized that many zoos will save species not by building expensive breeding facilities on their zoo grounds, but instead by partnering with others to sponsor cost-effective conservation centers in the countries where the amphibian diversity is both greatest and most threatened. Many zoos are beginning to make the needed commitments (e.g., Zurich, London, Jersey, Chester, St. Louis, Omaha, Toledo, Houston, Cali, Perth, and Johannesburg), and I expect that many more will soon be joining them.

You can get more information about the issue and our efforts to respond in this newsletter, at the CBSG and WAZA websites, and at our meetings. A theme of our upcoming Annual Meeting in Halle, Germany will be the amphibian extinction crisis. I hope that many of you will join us there to hear more about the conservation efforts of CBSG and our partners, and to help guide our future work.

Sincerely,



Dr. Robert C. Lacy  
CBSG Chairman



**CBSG's mission is to save threatened species by increasing the effectiveness of conservation efforts worldwide.**

Through:

- innovative and interdisciplinary methodologies,
- culturally sensitive and respectful facilitation, and
- empowering global partnerships and collaborations,

**CBSG transforms passionate commitment to wildlife into effective conservation.**

## CBSG News

CBSG News is published by the Conservation Breeding Specialist Group, Species Survival Commission, World Conservation Union. CBSG News is intended to inform CBSG members and other individuals and organizations concerned with the conservation of plants and animals of the activities of CBSG in particular and the conservation community in general. We are interested in exchanging newsletters and receiving notices of your meetings. Contributions of US \$35 to help defray cost of publication would be most appreciated. Please send contributions or news items to:

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**A color PDF of this newsletter is available on CBSG's website:**

[www.cbsg.org/news/archive/scd](http://www.cbsg.org/news/archive/scd)

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## Amphibian *Ex Situ* Conservation Planning

12-15 February 2006

El Valle, Panama

From 17-19 September 2005, the IUCN hosted an Amphibian Conservation Summit in Washington, DC. The world's amphibian authorities from academia, zoos, government, veterinary medicine, and other diverse disciplines convened to conceptualize an Amphibian Conservation Action Plan (ACAP), outlining general responses required in the fields of research, assessment, conservation, and rapid response to stem widespread global amphibian extinctions. The IUCN/SSC Amphibian Specialist Group (ASG), the organization overseeing implementation of the ACAP, asked CBSG to help lead and coordinate the implementation of the *ex situ* aspects of ACAP's goals.

From 12-15 February 2006, CBSG and WAZA (World Association of Zoos and Aquariums) hosted an Amphibian *Ex Situ* Conservation Planning Workshop in El Valle, Panama. Unlike the prior meeting in DC, this group called upon only those amphibian biologists with expertise in the issues surrounding captive maintenance of amphibians. Fifty such people from 14 countries representing every amphibian-inhabited continent divided into four working groups to develop strategies for organization of the *ex situ* community, best practices for husbandry and quarantine, developing objective criteria for species selection, and conceptually organizing rapid response programs.

### Organization

An administrative structure was proposed in which the *ex situ* community would liaise with the larger Amphibian Specialist Group through an advisory board consisting of representatives from CBSG and WAZA, among others. The advisory board would, among other tasks,



develop and monitor strategies for implementing the *ex situ* part of the initiative in coordination with the *in situ* component, direct fundraising activities, and ensure excellent communication with all stakeholders. The advisory board and the WAZA Executive Director would oversee the activities of an Amphibian Program Officer, who would in turn provide advice to implementing partners in the *ex situ* community regarding knowledge and technology transfer, breeding programs, regional coordination, and species priorities.

### Best Practices

Standards were provided for the *ex situ* housing and maintenance of amphibians and recommendations made for fostering community involvement. These husbandry standards were designed to ensure the highest quality of care for captive amphibians, to minimize the transmission of disease between captive species, and to prevent the introduction of exotic pathogens into unexposed environments. They are intended to be general husbandry guidelines. Specific protocols will be determined for individual species selected for *ex situ* efforts.



### Species Selection

A Decision Tree was constructed to quantify the appropriateness for a given species to be included in an *ex situ* program. Phase One of the Decision Tree ensures there is justification for an *ex situ* program. It consists of three fundamental questions with “yes” or “no” answers. These questions should be applied to the taxon under consideration, answering each honestly and objectively. Phase Two of the Decision Tree takes those species that have ‘passed’ Phase One and attempts to prioritize them, i.e., with limited resources (space, staff, money etc.) which species should have *ex situ* programs established ahead of others. It takes the form of a series of questions with weighted scores. The total score for a species indicates how ‘important’ an *ex situ* program for the species is in relation to others. Some questions may not be straightforward to answer and will require consultation with colleagues, taxonomic experts, and other individuals/groups working with the species. Phase Three of the Decision Tree considers the practical feasibility of initiating and maintaining an *ex situ* program once justified and considered a priority.

### Rapid Response Programs

Rapid response programs deliver basic protocol and capacity to countries facing amphibian crises. These protocols must be flexible in nature to respond to crises deriving from causes as disparate as disease, habitat loss, contamination, and climate change. This will require identification of secure funding and dedicated staff to devise and implement the response program defined below. The purpose of these programs is to establish basic *ex situ* amphibian operations during the



suggested time required while permanent capacity for *ex situ* operations is developed in the range country. This purpose directly addresses the common problem of delays in conservation action that result from insufficient capacity in range countries, and ties directly to commitments to build permanent capacity in those countries. Key elements of these programs will include

identifying and training of national citizens and agencies in all aspects of *ex situ* programs, for example: husbandry, veterinary, management, fund raising, and public education. Successful implementation of programs will require fluid communication at all levels between IUCN, ASG, national governments, and local citizens in affected areas.

The working group reports compiled into a single document represent the collective expertise of the workshop participants to address the *ex situ* conservation components of the ACAP. The workshop report and recommendations will be presented to the ASG, and it is expected that the *ex situ* community will then collectively form an ASG Thematic Working Group (yet to be named) to implement the needed actions. Workshop participants will also be presenting these results for consideration at regional meetings. The responses by regional zoo associations and partners, and species prioritization for regional action, will be developed in collaboration with branches of the ASG (Assessment, Research, and Conservation). 🐸

Submitted by Kevin Zippel, CBSG



Amphibian Images © Danté Fenolio

## CBSG/WAZA Amphibian Initiative

CBSG's Amphibian Program Officer, Dr. Kevin Zippel, has been very busy managing the CBSG/WAZA Amphibian Initiative. He has organized and attended meetings and workshops, worked to raise urgently needed funds, and answered dozens of queries regarding amphibian conservation. Below is a summary of CBSG's recent and planned amphibian activities.

### **Amphibian *Ex-situ* Conservation Workshop: 11-15 February 2006**

CBSG and WAZA hosted this meeting to conceptualize ex situ components of the Amphibian Conservation Action Plan, including organization, best practices, taxon prioritization, and rapid response. See page 4 for details on this meeting.

### **AZA Amphibian Biology & Management Course: 17-23 April 2006**

At the course, Kevin Zippel taught lectures and workshops; students included five Latin American colleagues, two of whom have already or are planning to lead similar courses in their home countries.

### **Mexican Amphibian Biology and Management Course: 22-26 May 2006**

CBSG's Kevin Zippel gave several lectures on amphibian husbandry, and continues to answer questions from students since the workshop.

### **Amphibian Survival Alliance Meeting: 1-2 June 2006**

CBSG, the Amphibian Specialist Group and several *ex situ* parties met at the offices of Conservation International in Washington, DC to discuss organizational structure and taxon prioritization.



### **Project Golden Frog and EVACC: ongoing**

Kevin Zippel coordinated with EVACC's Panama rescue effort to simultaneously collect additional golden frogs, raise money and support for EVACC.

### **AZA Regional Amphibian Conservation Center: ongoing**

CBSG is working with regional zoos to develop and collaboratively run this amphibian center in the United States.

### **Kihansi Spray Toad: 7-8 June 2006**

CBSG met with Tanzanian officials to discuss a PHVA for the Kihansi Spray Toad and a Biology/Management course in Tanzania.

### **Hellbender PHVA: 7-10 August 2006**

CBSG will facilitate a workshop for the conservation of the hellbender salamander, native to the Eastern United States.

### **CBSG Annual Meeting: 25-27 August 2006**

A major session will focus on amphibians, with a presentation on the current situation and progress made by the CBSG/WAZA initiative to date. Several speakers will highlight their work as a region, an individual zoo, or a partnership in responding to the crisis. See the back cover of this newsletter for more details.

### **AZA Annual Conference: 25-30 September 2006**

CBSG will give a presentation on the role of the *ex situ* community in amphibian conservation.





**Costa Rica Conservation Strategy Workshop:  
6-8 October 2006**

CBSG will help lead a workshop to create a national recovery plan for amphibians in Costa Rica.


**Colombian Amphibian Biology & Management Workshop: 24-29 October 2006**

CBSG will assist Cali Zoo staff in leading a workshop to share knowledge of amphibian husbandry and conservation with regional participants.

**Zoos and Aquariums Committing to Conservation: 26-31 January 2007**

CBSG will give a presentation on the role of the *ex situ* community in amphibian conservation.

**Amphibian Publications Involving CBSG Staff**

- "On the Role of Ex Situ Management in the Conservation of Amphibians" manuscript completed for ASG Global Amphibian Assessment book
- "Conservation Implications of Taxonomically Revising Panamanian Golden Frogs" manuscript accepted at *Herpetotrópicos*
- "Captive-breeding programme for the Kihansi spray toad *Nectophrynoides asperginis* at the Wildlife Conservation Society, Bronx, New York" manuscript accepted at *International Zoo Yearbook*
- "Confronting Amphibian Declines and Extinctions" manuscript published as Policy Forum piece in *Science*. 

*Submitted by Kevin Zippel, CBSG*

Amphibian Images © Danté Fenolio

**AZA & CBSG: Training Keepers to Help Amphibians**

The third annual offering of the Association of Zoos and Aquarium's (AZA) Amphibian Biology and Management course was held at the Toledo Zoo from 17-23 April 2006. Instructors from Toledo, Detroit, Atlanta, and Toronto Zoos, as well as CBSG, led a series of lectures and workshops on a diversity of subjects from the scientific (classification, evolution, water chemistry) to the applied (enclosure construction, assisted reproductive techniques, medicine, conservation). Twenty-two students were trained this year, bringing the course total to 63. Significantly, this year's class included 5 students from Latin America, including staff from



Africam Safari in Mexico, El Nispero Zoo in Panama, Cali Zoo in Colombia, and the lab of Dr. Luis Coloma at Católica University in Ecuador. Attendance of these students was made possible by the generous support of AZA and Brookfield, Cleveland, St. Louis, and Zurich Zoos. This course is part of a globally coordinated effort to stem amphibian extinctions, which are occurring at an unprecedented rate. There are 2000-3000 threatened amphibian species currently going extinct at the rate of ~10/year. The best case scenario is that the global zoo community currently has resources for sustainable management of 50 species, a mere 2% of those in need. But through efforts like the Amphibian Biology and Management Course, AZA is helping to build capacity here in the US and in other areas of need throughout the world.

## Southern African Bearded Vulture PHVA

6-10 March 2006

Sterkfontein Dam, South Africa

The bearded vulture's (*Gypaetus barbatus*) is classified as Endangered in Lesotho and South Africa due to its small and declining population size, restricted range, range contraction, and threats from human activity. Its reduction in range can largely be attributed to the loss of natural ungulates, superior animal husbandry practices and improved animal hygiene that has reduced the food supply.

Human-induced mortality in bearded vultures includes collisions and electrocutions on power lines, indirect persecution by poisoning, direct persecution from shooting, development, radio/electrical structures and the consumptive use of vulture parts for medicinal and traditional use. Currently, there are fewer than 20 pairs and 50 individuals in six designated Important Bird Areas in Lesotho. However, all bearded vultures breed outside of protected areas, and bearded vultures wander long distances in their daily foraging and spend most of their day outside protected areas.

Twenty-seven participants from four countries participated in the PHVA workshop, representing the conservation NGO community, academic institutions, SAN-Parks, Ezemvelo KZN Wildlife, provincial conservation departments from South Africa and Lesotho, and the German Development Service. Participants generated a list of key issues facing the survival of the bearded vulture in southern Africa and formed five working groups.

### Surveying and Monitoring Working Group

This group developed recommendations focused on the need for a reliable assessment of the causes of mortalities, and specifically the rates of juvenile mortality in high density areas of the population, through a comprehensive bird marking and monitoring program. A long-term marking project of birds of various age groups was identified as crucial. The



group recommended that all existing information be collated to form the basis of a baseline database.

### Resource Availability and Habitat Loss Working Group

In South Africa, natural carcass availability is likely to decline and bearded vulture populations will have to be managed through an intensive feeding program, i.e. vulture restaurants. Protected areas have a strong role to play in this feeding program as they represent safe areas for the birds. Therefore, it was proposed that vulture restaurants be established strategically across the foraging range of bearded vultures.

### Political, Legal, Education, Awareness, Social, Economic Factors Working Group

This group discussed the various social, political, legal and economic factors influencing the bearded vulture as well as issues around education and awareness. Of greatest concern was the lack of partnerships among stakeholders, including traditional healers, muthi traders, government departments, NGOs, private enterprise, provincial conservation authorities, the media and educational institutions.

To address these issues, the group suggested: that relevant conservation authorities agree on and adopt a bearded vulture management plan; using dedicated media slots to promote bearded vulture awareness and improve the vulture's image; creating awareness





among large corporations and landowners of the problems associated with bearded vulture use, developing and distributing appropriate educational materials to schools; that tertiary institutions become involved in bearded vulture conservation work where appropriate; and raising awareness of the problem, so stakeholders will support vulture conservation.

**Unnatural Mortality Working Group**

To prevent mortality due to poisons, this group recommended the improvement of law enforcement, a review of the statutes regarding use of agro-chemicals for problem animal control in Lesotho, an awareness campaign of the ramifications of poisons and veterinary medicine and control and management of feeding sites to ensure that they remain secure from intentional and accidental poisoning.

The prevention of direct persecution also requires the improvement of education and law enforcement. Mortalities as a result of power line interactions can be addressed by evaluating the placement of all transmission lines and structures and installing mitigation measures for collisions and electrocutions. It was recommended that a Memorandum of Understanding between Lesotho and South Africa regarding the control of access to live birds or parts be compiled.

**Population Modelling and Dynamics Working Group**

Several scenarios were run to test the effects of interventions aimed at decreasing mortality. If adult mortality decreases, the population reaches carrying capacity and stabilises if 8 birds are saved annually.



Any adults that are “saved” from mortality in the population will have a significant impact. Poisoning potentially accounts for 70% of all bearded vulture mortalities. Mass poisonings were modelled, which were assumed to occur every 5-10 years over the next 100 years. A significant increase in the probability of extinction was noted when the mass poisoning occurred every 5 years. It is evident that mass poisonings could result in a rapid decline of the population and could cause it to go extinct if they occur on a regular basis.

*Submitted by Yolán Friedmann, CBSG Southern Africa*

**CBSG Brochure Available in Seven Languages**

CBSG thanks the following individuals who have translated our new brochure. Translations will be available for download on the CBSG website soon.

**French**

Jean-Luc Berthier

**German**

Fabian Schmidt

**Bahasa Indonesia**

Pat Irving

**Japanese**

Akira Murayama

**Portuguese**

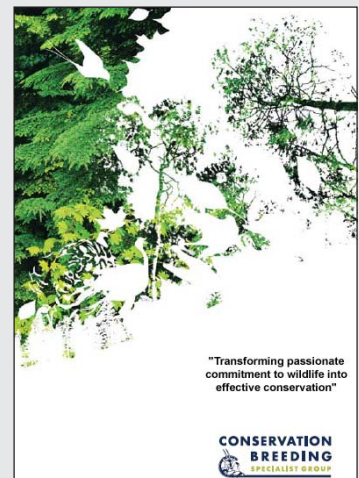
Patrícia Medici

**Spanish**

Teresa Abello

Luis Carrillo

Yolanda Matamoros



## Mexican Wolf Reintroduction Site Workshop

8-10 March 2006

Nuevo León, Mexico

The Mexican wolf (*Canis lupus baileyi*) once roamed in Arizona, New Mexico, Texas and Mexico. Conflicts with livestock and other human activities led to the extirpation of the Mexican wolf from its natural habitat in the United States around 1970, at a time when few remained free in the mountains of México. In 1976 Mexican wolves were listed under the US Endangered Species Act, leading to an agreement between the Mexican and American governments to protect the species through a coordinated captive breeding program. Only about 50 wild wolves remained in Mexico in 1977, when five animals were captured to initiate this captive breeding program.

Today the captive population of Mexican wolves in the United States and Mexico totals more than 90 animals managed by the Association of Zoos and Aquariums (AZA) Species Survival Plan (SSP). In 1998, after a 30-year absence from the wild in the U.S., captive-reared Mexican wolves were released in the Blue Range Wolf Recovery Area, which stretches across east-central Arizona and west-central New Mexico, and reintroduction efforts have continued since that time.



CBSG México was contacted by the Mexican government and the National Committee for the Recovery of the Mexican Wolf to design and facilitate a workshop to explore potential wolf reintroduction sites in Mexico, as part of a larger government plan to reintroduce Mexican wolves. This workshop brought together more than 30 people, including wolf experts from México and the US Fish and Wildlife Service and Arizona Fish and Game to discuss, analyze and select the best sites for the release of this species in Mexico and to develop a reliable release protocol for this effort.



After reviewing analyses of several potential wolf habitat areas in Mexico, the participants identified six criteria for assessing potential areas for reintroduction in Mexico: habitat quality; site stability; risks associated with anthropogenic factors; local cultural factors; management feasibility; and potential impact on the ecosystem. Participants divided into working groups to develop decision rules for site evaluation for each of these six categories, resulting in a tool to identify ideal characteristics of a potential release site that could be used to evaluate areas under consideration.

During the workshop, a Vortex model was developed from the best available data on Mexican wolf biology to simulate the establishment of wild wolf populations based on the release of adult pairs from the captive population. Population viability is affected by population size, which in turn is a function of carrying capacity. Mortality rates, whether due to natural or anthropogenic causes, also impact population viability. Model results suggest that populations of 80-100 wolves are needed to reduce the risk of extinction to less than 10-20% over 100 years, depending upon mortality rates. Populations of 120 or more wolves are more genetically robust. This information provided participants with guidelines when evaluating potential sites of different size, prey density, and susceptibility to human impacts.



Wolf/habitat Photos © Oscar Moctezuma O. / Naturalia, A.C

Three working groups convened to apply the developed criteria and model recommendations to potential release sites, while a fourth working group outlined a reintroduction protocol based on that used by the USFWS. Three recovery areas, each consisting of two connected habitat patches, were identified as suitable for wolf reintroduction.

reintroduction in Mexico. This workshop enabled them to make significant progress on this issue and will hopefully catalyze effective action toward recovery efforts for Mexican wolves. 🐾

Submitted by Amy Camacho and Luis Carrillo, CBSG México

For the past 10 years, the Mexican government and the National Committee for the Recovery of the Mexican Wolf have been working together both for the recovery of this species in captivity and in planning for

## Risk Assessment Continues for Alabama Beach Mouse

CBSG recently completed its third Population Viability Analysis of the Alabama beach mouse (ABM) (*Peromyscus polionotus ammobates*), one of several endangered subspecies of oldfield mice that inhabit the coastal dune habitats of the southeastern US. Increasing recreational and residential development along coastal beaches reduce and fragment beach mouse habitat, causing populations to decline and making them more susceptible to hurricanes.



© USFWS

A wide diversity of ABM experts convened at the June 2004 PHVA workshop to develop a complex beach mouse model, which was subsequently used to evaluate the effects of various threats (such as domestic cats and invasive species) and potential management strategies on ABM viability. In Decem-

ber 2004 the US Fish and Wildlife Service (FWS) requested CBSG to refine this model to account for the effects of Hurricane Ivan and to assess the impact of various development scenarios under consideration. This year CBSG again worked with FWS to further refine the model to include Hurricane Katrina effects and more accurate habitat and hurricane estimates. Developed by CBSG modeller David Reed from the University of Mississippi, this latest model was used to evaluate the importance of habitat corridors and privately-owned habitat patches as well as the potential benefits of translocation efforts to re-establish mice populations decimated by hurricanes.

Although the risk of subspecies extinction is real, this sophisticated model and adaptive approach is helping FWS to evaluate the impacts of issuing Incidental Take Permits for development and to identify management strategies that are most likely to minimize the risk of extinction for the Alabama beach mouse.

## Eastern Massasauga Rattlesnake Symposium

11-15 October 2005  
Toronto, Canada

The Eastern massasauga (*Sistrurus catenatus catenatus*) rattlesnake is distributed primarily through the Great Lakes region of North America, with three isolated remnant populations occurring in the province of Ontario. Every few years, the massasauga biology and conservation community gathers to discuss a multitude of issues surrounding this charismatic species, and the 2005 meeting was held at the Toronto Zoo.

CBSG's role in this meeting was to facilitate a population viability analysis (PVA) for an isolated massasauga population occupying the Bruce Peninsula in southwestern Ontario. This is one of three remnant populations of the subspecies and is highly threatened due to economic development of the peninsula including road building and cottage construction. This PVA was a two day workshop held simultaneously with another session on public outreach and its role in Eastern Massasauga conservation. The PVA workshop opened with issue generation, followed by detailed discussions of species biology and threats imposed by human activities, and closing with the identification of specific actions to be conducted for successful conservation of the species in its native range.

The discussion of species demography was very engaging, unfortunately, there is little data on overall population trends among Eastern massasauga on the Bruce Peninsula, but most experts agree that the population is in some low rate of decline. Based on this general perspective, a model was created that showed a low level of population decline. The participants were comfortable with this and discussed the degree of population differentiation across the Bruce Peninsula, asking the question; is there a single population or several smaller populations separated by at least semi-permeable natural and/or anthropogenic barriers? This was an excellent discussion and one that the researchers had been reluctant to engage in historically. At the same time, there were enough demographic and genetic data available, and enough shared experience among the people in the room, that the experts were able to talk about this in a very productive fashion. The participants used a map of the peninsula to indicate seven different regions that represented more or less distinct regions of massasauga



© Paul D. Pratt

auga habitat, separated by major highways and natural features. They finished the day with discussion of how metapopulation data should be entered into the emerging 7-patch habitat system, and began discussions on how to best simulate an increasing future road network density within the existing metapopulation system through a gradual addition of snake mortality, since we assume that these features result in substantial increases in roadkill-based mortality.

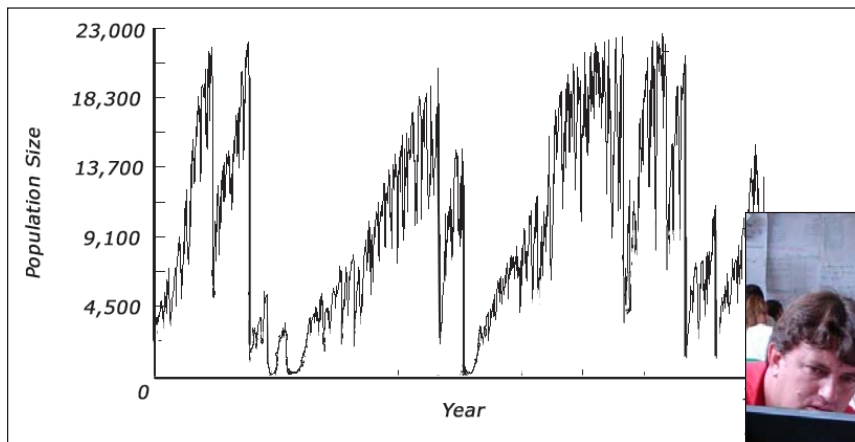
The fragmented landscape used in the models created some very interesting population dynamics, since some habitat patches were considered to be heavily impacted by human activities while others residing in Protected Areas suffered little to no effect of these same activities. The workshop co-organizers presented the results of the PVA workshop to the larger Symposium audience. They stressed the need for additional data collection, which stimulated a lengthy discussion on the ways in which snakes killed by vehicle collisions can be used for this purpose. Other interesting discussions emerged from the presentation of the metapopulation map of the peninsula, and participants generated a new estimate of the total number of individual snakes throughout the habitat: 1900 adults as a very rough guess, but one that the researchers and managers can accept and use to decide how to proceed with conservation and research.

An informal PVA report has been generated by the CBSG Office and is included in the International Symposium proceedings. More importantly, the recommendations resulting from the workshop are to be taken on by provincial and federal authorities as part of the larger process of providing a more secure future for Ontario's only venomous snake. 🐍

Submitted by Phil Miller, CBSG

## PVA and PHVA: Similarities & Differences

While their acronyms sound similar, these two processes have important differences that help us understand how each process can be best used in conserving threatened biodiversity. A Population Viability Analysis, or PVA, is an analytical technique that is typically used to assess the current risk of decline or extinction of a given plant or animal population, and to investigate the most likely response of the population to changes in its rates of reproduction or survival from one year to the next – often through human activities on the landscape. This investigation is conducted most effectively through the use of computer simulation



models, and uses information gathered over many years by field researchers on the biological characteristics of the populations under study. These analyses can become quite complex and, therefore, they often remain in the confines of the conservation science community.

CBSG's Population and Habitat Viability Assessment, or PHVA, represents a significant extension of the more traditional PVA approach into the realm of practical conservation decision-making. Whereas a PVA is conducted with the expertise of population ecologists and geneticists, and focuses intensively on the dynamics of population extinction, a typical PHVA workshop includes representatives and perspectives from a much more diverse body of interested parties, or stakeholders. These stakeholders utilize the results from a PVA analysis – performed during or immediately before the PHVA workshop – to improve the rigor and utility of very practical recommendations designed to effectively conserve the species or population that is

the focus of the workshop. Additionally, other discussions focusing on vital aspects of species conservation such as legal issues, social acceptance, and human-wildlife interactions, form the basis of facilitated interactions between people from diverse backgrounds and perspectives. In this way, the PVA forms the analytical “core” of the PHVA workshop, with expert participants from other disciplines encouraged to guide the use of the PVA models and adapt the results of the risk assessment to fit their own situations and needs as they develop species and habitat conservation strategies.

Perhaps the most visible difference between a PVA and a PHVA is in the number of experts needed to do one. A PVA can and often is completed by a single population biologist working with data gleaned from published sources. CBSG members and staff sometimes provide PVA consultant services, as do many other population biologists skilled in the modeling techniques.



In contrast, a PHVA cannot be conducted by a single scientist, because by definition it involves the facilitated synthesis of concerns, ideas, data, and proposed conservation solutions from not only a range of population biologists, but also wildlife and land managers, social scientists, and others with knowledge needed for crafting a successful conservation plan for the species. 🐸

## American Burying Beetle PHVA

14-17 November 2005

St. Louis, Missouri, USA

The Conservation Breeding Specialist Group (CBSG) conducted a Population and Habitat Viability Assessment (PHVA) workshop for the American burying beetle (*Nicrophorus americanus* Olivier) in St. Louis, Missouri, USA on 14-17 November 2005.

The federally endangered American burying beetle (ABB) is the largest member of the family *Silphidae* in North America. Easily recognized by their shiny black bodies and red to orange markings on both their elytra and pronotum, this species offers its young extended parental care, an unusual behavioral trait in beetles. After ABBs find an appropriate-sized carcass, intense inter- and intra-species competition occurs (Kozol, 1990). Together, a victorious pair cooperatively prepares the carcass for burial by removing fur or feathers and coating it with oral and anal secretions that retard bacterial and fungal growth. The female beetle lays eggs in a brood chamber near the preserved carcass. After the eggs hatch, the parents move the first instar (stage) larvae to the carcass, where the larvae solicit feeding by stroking the mandibles of the parents. Both parents remain with the carcass and larvae, feeding their offspring with regurgitated meat until the larvae are capable of feeding themselves. Eventually, large third instar larvae burrow a short distance from the now-diminished carcass and form a pupation cell. Teneral (new adults) then emerge from pupation within 30-45 days (Prosser, 1999).

The ABB was once abundant in most eastern and central states as well as the southern borders of eastern Canadian provinces. It was found in Jasper County, Missouri as recently as 1980. At the time it was placed on the U.S. federal endangered species list in 1989, the only known populations occurred on Block Island in Rhode Island and in Latimer County, Oklahoma. Since then, field surveys have discovered populations in five other states: Arkansas, Kansas, Nebraska, Oklahoma, and South Dakota. In 2005, the ABB was also apparently discovered in northeastern Texas, but further verification of this record is pending.

The decline of the ABB has been underway for nearly a century. The once widespread population was fragmented and greatly diminished by the 1920's. The prevailing theory for this decline points to habitat loss and fragmentation leading to a corresponding decrease in suitable carrion. As more and more land was

converted for agricultural use, the changed habitat favored scavenging mammal and bird species that compete with carrion beetles for resources. For example, passenger pigeons and prairie chickens, ideal carrion size for the beetle, disappeared. Turkey and waterfowl populations declined. Small rodents adapted well to the new habitats and some species flourished. However, most small mammals are too small for the ABB, which requires an 80-200 gram carcass to maximize its reproductive potential. The cutting of forests and tilling and pasturing of the prairies led to more edge habitat, ideal for predators and scavengers that directly compete with the beetles for carrion.



Since listing, the ABB has been successfully reared at several universities and zoos. Captive-reared and direct-translocated ABBs have been released at three sites in attempts to re-establish populations in the wild. Releases of only 211 ABBs on Penikese Island, Massachusetts, from 1990-1993, resulted in a small population that persisted until 2002, about 9 generations. However, no ABBs were documented on the island from 2003-2005. A much more ambitious reintroduction effort on Nantucket Island involved the release of nearly 3,000 ABBs during a 12-year period, 1994-2005. The success of this effort is still being evaluated. Lastly, about 830 ABBs have been released on public land in southeastern Ohio during the years 1998-2000 and 2003-2005. This is the first mainland attempt to restore the species to its former range and thus far, post-release monitoring surveys have caught relatively few ABBs.

The ABB Conservation Center of Saint Louis Zoo's Wild Care Institute, comprised of 12 Conservation Centers around the world where threatened animals

and their ecosystems are receiving a focused approach to help in their survival, invited the CBSG to conduct a PHVA for the American burying beetle.


The PHVA workshop involved stakeholders from eight states and the United Kingdom, including representatives from federal and state wildlife agencies, zoological institutions and the timber industry. The goals of the Workshop were to:

- encourage communication and collaboration with government and non-government conservation programs;
- develop a risk analysis and simulation population model for the ABB;
- formulate practical, scientific management of the ABB throughout its range; and
- suggest research priorities linked to conservation and recovery of the ABB.

The PHVA workshop began with participant introductions and a series of presentations to ensure that everyone was starting from the same place and familiar with the process and available scientific information. Next, issues and needs related to the long term survival of the ABB were identified and organized into topics for further working group discussions. After significant problem analysis and data compilation and review, the groups prepared an 'issue statement' for each issue, prioritized these statements and brainstormed potential solutions to address high priority concerns. In addition, the groups were asked to identify those solutions with the potential to impact any of the population model input parameters.

The participants worked in plenary to discuss values for life history parameters and to estimate population size and carrying capacity for the various wild ABB populations. The resulting Vortex model was used to identify key factors affecting ABB populations, such as over-winter mortality, that were then used by the working groups to identify effective management actions. Specific models were developed for each geographic population that assessed the current status as well as potential future habitat losses, and a reintroduction model examined the impact of the

number of beetles released, the number of years of release, and the effect of provisioning released pairs. This information was used to develop alternative management scenarios and later to modify the recommendations. The penultimate step in the workshop process involved the development and prioritization of recommendations for implementation of preferred solutions. Recommendation presentations were shared with the entire group and detailed, concrete action steps for implementation of their priority recommendations were developed.

Finally, the recommendations were prioritized by the entire group. This was a powerful exercise in which workshop participants clearly articulated their highest priority actions-the need for life history research, surveys, and improved communication among stakeholders. The top priority recommendations are detailed in the PHVA report available from the CBSG Office. Each recommendation includes a timeline for completion and lists the parties responsible for their implementation. 

*Submitted by Onnie Byers, and Kathy Holzer, CBSG, and Michael Amaral, U.S. Fish and Wildlife Service*

Reprinted from *Re-introduction NEWS* No. 25 April 2006

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Prospero, M.L. Roger Williams Park Zoo and the American burying beetle *Nicrophorus americanus*: How it works and what it costs. Pg. 107-112.

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## Tsushima Leopard Cat Conservation Planning

9-11 January 2006

Tsushima, Japan

The latest survey of wild Tsushima leopard cats estimates that there are between 80 and 110 leopard cats left in the wild population. This indicates that over the course of the last decade, the population has declined by 10 percent. While the Tsushima leopard cat once was distributed on the two main islands of Tsushima, no evidence of this species has been found on the southern island for over 20 years.

The causes of population decline are thought to be habitat loss, human-related mortality (road kill, trapping, feral dogs), and infectious disease spread by invasive non-native species, especially feral cats. Despite a small area on the island that has been granted protected status, most of the land on Tsushima - about 89% - is privately owned. This endangered species is found mainly on private unprotected land, so new ideas and policies for conservation are necessary to ensure its preservation.

The Tsushima Leopard Cat Conservation Planning Workshop was held in January 2006 on the island of Tsushima, with 119 people in attendance. Participants were divided into four working groups:

- establishment of a society that coexists with the leopard cat
- *in-situ* conservation and population viability analysis
- *ex-situ* conservation
- disease risk assessment.

The discussion in each group was very passionate, enthusiastic, and constructive. Participants set clear conservation goals to facilitate the survival of the *in situ* leopard cat population, and expressed interest in a PHVA workshop on this species in the future.



A final session - which was open to the public - was held in the evening of the final day of the workshop, primarily to inform interested members of the local community about the conclusions of the workshop.

About 180 people participated in this session, which helped the local people feel that they also have important roles to play in the conservation of the leopard cat. Many local and national newspapers wrote articles about the workshop. In addition, the open session was aired on the local cable TV network.

A small but certainly not trivial immediate outcome of the workshop was a message delivered by the Mayor of Tsushima the day after the workshop. In this message, he declared his intention to create a Department of Environmental Conservation for the city and surrounding areas, based directly on his response to the Tsushima Leopard Cat conservation planning workshop.

This workshop represented a monumental task, with 119 participants and the goal of addressing disease risk, *in situ* conservation and PVA, and *ex situ* population management. It involved the efforts of five CBSG team members-including Alberto Paras (CBSG Mexico) Richard Jacob-Hoff (Auckland Zoo) and David Reed (University of Mississippi) as well as many members of CBSG Japan. This was the first workshop organized by CBSG Japan, and the staff of the regional network were invaluable in adapting CBSG processes for the local culture. 🐆



Submitted by Hiroshi Hori and Akira Murayama, CBSG Japan



# Okinawa Rail PVA

13-15 January 2006  
Kunigami Village, Okinawa, Japan

Once found throughout the island of Okinawa, the Okinawa rail is now one of the most endangered birds in Japan. Today the remaining population of 800 -1,000 individuals is found only near the small local community of Ada in northern Okinawa. The primary cause of decline is believed to be the spread of an exotic mongoose species, released in the southern region of Okinawa about 100 years ago in an attempt to control an endemic poisonous snake, the *habu*. As the mongoose spread north across Okinawa, rail populations disappeared. In addition to the effects of mongoose predation, other causes of population decline of rails include predation by feral cats and road kills.



intensive program to control invasive species. This group also recommended the creation of a mongoose-free habitat to contain about 200 rails by the year 2016.

The situation facing this species is very similar to that of the Guam rail, a closely related species that has experienced a similar decline due to the establishment of exotic brown tree snakes on Guam. Paul Wenninger, a biologist from the Guam rail reintroduction program, participated in this workshop to offer his expertise in rail conservation. One of the biggest challenges to effective conservation planning for this species is the lack of data; however, based on lessons learned from the Guam rail program, all participants agreed that immediate action was important to the survival of this species.



About 45 participants attended this two-day conservation workshop, with three CBSG team members (including David Reed, University of Mississippi) providing facilitation and modeling expertise. Two working groups were

formed – *in situ* conservation and *ex situ* conservation – to set conservation goals and priorities to deal with the urgent situation facing these birds. Although the structure of the CBSG workshop process was different from the typical Japanese approach to problem analysis and planning, the participants adapted quickly and were very productive.

Model projections based on the rate of spread of mongoose populations suggest that the Okinawa rail may be extinct in the wild within 15-20 years. The highest priority for the *in situ* working group is a more

To safeguard against species extinction, the *ex situ* conservation working group recommended the establishment of a captive breeding population to supply rails for eventual reintroduction after mongoose-free habitat is established. There is currently no captive program for Okinawa rails, with only a few injured rails housed temporarily in rescue centers. Just after the workshop, the Ministry of Environment formed a subcommittee to initiate a captive breeding program for the Okinawa rail in Japan.

Control of invasive species and a captive breeding program will be essential to preserving this species for the future. Community support is also vital and was quite evident during the workshop. Local residents of Ada and the surrounding area are very supportive of rail preservation. The Okinawa rail, known locally as *yanbaru*, is the subject of education awareness programs and featured prominently in artwork and handicrafts. Local residents funded the establishment of a rescue center for injured birds and initiated a domestic cat registration program that is designed to reduce the feral cat population. The love of the Okinawan people for their natural heritage will be a strong and necessary advantage in the challenge to preserve this beautiful species. 🐈



Submitted by Hiroshi Hori and Akira Murayama, CBSG Japan

## Maned Wolf PHVA

24-28 October 2005  
 Minas Gerais, Brazil

The maned wolf (*Chrysocyon brachyurus*) is the largest canid roaming the broad grasslands of the Neotropics. The distribution of this species ranges through central and eastern South America including northern Uruguay and Argentina, south and central Brazil, eastern Bolivia, Paraguay, and southern Peru. Although this represents a wide distribution area, it is listed as Near Threatened in the IUCN's Red List of Threatened Species, and has now been placed on many local Red Lists throughout the region.

Increasing human presence in the ecosystem, resulting in widespread habitat alteration and fragmentation, has been considered a major factor in the maned wolf's survival. Although maned wolves have been a subject of serious biological study for a number of years, we still do not fully understand the ecology of maned wolves in disturbed urban areas, or even in protected sites. In addition, most of this available information is spread among biologists that conduct their research in different parts of the species' range.



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Species Survival Plan (MWSSP) and the Canid Specialist Group (CSG/IUCN). The main objective of the PHVA was to gather as much of the available information as possible concerning maned wolf ecology, demography, habitat use, and dispersal from specialists residing in all of the countries where the species occurs, and use that information to develop a conservation action plan for the maned wolf that can be applied throughout its entire range, in order to protect the species and preserve the ecosystems it inhabits.



In order to address the conservation needs of the species throughout much of its range, CBSG was invited to design and conduct a PHVA workshop on maned wolves in October 2005 in Brazil. The main organization undertaking the project represents a partnership between the National Research Center for Predator Conservation (CENAP) of the Brazilian Environmental Agency (IBAMA), and a Brazilian non-governmental institution, Instituto Pró-Carnívoros. Institutional supporters of this project included the Association of Zoos and Aquariums (AZA) Maned Wolf

Nearly 50 people from Brazil, Argentina, Paraguay, and the United States were on hand for the opening festivities. Our CBSG Brasil Regional Network Convenor, Patricia Medici, was lead workshop facilitator, with assistance from Phil Miller and IBAMA's Leandro Jerusalinsky. Kathy Traylor-Holzer mentored Brazilians Arnaud Desbiez and Anders Gonçalves da Silva in the skillful art of risk assessment modeling. During participant introductions at the outset of the workshop, concerns were expressed regarding difficulties in achieving socio-political buy-in to conservation, public attitudes towards species conservation,

and lack of detailed biological information. In addition, there was significant emphasis placed on how the captive breeding program should be integrated into the larger conservation efforts for the species. A series of detailed presentations on many aspects of maned wolf conservation stretched into the evening, so working groups sessions were deferred until the next morning. The CBSG Team created five working groups: population biology / PVA modeling; *ex-situ* conservation; maned wolf threats and population management;



distribution; and socio-economic issues in maned wolf conservation.

The groups were very enthusiastic about their tasks, ultimately developing a comprehensive set of issue statements and a detailed summary of the available data pertinent to their particular topics. Of particular interest was the detailed causal flow diagram developed by the group working on threats and population management, who worked very hard to understand the links between different human activities and their impacts on maned wolf populations.

As the workshop progressed, participants were able to gain a perspective on the group's priorities for maned wolf conservation. This allowed us to move more effectively to the development of actions from each working group. The final plenary session was very good: each working group's action statements had excellent detail, with emphasis on improving public awareness of wolf conservation, strengthening inter-institutional cooperation, enhancing research on the distribution and demography of the wolf, and better integration of *ex-situ* population management into the larger wolf conservation effort. The work of the *ex-situ* group was particularly rewarding, given a variety of difficult challenges they had to overcome throughout the week as they discussed sensitive and controversial issues. Despite these difficulties, the group persevered and produced a very detailed report that will be an important blueprint for this community to follow in the coming years.

The third day of the workshop dawned sunny and dry, so participants drove to the Visitor's Center at Serra da Canastra National Park to continue the workshop there. Only minutes into our drive, IBAMA wolf researcher Rogerio de Paula told us that they had successfully live-trapped two wolves the night before, so we were going to be able to see maned wolves in the wild that morning! We drove to an open part of the park, then continued on foot to the site of the first trap and our first wild maned wolf. Rogerio opened the trap's door and it was quite a sight to see the animal

bound into the grasslands of the *cerrado*. This was a wonderful experience; the participants felt a renewed sense of purpose following this break from the normal workshop experience.

The closing session of the workshop was surprisingly (and wonderfully) emotional: while Rogerio showed a slide of a young maned wolf pup, he spoke of the tremendous gratitude he personally felt at the commitment to work demonstrated by all participants at this meeting. Because of the work that had been completed here, he felt personally empowered to do more for conservation of the species he loves so much.

This workshop was an outstanding example of the capacity of Pati Medici and her colleagues in CBSG Brasil to conduct effective and meaningful conservation workshops in Brazil and surrounding regions of South America. We look forward to many more collaborative projects with Pati as she works to adopt CBSG processes throughout Amazonia. 🐾

*Submitted by Phil Miller, CBSG*



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## Endemic Tortoise Species in Madagascar PHVA

25-28 August 2005

Ifaty, Madagascar

### Background

A Population and Habitat Viability Assessment workshop was conducted for two Madagascar tortoise species – the radiated tortoise (*Geochelone radiata*) and the smaller spider tortoise (*Pyxis arachnoides*).

These tortoise species are found within the dry spiny forest of southern Madagascar. Tortoise populations have decreased drastically in the wild during the past two decades because of habitat loss and unsustainable illegal harvesting for food or the pet trade.

Listed as CITES Appendix I and classified as Vulnerable by the IUCN, both species are protected by Malagasy law. However, law enforcement at every level often fails, due in large part to poverty-induced corruption, and illegal trade continues. Illegal harvest is generally not conducted by local communities – for some tribes, even touching a tortoise is taboo – but tortoises are typically harvested by outsiders for monetary gain. Poachers now travel further into tortoise habitat to collect specimens as they deplete the population near the periphery of tortoise range, removing the large, breeding animals from the population.

The impetus for this workshop was the recognition that the ecological damage caused by illegal tortoise harvest and unsustainable land use could be controlled if villagers were given the chance to understand and to manage their renewable resources in an appropriate way. The tortoise is valued both ecologically and culturally by the local people, and empowering local communities to protect their natural heritage hopefully will enable the tortoise population to stabilize and recover. The PHVA workshop was aimed at promoting the community-based management of natural resources and supporting the already existing taboo to prevent intruders from collecting tortoises.

The PHVA was organized and hosted by Wildlife Conservation Society – Madagascar and generously

funded by SeaWorld, Inc. and Conservation International – Madagascar. The workshop involved a wide variety of stakeholders, including local community members, legislators, decision-makers, academic biologists, wildlife managers and other interested parties. To ensure full participation by the local community representatives, pre-workshop meetings were held in several villages throughout the range of the tortoises to gather support, data and recommendations.



The goals of the workshop were to assist local people, biologists, managers and policy makers to: 1) collaboratively formulate priorities for a practical management program for survival and

recovery of tortoises; 2) develop a risk analysis and population model for each tortoise species that can be used to guide to evaluate management and research activities; 3) identify specific actions that will mitigate threats; 4) identify needed conservation research projects; and 5) identify and recruit potential collaborators, if needed, from the greater international community.

### PHVA Workshop

Thirty-nine participants, including local community representatives, local and provincial government and law enforcement officials, wildlife managers, biologists, field researchers, and NGO representatives gathered for the PHVA. Opening presentations included a report on tortoise survey results as well as presentations by the local communities on the status of tortoises in their respective areas and by the law enforcement officials describing the difficulties they face and the effectiveness of their efforts.

Four stakeholder groups (local community representatives; park/wildlife managers and government representatives; biological scientists/researchers; and conservationists/NGOs) identified issues and needs related to the long-term survival of tortoises in Madagascar. These issues were then grouped by all participants into themes for further working group discussions. For the remainder of the workshop, participants were divided into issue-based working groups focusing on: harvest and the lack of respect for local customs; habitat destruction and laws; public awareness and collaboration with stakeholders; and lack of capacity and support to act for conservation locally.

These working groups amplified the issues identified and prioritized by the stakeholder groups, and then brainstormed potential recommendations to address these concerns. In addition, the groups identified those recommendations with the potential to impact any of the population model input parameters such as hatchling survival rate and harvest rate. The modeling group used this information to develop alternative management scenarios for each tortoise species to help assess the potential impact of these actions. Next, the working groups checked their recommendations against the needs statements of each stakeholder group to ensure that all needs and issues were addressed. Finally, after lengthy and animated plenary discussions the groups developed action plans for implementation of their priority recommendations.

**Population Projections**

The workshop benefited from the joint effort of modelers from the CBSG main office as well as from CBSG Europe and CBSG Southern Africa. Population models for both tortoise species based on the best available data project substantial population decline in the face of illegal harvest. Despite a current tortoise population estimated to be in the millions, models based on current estimated harvest rates project that the radiated tortoise population will continue to decline to extinction, likely within 50 years. Likewise, two of the three spider tortoise subspecies are projected to disappear in 60-80 years. If spider tortoise harvest increases as the larger radiated tortoises become rare, population decline could accelerate toward earlier extinction.

Tortoise population decline is being driven by overharvesting, which currently overshadows the effects of habitat loss and fragmentation. Harvest rates for radiated tortoises may need to be reduced by 85% or more to halt this population decline. Conservation actions that serve to significantly reduce the harvest of tortoises will be necessary to ensure the persistence of viable tortoise populations into the future. Habitat conversion, fragmentation and other threats to the tortoise population also need to be addressed, as they

also affect population viability, especially if harvesting is not completely eliminated. It is likely that no single conservation action will sufficiently protect tortoises; therefore, multiple effective conservation efforts will be needed to ensure the long-term persistence of this species.



**Outcomes**

Based on these modeling results and group discussions, each working group identified a set of recommendations to address the key issues facing tortoise populations, particularly actions aimed at reducing harvest. This PHVA workshop became a valuable tool for local communities and managers in Madagascar, setting directions and priorities for management, and serving as a model for other threatened species living in this unique ecosystem. 🐢

*Submitted by Onnie Byers and Kathy Traylor-Holzer, CBSG*



## Assateague Horse PHVA Workshop

29-31 March 2006  
Berlin, Maryland, USA

### Background

Since the 1600s a population of feral horses has been present on Assateague Island, a 37-mile barrier island off the coast of eastern Virginia and Maryland. Although their exact origins are unknown, the first horses may have been brought to Assateague by early colonists to avoid taxation. The Maryland horse population is maintained by the National Park Service (NPS) on Assateague Island National Seashore (ASIS) and by the Maryland DNR in the adjacent Assateague Island State Park. Due to their cultural significance, horses are managed as a “desirable feral species” on these public lands.



© Allison Turner, NPS

From 1968 to 1994, the Maryland herd grew from 28 to 166 horses; with this expansion came evidence of negative impacts of horses upon other species and ecological processes of the island. To address these concerns, in 1994 a concerted effort began to reduce population size through immuno-contraception using porcine zonae pellucida (PZP) vaccine. Contracepted mares, however, live significantly longer, and herd reduction has been much slower than expected.

In early 2006 CBSG was requested by NPS to conduct a Population and Habitat Viability Assessment (PHVA) workshop to evaluate management strategies for this

feral horse population in Maryland. NPS is faced with the competing interests of managing these horses in balance with the island ecosystem, which includes several threatened species and rare plant communities, while also meeting their mandate of providing visitor opportunities to view free roaming horses. This led to an unusual situation for a CBSG PHVA workshop – one in which the goal is to reduce and limit population size of a non-threatened species – but one in which CBSG’s facilitation and modeling tools were directly applicable to developing a population management strategy based on broad stakeholder interests.

### Pre-PHVA Planning Workshop

In preparation for the PHVA, CBSG facilitated a one-day planning workshop in late February, which provided a forum for informational presentations, issue generation and data assembly for the *Vortex* model. Participants represented a wide diversity of stakeholder interests, including park staff, wildlife managers of other feral horse populations, horse and environmental advocacy groups, and researchers. NPS has a history of innovative, stakeholder inclusive, adaptive management of this population, and acknowledges the conflict between those who would prefer to remove horses from the ecosystem and those who desire a large population of horses in the park.

The group reviewed the past management plans for horses in ASIS and delineated six management objectives based on reoccurring themes throughout the history of park management. Participants also discussed available information on demographic rates, population trends, and management actions needed to develop the *Vortex* population model. This allowed a complex baseline model to be constructed prior to the PHVA that was then used to test various management strategies to reduce and maintain this population at target levels.

### PHVA Workshop

Workshop participants reconvened on 29-31 March 2006 to refine and prioritize the six management objectives for the Assateague horse population (summarized in order of priority):



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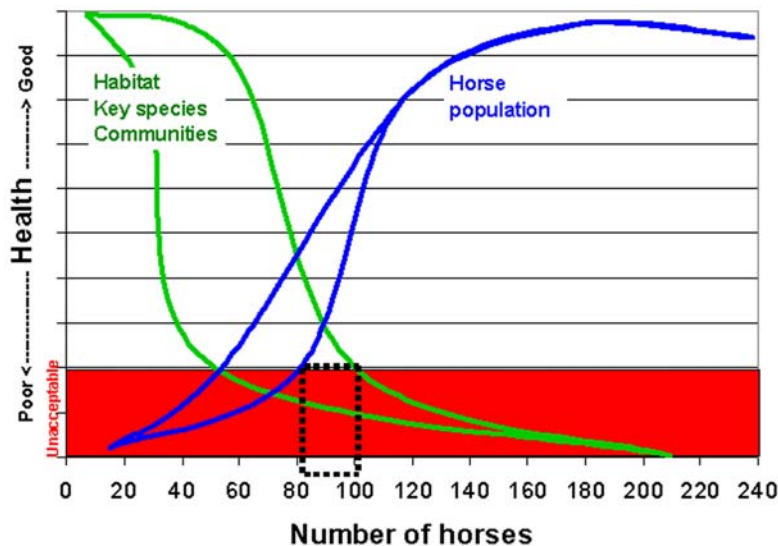
1. Reduce the negative ecological impacts of horses to acceptable levels.
2. Maintain a free roaming herd of feral horses that exhibit natural characteristics.
3. Maintain a healthy herd of horses capable of successful reproduction.
4. Educate the general public on the Assateague horses and their management.
5. Recognize and utilize this population as a valuable research resource.
6. Provide a reasonable opportunity for visitors to view horses safely.

These objectives are interrelated, and the management actions needed to meet them often conflict. It was therefore important to evaluate proposed management strategies with respect to impacts upon all six objectives. Working groups developed solutions and recommendations designed to meet these objectives, incorporating NPS data and *Vortex* model results in their analyses.

This population provided an interesting situation to model in *Vortex*, incorporating the actual pedigree of the living wild population complete with reproductive and contraception histories. Using *Vortex*, CBSG

modellers Jon Ballou and Aurelio Malo from the National Zoological Park were able to simulate NPS's contraception management strategy, the differing rates of contracepted mares, and the variable return to reproduction following contraception, making it a valuable analytical tool during the workshop.

The pinnacle discussion of the workshop addressed the complex issue of balancing the primary goals of horse management in Assateague – to maintain a healthy, reproductive, free roaming and naturally-behaving population while having little to no ecological impact on key threatened species, communities, and ecological processes of this barrier island. Developing a graphical depiction of how horse population size is related to population health and ecosystem health prompted a lengthy discussion of unacceptable low levels of health for each, leading participants to suggest a range for minimum acceptable population size for population health and maximum acceptable population size for ecosystem health. Through consensus the group ended up with a short-term target of 80-100 horses, with the understanding that this target will be adjusted through adaptive management as the impacts of changing population size on horse and ecosystem health are monitored.



The quality and quantity of data available for this free-ranging population make it a valuable resource that has benefited a broad array of wildlife management fields, from measuring ungulate impacts on vegetation to developing effective wildlife contraception techniques. These extensive data, coupled with NPS's commitment to stakeholder inclusive and innovative management planning, provided an ideal situation for the applicable of CBSG conservation planning tools. 🐾

Submitted by Kathy Traylor-Holzer, CBSG

## Amphibian *Ex Situ* Conservation Planning Participants

12-15 February 2006

<b>Amphibian Research Center</b> Gerry Marantelli	<b>El Nispero Zoo</b> Mauricio Caballero	<b>Sedgwick County Zoo</b> Karen Graham
<b>Autoridad Nacional del Ambiente</b> Jorge Garcia Juan Jose Garcia Melquiades Ramos	<b>Houston Zoo</b> Paul Crump Alberto Mendoza	<b>Singapore Zoo</b> Biswajit Guha Saskia Lafebre
<b>ARAZPA</b> Graeme Gillespie	<b>Johannesburg Zoo</b> Stephen van der Spuy	<b>Smithsonian (STRI) - Panama</b> Roberto Ibanez
<b>Biólogo Universidad del Cauca</b> Francisco José López	<b>Ministerio del Ambiente</b> César Molina	<b>St. Louis Zoo</b> Eric Miller Mark Wanner
<b>Bristol Zoo</b> Tim Skelton	<b>Omaha's Henry Doorly Zoo</b> Jessi Krebs	<b>Summit Zoo</b> Adrian Benedetti
<b>Brookfield Zoo</b> Alejandro Grajal	<b>Project Golden Frog</b> Ana Lucrecia Arosemena Vanessa Kilburn	<b>Toronto Zoo</b> Bob Johnson
<b>Cali Zoo</b> German Corredor Maria Clara Dominguez	<b>Pontificia Universidad Católica del Ecuador</b> Véronica Cano Luis Coloma	<b>University of Miami</b> Dante Fenolio
<b>CBSG</b> Onnie Byers Bob Lacy Kevin Zippel	<b>Pontificia Universidad Javeriana</b> Andrés Acosta	<b>Vsevolozhsk Zoo</b> Evgeny Ryboltovsky
<b>Chester Zoo</b> Kevin Buley Gordon McGregor Reid	<b>Private</b> Jean Rafaelli Andy Snider	<b>WAZA</b> Peter Dollinger
<b>Conservation International</b> José Vicente Rodríguez	<b>Riverbanks Zoo</b> Scott Pfaff	<b>Zoo Atlanta</b> Joe Mendelson
<b>Deutsche Gesellschaft für Herpetologie und Terrarienkunde</b> Beat Akeret Ingo Pauler	<b>San Diego Zoo</b> Allan Pessier	<b>Zoological Society of London</b> Richard Gibson
	<b>Sandfire Dragon Ranch</b> Bob Mailloux Mike Ready	<b>Zoo Zurich</b> Samuel Furrer Alex Rubel

## Mexican Wolf Reintroduction Site Workshop Participants

8-10 March 2006

<b>Africam Safari/CBSG México</b> Amy Camacho Luis Carrillo	<b>Oficina de Representación en el Norte de México</b> Juan Carlos González	
<b>Asociación de Zoológicos</b> Fernando Gual	<b>Organización Vida Silvestre</b> Sergio Jiménez	
<b>CBSG</b> Kathy Traylor-Holzer	<b>Procuraduría Federal de Protección al Ambiente</b> José Bernal Stoopen	<b>UNAM</b> Enrique Martínez-Meyer
<b>CEMEX</b> Jonás Delgadillo	<b>Reserva El Carmen</b> Bonnie Reynolds McKinney	<b>Universidad Autónoma de Ciudad Juárez</b> Carlos López González
<b>CONANP</b> Georgita Ruiz	<b>The Rewilding Institute</b> David Parsons	<b>Universidad Autónoma de Nuevo León</b> José Guevara González Nahum Sánchez
<b>Defenders of Wildlife</b> Craig Miller	<b>SEMARNAT</b> Roberto Wolf	<b>Universidad Juárez del Estado de Durango</b> Jorge Servín
<b>Instituto de Ecología</b> Patricia Guadalupe Martinez	<b>Sierra de San Luís</b> Valer Austin	<b>US Fish &amp; Wildlife Service</b> John Oakleaf John Morgart
<b>Laboratorio de Ecología y Conservación de Fauna Silvestre</b> Rurik List	<b>Sierra del Carmen</b> David Garza Laguera	<b>Técnico—Seguimiento de lobos</b> Luis González-Saravia
<b>Mexican Wolf Recovery Team—AZA</b> Peter Siminski	<b>Subcomité del Lobo Mexicano—Vocalía de Educación</b> Miguel Armella	
<b>New Mexico Fish and Game Department</b> Nick Smith	<b>Subcomité del Lobo Mexicano—Vocal de Vida Libre</b> Oscar Moctezuma	

Photo © Oscar Moctezuma O. / Naturalia, A.C



## Maned Wolf PHVA Participants

24 – 28 October 2005

### Buenos Aires Zoo

María de la Cruz Pino  
Soledad Rosso

### CBMM

Laura Teodoro O. Fernandes

### CBSG Brasil/IPE

Patrícia Medici  
Anders Gonçalves da Silva

### CBSG

Phil Miller  
Kathy Traylor-Holzer

### CENAP/IBAMA

Rogério Cunha de Paula  
Rose Lílian Gasparini Morato  
Ronaldo Gonçalves Morato

### CENAP/IBAMA - FMVZUSP

Rodrigo Silva Pinto Jorge

### CPB/IBAMA/CBSG Brasil

Leandro Jerusalinsky

### CRC - National Zoo / Smithsonian Institution

Devra Kleiman  
Melissa Rodden  
Nucharin Songsasen

### EMBRAPA

José Roberto Moreira

### EMBRAPA/CBSG Brasil

Arnaud Desbiez

### FMVZUSP / Triade

Jean Carlos Ramos da Silva

### Fundação RioZoo

Valdir Ramos Jr.

### Fundação Zoobotânica de BH

Angela Alves Lutterbach  
Carlyle Mendes Coelho  
Elisa Vaz Magni  
Valéria do Socorro Pereira

### Guyra Paraguay

José Luis Cartes  
Maria Luiza Ortiz  
Marianela Velilla Fernandez

### Huellas

Pablo Cuello  
Abel Fleita

### Huellas -Universidad Nacional del Sur

Lucia Soller

### IBAMA - PR

Cosette Silva

### IBAMA/CGFAU

Ricardo Soavinski

### IBAMA/COEFA

Otávio Borges-Maia

### IBAMA/COFAU

Marcelo Lima Reis

### Parque Zoológico de São Paulo

Ana Maria Beresca Fundação

### Paschoal SZB

Francisco Rogério

### Projeto Lobo-Guará Paraná

Almir Pontes Filho

### Pró-Carnívoros

Eduardo Eizirik  
Júlio Dalponte  
Fernanda Vinci

### Pró-Carnívoros / UFMG

Flávio Rodrigues

### Projeto Lobos da Canastra - Pró-Carnívoros

Fernanda Cavalcanti de Azevedo  
Jean Pierre Santos  
Joares May Junior

### Projeto Lobo-Guará Paraná

Almir Pontes Filho

### UFMG

Joaquim Silva

### UFSCAR

Paulo Mattos

### UnB

Daniela Salim

### UNICEUB

Marcelo Bizerril

### Universidad de Buenos Aires

Marcela Orozco

### USP

Diego Queirolo

### Temaiken Foundation

Viviana Quse

### Veterinary Oncology and

### Hematology Center

Gerald Post

### Zoológico de Sorocaba

Cecília Pessuti

### Zoológico de São Bernardo

Cleyde Chierogatto

Photo © Rogerio de Paula

## Assateague Horse Planning & PHVA Participants

29-31 March 2006

### American Horse Protection Association

Robin Lohnes

### Assateague Coastal Trust

Jay Charland

### Assateague Island National

### Seashore

Cineva Kline  
Jack Kumer  
Andrew Roach  
Mark Sturm  
Allison Turner  
Carl Zimmerman

### Assateague Island State Park

Mike Riley

### BLM Wild Horse and Burro

### Program

Dean Bolstad  
Don Glenn

### Cape Lookout National Seashore

Sue Stuska

### CBSG

Kathy Traylor-Holzer

### Chincoteague Island Nat'l Wildlife

### Refuge

William Haglan

### Maryland Dept. of Natural

### Resources

Gwen Brewer  
Dave Brinker  
Wayne Tyndall

### MD DNR Resource Planning

Raj Williams

### National Zoological Park

Jesus Maldonado

Aurelio Malo

### National Zoological Park/CBSG

Jonathan Ballou

### Terwilliger Consulting, Inc.

Harmony Hall  
Karen Terwilliger

### Tufts University – Humane Society

Allen Rutberg

### University of Missouri

Lori Eggert  
Stephanie Manka

### Wildlife Conservation Society

Dave Powell

### Zoo Montana

Jay Kirkpatrick

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## Colorado Greater Sage Grouse Statewide Conservation Planning Participants

7-12 May 2006

**Audubon Colorado**

Ken Strom

**Bureau of Land Management**

John Ruhs

Robin Sell

**Bureau of Land  
Management/North Park  
Local Working Group**

Megan McGuire

**CBSG**

Luis Carrillo

Phil Miller

Rebecca Soileau

**Colorado Counties Inc.**

Doug Monger

**Colorado Division of  
Wildlife**

Tony Apa

Jeff Beck

Michelle Cowardin

Karin Eichhoff

Mike Grode

Kim Kaal

Jenn Logan

Bruce McCloskey

Tom Nesler

Brad Petch

Mike Phillips

Tom Remington

Liza Rossi

Pam Schnurr

John Toolen

Ron Velarde

Susan Werner

**Center for Native**

**Ecosystems**

Erin Robertson

**Chevron**

Sean Norris

**Club 20 & Moffat Company**

Jeff Comstock

**Colorado Natural Heritage  
Program**

Renee Rondeaux

**Colorado Wildlife Federation**

Harvey Nyberg

**Colorado Oil and Gas Association**

Kathy Hall

**Colorado Environmental Coalition**

Reed Morris

**Colorado Rural Electric  
Association**

Dave Kieper

**Colorado State University**

C. J. Mucklow

Bill Ekstrom



**Greater Sage Grouse Conservation  
Planning Steering Committee**

Barbara Ver Steeg

John Gray

Cathleen Neelan

**Grand County Planning Department**

Irene Cooke

**Idaho Fish & Game**

Bruce Ackerman

**Middle Park Local Working Group**

Art Bruchez

John Kossler

Jim Liewer

Mark Monger

**N. Eagle/S. Routt Local Working  
Group**

Carl Herold

Jill Schlegel

**North American Grouse Partnership/  
Sierra Club**

Clee Sealing

**North Park Local Working Group**

William Kent Crowder

John Rich

**Natural Resources Conservation  
Service**

Ed Neilson

**NW Colorado Local Working  
Group**

T. Wright Dickinson

Dean Gent

Marianna Raftopoulos

Jean Stetson

**Omaha's Henry Doorly Zoo/CBSG**

Doug Armstrong

**Parks Canada**

Kent Prior

Danny Morris

**Piceance/Parachute/Roan Local  
Working Group**

Joe Gumber

Mike Lopez

**Routt County**

Caryn Fox

**State Land Board**

Beverly Rave

**The Wilderness Society**

Steve Smith

**The Nature Conservancy**

Paula Guenther-Gloss

**USDA - APHIS**

David Moreno

**USFS**

Julie Grode

**USFWS**

Terry Ireland

Al Pfister

Ann Timberman

**Western Gas Resources**

Steven Flaherty

**XCEL Energy**

Larry Claxton

**Yampa Valley Land Trust**

## Tree Kangaroo Conservation Update

The 1998 PHVA workshop on the tree kangaroos of Papua New Guinea was instrumental in focusing attention on the plight of the tenkile, or Scott's tree kangaroo (*Dendrolagus scottae*). Analyses conducted at the workshop made it clear that no more than 100 individuals remained in the rugged Torricelli Mountains, located in the far northwestern corner of the country. Moreover, risk assessment using the PVA software Vortex suggested that, if hunting of the species by local villagers were to continue, extinction within just a few decades was almost certain. Recognizing the urgency of the situation, the full body of workshop participants began calling for a moratorium on hunting of tenkile among the villages surrounding the species' mountainous habitat.



© William Betz

Within months of the workshop, 14 of the 18 villages in and near tenkile habitat signed what was originally considered a short-term moratorium on hunting the species. Soon after this historic event, and in response to the need identified at the PHVA workshop, the Tenkile Conservation Alliance (TCA) was born. TCA is an official non-government organization recognized by the PNG government. Through the tireless efforts of TCA staff members Jim and Jean Thomas, in collaboration with local scientists and landowners, the moratorium has now been effectively extended permanently, with 17 villages signing on to the moratorium. This moratorium is now being used as a model to effect a similar agreement with 16 different villages near the habitat of the golden-mantled tree kangaroo (*Dendrolagus pulcherrimus*), also in the Torricelli Mountains. Together, these 34 villages comprise a large area of land in the Torricellis that is proposed for official long-term protection.

Additional activities catalyzed by the TCA include:

- A population monitoring program to study long-term consequences of cooperative management of tenkile and other wildlife species in the Torricelli mountains. This monitoring effort involves activity at seven separate research sites, with intensive training of local villagers as designated "Distance Sampling Officers" intended to increase local support and participation.
- Coordinating broad environmental education programs in local schools. These programs include curricula on general environmental conservation issues, as well as nutritional awareness modules that place an emphasis on improving protein consumption by growing peanuts and beans in local gardens.
- Development of a major rabbit farming effort as a means of providing an alternative source of meat protein to local villages. This work is complemented by studies on the social impacts within affected communities, including the effects of rabbit farming on traditional hunting patterns, health status and workloads. Funding is being provided by local government authorities to investigate the feasibility of poultry farming as an additional method of protein supplementation.

The TCA is looking into bringing on a full-time agricultural specialist to assist in developing sustainable land management practices, and a community development worker to deal with issues surrounding health awareness, family planning, and the rights of women and children. Importantly, Australasian zoos are playing a critical role in providing support for past and future efforts relating to tenkile conservation.

Recent monitoring of tenkile populations, as well as an increase in the sightings of tenkile by villagers, suggests that the population is growing – likely in response to the conservation measures initially considered at the 1998 PHVA workshop and implemented with the help of the Tenkile Conservation Alliance. We at CBSG are very proud to have played a role in this outstanding conservation effort. 🐾

For more information, please visit the TCA website at [www.tenkile.com](http://www.tenkile.com).

## Changing Local Attitudes about Tigers

Throughout the world, when people and large carnivores live in close proximity, conflicts arise – often with disastrous results for both. In Sumatra it is the critically endangered Sumatran tiger (*Panthera tigris sumatrae*), a species that not only may kill livestock but humans as well, is the center of many conflicts.

In December 2005 the Sumatran Tiger Rescue Team (STRT) based in Cisarua, West Java received news that a tiger had killed people in the forest near a village in West Sumatra. STRT leader Yuli Yoko quickly departed for Sumatra prepared to do what the STRT does best: capture tigers caught in the vicious circle of human-animal conflict.

A joint initiative of the Indonesian Government's Department of Forest Protection and Nature Conservation and the Indonesian Zoological Parks Association (PKBSI), the STRT was formed following a CBSG PHVA workshop in Padang, Sumatra in 1992. Captured problem tigers are relocated to a captive facility at Taman Safari Indonesia.

The villagers viewed Yuli with some suspicion upon his arrival. Subsistence farmers, they have traditionally hunted in nearby forests for food and cleared small areas to build houses and plant food crops. Convinced that Yuli had come to remove their weapons – or worse, as the tiger is one of the few species protected under Indonesian law – they were not receptive to appeals to spare any tiger's life, let alone one that they believed had killed two of their own.

Within a few days, reports arrived that a large male tiger had been captured. Before the STRT could act, authorities decided to shoot the tiger. Although saddened, Yuli understood their perspective. Rather than leave, he stayed for weeks, meeting with the families and friends of the victims and persuading them to talk about the challenges of living with large carnivores in shrinking forest habitat.

To convince extremely poor people in such distress about the importance of conserving an endangered species is no small challenge, particularly considering the high price attached to tigers on the black market. Working with the local village spokesmen and the district chief, the STRT was able to gain their trust. Slowly, the local people began to talk more positively



*Yuli Yoko, after a previous successful capture of a tiger caught in animal-human conflict in Sumatra.*

about the tiger – an animal they have always respected, but lately had feared greatly.

As the district chief exclaimed, “Our people now feel they have more power. They certainly have a deeper appreciation for the tigers whose territory they share. They also know that people in the outside world appreciate their struggle – we have learned and been taught valuable lessons. We know we are part of a very big fight, even though we are just small people trying to feed our families.”

Meanwhile, two more deaths due to tiger attacks occurred, and signs of tiger activity were found near the village. Although traps were set, the tiger was never captured. The STRT has since returned to Java but remains on alert. The local people now trust the STRT, realizing that the STRT values human lives as well as tigers, and they are even enthusiastic about ensuring the humane capture of the tiger. The villagers have slowly picked up the pieces of their lives and are once more eking out a meager living on the same land as their forefathers, while the tiger still prowls the diminishing forest seeking prey. 🐅

*Submitted by Jansen Manansang, CBSG Indonesia*

## Steering Committee Member D. Ashari Retires

**A letter from General Ashari, announcing his retirement from our Steering Committee.**

In terms of CBSG's history, 1990 was a personal milestone. It started with the historic joint meeting of CBSG and IUDZG at Front Royal, VA, followed by many achievements and changes within the environment-wildlife world.

I became a member of CBSG Steering Committee and was on the team that produced the first World Zoo Conservation Strategy document (1990-1993), chaired by Dr. De Boer of the Netherlands. CBSG and the Smithsonian Institution arranged the first "Zoo Biology Training Course" at the Jakarta zoo in 1990. The South East Asian Zoo Association-SEAZA came into being in 1990 and I was its first president. Now, the fourth President is Dr. Jansen Manansang, who is also the Convenor for CBSG Indonesia.

My last contribution was the document titled "A joining together, Establishment and Development of SEAZA," which was introduced during the 2<sup>nd</sup> joint ARAZPA-SEAZA Conference in Australia in May 2005.

Regretfully, I missed the conference due to my declining health. I was hospitalized recently and I am still under doctor's control. Age is a decisive factor indeed. I am over 83 now. My wife Sri Hartati died on February 27, 2006. She was 82. Consequently I have to retire from several activities and positions including SEAZA's Executive Board and other environmental bodies.

I thank both Dr. Robert Lacy and Dr. Onnie Byers for all the years of cooperation and support for the South East Asian region. I wish you continued success leading CBSG in the challenging future!

Good Luck and all the best!

Sincerely yours,  
D. Ashari

## In Memory: Tom Foose (1945-2006)

With great sadness, CBSG announces the death of Dr. Thomas Foose, 61, Program Director of the International Rhino Foundation, and the first Executive Director of CBSG. Tom died on May 17th at his home in Waynesboro, Pennsylvania. Tom had a lifelong passion for conservation, both in zoos and in nature. He dedicated his life to bridging gaps among people with diverse interests and perspectives, as well as using science to foster national and global collaborations for threatened species management.

Tom served as the Conservation Director for the Association of Zoos and Aquariums (AZA) from 1981 to 1990, and along with Dr. Ulie Seal developed the first Species Survival Plan program for Siberian tigers in 1983. Species Survival Plans now are a cornerstone for captive species management for the AZA as well as other regional zoo associations. From 1990 to 1992, Tom served as Executive Officer of the IUCN/SSC Conservation Breeding Specialist Group, shaping its programs and focus to include using computer simulation modeling to examine the risks for species extinction, as well as global risk assessments of broad



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taxonomic groups and identification of species management and research recommendations. Over the past 20 years, his tireless efforts to facilitate cross-organizational and international conservation efforts resulted in integrated action plans for species groups ranging from primates to rhinos to tigers, involving zoo experts and field biologists from around the world.

Throughout his career, Tom touched people across the world and inspired them to set aside their personal, national and institutional agendas to focus on preventing species extinctions. Over the past ten years, his primary focus was leading development and implementation of global and national conservation strategies and action plans for rhinoceros in Asia and Africa. Most recently, Tom initiated the North American Save the Rhinos Campaign with the goal of doubling the number of critically-endangered rhino populations in select protected habitats in the wild within ten years. Tom was a respected colleague and a great friend to CBSG. He will be greatly missed. 🐘

## CBSG Regional Modeler Training Workshop

The escalating global biodiversity crisis challenges CBSG to increase our efforts to meet the ever growing need for assistance. Our eight CBSG Regional and National Networks (located in Brazil, Costa Rica, Mexico, South Africa, Europe, India, Indonesia, and Japan) are invaluable in CBSG's efforts to meet this need and promote effective conservation management globally. Our goal is to develop sufficient expertise within each Network to allow each to operate independently and effectively. One of the greatest needs is to develop population modeling and risk assessment expertise within each regional team.

To address this issue, the Regional Conveners have identified at least two Regional Modelers from each Network to attend a comprehensive seven-day training workshop in October 2006 in Puebla, Mexico. These 20 enthusiastic biologists representing 11 countries spanning five continents have been carefully selected and are committed to applying their gained knowledge to conservation issues in their region. Training will focus on the use of Vortex in population viability analysis and risk assessment for conservation planning as well as other aspects related to population modeling for CBSG PHVA workshops. Trainees will learn how to effectively communicate with workshop participants to develop species models, evaluate management scenarios, and convene the results in an understandable manner to all participants. These regional modelers will then gain additional experience through mentoring and



hands-on training at future PHVA workshops. The training of these conservationists will not only greatly increase CBSG's capacity for species conservation planning activities globally, but we hope that these modelers will train additional local biologists, in their native language, thereby amplifying the contribution of this training effort to conservation.

We are grateful to CBSG Mexico for securing a local sponsor, Octagráfica, to cover participant lodging and meal costs, and meeting facilities are being provided by Africam Safari. **CBSG is still seeking travel funds to cover airfare for the 20 participants to attend this one-time comprehensive training opportunity.** Anyone interesting in sponsoring a Regional Modeler by providing airfare (ranging from USD 700 to 2,400) may contact Kathy Traylor-Holzer (kathy@cbgs.org) at the CBSG office for more information. 🐢

### CBSG Modeler Trainees

#### CBSG Brasil

Arnaud Desbiez, Brazil  
Anders Gonçalves da Silva, Brazil

#### CBSG Europe

Frands Carlsen, Denmark  
Duncan Bolton, United Kingdom  
Kristin Leus, Belgium

#### CBSG Indonesia

Noviar Andayani, Indonesia  
Entang Iskandar, Indonesia

#### CBSG Japan

Hiroki Kobayashi, Japan  
Shinichi Watanabe, Japan

#### CBSG Mesoamerica

Gustavo Gutierrez, Costa Rica  
Jorge Rodriguez, Costa Rica  
Jon Paul Rodriguez, Venezuela  
Kathryn Rodriguez-Clark, Venezuela

#### CBSG Mexico

Luis Carrillo, Mexico  
Juan Cornejo, Mexico

#### CBSG South Asia

B.A. Daniel, India  
Sanjay Molur, India

#### CBSG Southern Africa

Steven Evans, South Africa  
Kevin McCann, South Africa  
Kerryn Morrison, South Africa

## CBSG Scheduled Workshops and Meetings

This schedule is tentative and expected to change

*CBSG Staff Attending:* Bob Lacy (L), Onnie Byers (B), Phil Miller (M),  
Kathy Traylor-Holzer (H), Kevin Zippel (Z), Liz Follese (F), Ginger Lindgren (G)

### July

17 – 21 East London, South Africa: Cycad PHVA (M, Friedmann, Morrison, Daly)  
25 – 26 Salt Lake City, UT: Tiger SSP Masterplan (H)

### August

4 – 5 Costa Rican Psitacids CAMP (Matamoros)  
7 – 10 Saint Louis, MO: Hellbender PHVA (B, Z, H, Reed)  
23 Leipzig, Germany: CIRCC Meeting (B)  
24 Halle, Germany: CBSG Steering Committee Meeting (B, L, M, H, Z)  
25 – 27 Halle, Germany: CBSG Annual Meeting (B, L, M, H, Z)  
27 – 31 Leipzig, Germany: WAZA Annual Conference (B, L)

### September

15 – 25 Madagascar: CI Amphibian Conservation Workshop (Z)  
25 – 30 Gifu, Japan: International Symposium for Zoo and Wildlife Medicine (M, Murayama)  
25 – 30 Tampa, FL USA: AZA Meeting (L, Z)

### October

3 – 7 Madrid, Spain: EAZA Annual Conference (B)  
6 – 8 Reserva de San Ramon, Costa Rica: CR Amphibian Conservation Strategy Wkshp. (Matamoros)  
? Tanzania: Kihansi Spray Toad PHVA (L, B, Z)  
16 – 21 Mexican Primates CAMP / Mexican Spider Monkey PHVA (Camacho, Carrillo, Cornejo, Molur)  
25 – 28 AZCARM Annual Conference (Camacho)  
24-29 Cali, Colombia: Colombian Amphibian Management & Conservation Workshop (Z)  
22 – 28 Puebla, Mexico: CBSG Modeler Training Workshop (H, Leus, Ballou)  
30 Antigua, Guatemala: Mesoamerican Psitacids Conservation Network Annual Meeting (Matamoros)

### November

? Chile: Trichahue Parrot PHVA (Camacho, Cornejo)  
? Suzhou, China: South China Tiger Technical Meeting (H?)  
13 – 16 Chiangmai, Thailand: Giant Panda Technical Meeting (H, Ballou)  
28 – 29 London, England: Meeting of the Biodiversity Assessments Users Working Group (B)  
30 – 1 Dec London, England: Meeting of the Biodiversity Assessments Sub-Committee (B)





# 2006 CBSG ANNUAL MEETING

24-27 August 2006  
Halle, Germany



This year's CBSG annual meeting will be hosted by the Leipzig Zoo, and will be held 24-27 August at the Dorint Novotel Halle Charlottenhof in Halle, Germany. One of the primary themes of the meeting will be the global amphibian extinction crisis, and presentations on the amphibian crisis as well as brief presentations and working group sessions on a variety of other topics will form the basis of this working meeting.

As in previous years, our meeting will be held immediately prior to the WAZA Annual Conference, and will include a joint CBSG farewell/WAZA icebreaker on 27 August.

## Proposed Working Groups:

- Amphibian crisis response planning (*Kevin Zippel*)
- Conservation planning for CBSG Europe (*Bengt Holst*)
- Establishment of global species management programs (*Jonathan Wilcken*)
- World Zoo and Aquarium Conservation Strategy (*Jo Gipps*)
- WAZA Initiative to Engage Poorly Maintained Zoos (*Sally Walker*)
- Integrated, seamless conservation (*Lesley Dickie*)
- SIS and the zoo and aquarium community (*Jim Ragle*)



If you would like to register for the CBSG Annual Meeting or view the draft agenda, please visit the meeting website at <http://www.cbsg.waza2006.org>  
**Check the website often for changes to the agenda.**

We hope to see you in Halle!

If you have questions or suggestions about the meeting program, please email: [office@cbsg.org](mailto:office@cbsg.org)

