22nd ANNUAL MEETING OF THE

INTERNATIONAL HERPETOLOGICAL SYMPOSIUM

HOSTED BY

THE CINCINNATI ZOO AND BOTANICAL GARDEN
THE GREATER CINCINNATI HERPETOLOGICAL SOCIETY

CINCINNATI, OHIO, USA

JUNE 25-27, 1998

PROGRAM AND ABSTRACTS

INTERNATIONAL HERPETOLOGICAL SYMPOSIUM, INC.
1998 MEETING
CINCINNATI, OHIO

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Herpetological Natural History
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Riverside, CA 92515-8247

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National Zoological Park
3000 Connecticut Ave. N.W.
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Mike Goode - In Memorium

On March 20, 1998, Mike Goode (born James M. Goode) passed away. Mike was the Curator of the Department of Herpetology at the Columbus Zoo, in Ohio. He began his career at the Columbus Zoo in March 1973, becoming Reptile Curator in 1978. Mike was a long-time supporter of the IHS and had spoken at previous symposia. In fact, he was scheduled to speak at this one. Mike was perhaps best known for his work with turtles, and was responsible for the captive breeding of numerous species at the zoo. Recently, he had expanded his interests and partook in two field studies; one involving Komodo monitors in Indonesia, the other working with cascabels in Brazil. Always more than generous with his time and knowledge, Mike will be greatly missed by those of us honored to call him a colleague and a friend.

The International Herpetological Symposium, Inc. would like to dedicate the 22nd annual symposium to the memory of Mike Goode.

PROGRAM

WEDNESDAY, JUNE 24

6:00p.m. - 10:00p.m.	**Registration**
6:00p.m. - 9:00p.m.	**Social/Icebreaker** - Cash bar (Upper Terrace)

THURSDAY, JUNE 25

7:30a.m. - 6:00p.m.	**Registration**
8:00a.m. - 6:00p.m.	**Vendor rooms are open**

MORNING SESSION

Moderator: Joseph T. Collins (Past President, Secretary, and Treasurer of OHS/SSAR)

8:30a.m. - 9:00a.m.	**Opening remarks** Aaron Bauer, IHS President Pete Strimple, Host Committee Chairman, IHS Advisor Ed Maruska, Director - Cincinnati Zoo and Botanical Garden
9:00a.m. - 9:30a.m.	**The Beauty and Diversity of North American Snakes, with Comments on Their Taxonomy** Joseph T. Collins Suzanne L. Collins
9:30a.m. - 10:00a.m	**From the Cage to the Cay: Observations on the Behavior and Survival of Three Cohorts of Reintroduced, Captive-born Virgin Island Boas** Peter Tolson, Ph.D.
10:00a.m. - 10:30a.m.	**Break**
10:30a.m. - 11:00a.m.	**Practical Aspects of Chemoreception in Maintaining Reptiles** Paul J. Weldon, Ph.D.
11:00a.m. - 12:00p.m.	**The Private Lives of Snakes: Can They be Studied? Does it Matter? Should We Care?** Gordon M. Burghardt, Ph.D.
12:00p.m. - 1:30p.m.	**Lunch**

AFTERNOON SESSION

Moderator: Corson J. Hirschfeld (Past President OHS)

1:30p.m. - 2:30p.m.	**Assessing Competence in Captive-reared Amphibians and Reptiles: New Experiments** David Chiszar, Ph.D.
2:30p.m. - 3:00p.m.	**Natural History, Propagation, and Captive Management of African House Snakes (Genus *Lamprophis*)** Vince Scheidt
3:00p.m. - 3:30p.m.	**Break**
3:30p.m. - 4:30p.m.	**Wild and Captive Snakes: Some Thoughts on Reciprocal Illumination** Harry Greene, Ph.D.
4:30p.m. - 6:00p.m.	**Workshops** (To run concurrently in the Boone and Kenton Rooms): **1) Lizard and turtle husbandry** Donal Boyer and Thomas Boyer, DVM **2) Amphibian husbandry** Robin Saunders
6:00p.m. - 8:00p.m.	**Break**

SLIDE SHOWS

8:00p.m. - 10:30p.m.	**Amphibians of the Appalachians** **Herpetology of the West** **Herpetological Namesakes** (Presented by Kraig Adler, David Dennis, and Eric Juterbock)

FRIDAY, JUNE 26

7:30a.m. - 5:00p.m.	**Registration**
8:00a.m. - 5:00p.m.	**Vendor rooms are open**

MORNING SESSION

Moderator: Kraig Adler, Ph.D. (Co-founder and Past President of OHS/SSAR)

8:30a.m. - 9:30a.m.	**Initiation of a Radio-telemetry Project Involving Cascabels, *Crotalus durissus*, in Brazil** James R. Harrison Peter D. Strimple

9:30a.m. - 10:00a.m.	**Abnormal Snake Color Patterns** H. Bernard Bechtel, MD
10:00a.m. - 10:30a.m.	**Break**
10:30a.m. - 11:30a.m.	**Emerging Health Problems of Snakes** Elliott Jacobson, Ph.D., DVM
11:30a.m. - 12:00p.m.	**Evidence for Automictic Parthenogenesis in Bisexual Snakes** Gordon W. Schuett, Ph.D. (Presenter) Philip J. Fernandez, Ph.D. David Chiszar, Ph.D. Hobart M. Smith, Ph.D.
12:00p.m. - 1:30p.m.	**Lunch**

AFTERNOON SESSION

Moderator: Peter D. Strimple (IHS Advisor; Advisor and Past President of the GCHS)

1:30p.m. - 2:30p.m.	**How Snakes Work: The Physiological Requirements and Constraints of Captivity** Harvey B. Lillywhite, Ph.D.
2:30p.m. - 3:00p.m.	**Studies on Phenotypic Plasticity in Snakes: Does Laboratory Data Tell Us Anything About Snakes in the Wild?** Neil B. Ford, Ph.D.
3:00p.m. - 3:30p.m.	**Break**
3:30p.m. - 4:00p.m.	**Ecology and Evolution of Male-Male Fighting in Snakes: New Directions** Gordon W. Schuett, Ph.D. (Presenter) Erik W.A. Gergus
4:00p.m. - 4:30p.m.	**Rear-fanged Snakes and Their Venom** Sherman Minton, MD
4:30p.m. - 5:30p.m.	**Workshops** (To run concurrently in the Boone & Kenton Rooms): **1) Photography** David Dennis, Eric Juterbock, Suzanne L. Collins **2) Environmental technology** Andrew Odum
5:30p.m. - 6:30p.m.	**Break**

BANQUET

7:00p.m. - 8:30p.m.	**Banquet**
8:30p.m. - 9:30p.m.	**Herpetofauna of China** by Kraig Adler, Ph.D.
9:30p.m. - ???	**Announcements** **Presentation of the Josef Laszlo Memorial Award** **Auction** – Joseph T. Collins, auctioneer

SATURDAY, JUNE 27

8:00a.m. - 12:00p.m.	**Registration**
8:00a.m.- 4:30p.m.	**Vendor rooms are open**

MORNING SESSION

Moderator: George McDuffie, Ph.D. (Past Director OHS)

8:30a.m. - 9:00a.m.	**Captive Maintenance and Breeding of *Neurergus crocatus* at the Cincinnati Zoo.** Robin Saunders
9:00a.m. - 9:30a.m.	**Early History of the Ohio Herpetological Society** (Slide show) David M. Dennis
9:30a.m. - 10:00a.m.	**The Southwestern Ohio Mafia: A Dead Poets Herpetological Club in the Queen City** Joseph T. Collins
10:00a.m. - 10:30a.m.	**Break**
10:30a.m. - 11:30a.m.	**The Evolution of Herpetoculture** Bill Love
11:30a.m. - 12:00p.m.	**Komodo Dragons, *Varanus komodoensis*, Killers or Lifesavers?** Johnny Arnett Don Gillespie, DVM
12:00p.m. - 1:30p.m.	**Lunch**

AFTERNOON SESSION

Moderator: David M. Dennis (Co-founder OHS/SSAR, Past Director OHS)

1:30p.m. - 2:00p.m.	**Pressure/Immobilization as First Aid for Venomous Snakebite in the United States** David L. Hardy, Sr., MD

2:00p.m. - 2:30p.m.	**Geckos of the Southern Hemisphere or Why Rocks are Better than Trees** Aaron M. Bauer, Ph.D.
2:30p.m. - 3:00p.m.	**Captive Propagation and Husbandry of the European Fire Salamander** John McGrath
3:00p.m. - 3:30p.m.	**The Herpetofauna of Trinidad and Tobago** John C. Murphy
3:30p.m. - 3:45p.m.	**Closing remarks** Aaron Bauer Pete Strimple

ZOO TRIP/COOKOUT

5:30p.m.	**Buses arrive at hotel for zoo trip**
5:45p.m. - 7:00p.m.	**Buses shuttle between hotel and zoo**
7:00p.m. - 10:30p.m.	**Zoo tour/cookout** (food will start to be served at about 7:30p.m.)
8:00p.m. - 10:00p.m.	**Buses shuttle between zoo and hotel**

SPEAKERS AND ABSTRACTS

(In chronological order)

THE BEAUTY AND DIVERSITY OF NORTH AMERICAN SNAKES, WITH COMMENTS ON THEIR TAXONOMY

Joseph T. Collins, Herpetologist Emeritus, Natural History Museum, The University of Kansas, Lawrence, Kansas, 66045-2454, USA; e-mail: jcollins@ukans.edu
Suzanne L. Collins, Assistant to the Dean, School of Education, The University of Kansas, Lawrence, Kansas 66045, USA

(Abstract not applicable)

FROM THE CAGE TO THE CAY: OBSERVATIONS ON THE BEHAVIOR AND SURVIVAL OF THREE COHORTS OF REINTRODUCED, CAPTIVE-BORN VIRGIN ISLAND BOAS

Peter Tolson, Department of Herpetology, Toledo Zoo, 2700 Broadway, Toledo Ohio 43609, USA

(Abstract not available)

PRACTICAL ASPECTS OF CHEMORECEPTION IN MAINTAINING REPTILES

Paul J. Weldon, Conservation and Research Center, 1500 Remount Rd., Front Royal, Virginia 22630, USA; e-mail: pweldon@osf1.gmu.edu

Reptiles depend upon chemoreception to detect food, predators, and mates. Success in keeping reptiles in captivity depends upon recognizing these needs. The different chemosensory systems of reptiles are briefly described, and their involvement in food, predator, and mate recognition is discussed. The use of chemicals to elicit feeding is an important aspect of maintaining reptiles, and various methods of manipulating them with food chemicals are described.

THE PRIVATE LIVES OF SNAKES: CAN THEY BE STUDIED? DOES IT MATTER? SHOULD WE CARE?

Gordon M. Burghardt, Department of Psychology, University of Tennessee, Knoxville, Tennessee, 37996, USA; e-mail: gburghar@utk.edu

The title refers to both ways in which the 'private lives of snakes' can be interpreted. One way is to focus on what snakes do in the privacy of their natural lives in nature. Unlike most groups of vertebrates, field observations of snake behavior are generally sparse and anecdotal. Obtaining such observations in snakes is often difficult for a number of reasons. However, today the answer to all three questions in the title is a fairly non-controversial "yes." The second sense in which private lives can be construed is to ask about the 'private experience' of snakes and the nature of their personal worlds. This is a more difficult problem theoretically and methodologically, but new research and conceptual tools are becoming available. Herpetologists, in their scientific mode, generally avoid this issue or attack it as uncritically anthropomorphic. Yet the scientific fascination

with snakes often stems from a wonder about the ways such seemingly alien beings perceive, discern, and interpret their environments. I will support four propositions. 1) The answers to the three questions posed are also 'yes' for this second sense in which private lives can be construed. 2) The two meanings of privacy should not be kept isolated from each other. 3) Herpetoculturists as well as professional herpetologists, can provide important insights and documentation. 4) Studying the private lives of snakes will have far-ranging consequences in how we view and manage both captive and wild populations.

ASSESSING COMPETENCE IN CAPTIVE-REARED AMPHIBIANS AND REPTILES: NEW EXPERIMENTS

David Chiszar, Department of Psychology, Campus Box 345, University of Colorado, Boulder, Colorado, 80309-0345, USA; e-mail:chiszar@clipr.colorado.edu

(Abstract not available)

NATURAL HISTORY, PROPAGATION, AND CAPTIVE MANAGEMENT OF AFRICAN HOUSE SNAKES, GENUS *Lamprophis*

Vince Scheidt, P.O. Box 22885, San Diego, California 92192-2885, USA; e-mail:vince@san.rr.com

House Snakes (Genus *Lamprophis*) constitute a wide-ranging and highly divergent group of harmless colubrids which occupy a diversity of old-world habitats, from the xeric desert scrublands to tropical rain forest, savannah, and semi-urban environments. Most species in this interesting genus are wholly unknown to herpetoculture, with the experience of a single species (*L. fuliginosus*) forming the only basis for many common misconceptions about the group. In reality, *Lamprophis* can be a rewarding genus to work with, both in the incredible fecundity of some forms (e.g., *L. fuliginosus*) and the frustratingly specialized feeding habits of others (e.g., *L. fiskii*). House snakes, as a rule, do not follow any rules with respect to diversity of pattern and coloration, lifestyle, or ease of captive management. This presentation will focus on the great diversity within this genus, with examples from the author's personal experience and the experience of others.

WILD SNAKES AND CAPTIVE SNAKES: SOME THOUGHTS ON RECIPROCAL ILLUMINATION

Harry W. Greene, Museum of Vertebrate Zoology, University of California, Berkeley, California 94720, USA; e-mail: crotalus@socrates.berkeley.edu

A brief summary of field research on black-tailed rattlesnakes (*Crotalus molossus*) will set the stage for my comments on the study and maintenance of captive snakes. Ten years of observations of that species and work by other field biologists imply that the lives of wild snakes are far more complex and wide-ranging than we generally appreciate. A corollary is that typical captive conditions have precluded discovery of parental care and other complex behavior, and indeed keeping a 50 cm-long snake in a sweater box of wood shavings, removing baby snakes as soon as they are born, and so forth, may someday be regarded as inhumane. Herpetoculturists can make substantial contributions to snake biology, enrich the lives of their captives, and increase

esthetic appreciation for these animals by striving for naturalistic conditions (especially in terms of space and props), carefully recording behavioral details (really good observations should enable someone else to accurately recreate what happened), delving into the original literature ("chance favors the prepared mind"), and devoting attention to poorly known taxa (e.g., no detailed descriptions of courtship and mating have been published for any snake more primitive than a python--none for sunbeam snakes, pipesnakes, or blindsnakes).

INITIATION OF A RADIO-TELEMETRY STUDY INVOLVING THE CASCABEL, *Crotalus durissus*, IN BRAZIL

James R. Harrison, Kentucky Reptile Zoo, 1275 Natural Bridge Rd., Slade, Kentucky 40376, USA; e-mail: kyreptil@pop.mis.net

Peter D. Strimple, Reptile Research and Breeding Facility, 5310 Sultana Dr., Cincinnati, Ohio 45238, USA; e-mail: pds0404@aol.com

In September 1997, a small group of herpetologists from the United States teamed up with researchers from the Universidade de Brasilia to begin a radio-telemetry study of *Crotalus durissus*, at Serra da Mesa, in the state of Goias, Brazil. Five rattlesnakes were implanted with radio transmitters and then released into the wild. Over the next few months these animals were tracked until all five signals were lost. Plans are now underway to implant additional rattlesnakes so that the project can continue. Hopefully, over the next several years, this study will reveal many aspects of the ecology and behavior of these crotalines.

ABNORMAL SNAKE COLOR PATTERNS

H. Bernard Bechtel, 1307 Cold Spring Lane, Valdosta, Georgia, 31602, USA; e-mail: bbechtel@datasys.net; phone: (912) 242-3432

The colors of snake skin are determined by chromatophores (pigment cells), hemoglobin, carotenoids, and the structure of the skin itself. Patterns are determined by the arrangements of the different colors. The parts of the spectrum of incident light reflected to the observer are either pigmentary or structural. The structural colors are the whites of total reflection, tyndall blues of scattered reflection, and iridescence. Biology of color pattern formation will be discussed. Genetic and embryonic environmental factors, especially genetic, are known to cause anomalous color, pattern, or both. Many aberrations have been observed, and new ones are appearing regularly. Some, such as albinism, are fairly well understood, less is known of some others, and nothing known of many. Various aberrations will be discussed briefly, with illustrations of each.

EMERGING HEALTH PROBLEMS OF SNAKES

Elliott R. Jacobson, College of Veterinary Medicine, University of Florida, Gainesville, Florida 32610, USA

Disease problems in free-ranging snakes are poorly understood. Recently a necrotizing dermatitis and stomatitis was seen in free-ranging pygmy rattlesnakes, *Sistrurus miliarius*, in east-central Florida. Aside from this observation, other reports in wild snakes are limited to protozoan and helminth parasite infections. The situation in captive snakes is far different. A wide variety of potential pathogens including viruses, bacteria, fungi, and parasites have been identified in captive snakes. The protozoan, *Entamoeba invadens*, has been known to be the cause of severe enterohepatitis in snakes in the United States and Europe. Of all potential pathogens, viruses appear to be the most problematic. Paramyxovirus, first reported in *Bothrops moojeni* in 1975, is now known to affect many species of both viperid and non-viperid snakes. This appears to be a heterogeneous group of viruses, probably consisting of many different strains. The relatedness of these strains is currently unknown. A disease termed "inclusion body disease (IBD)" was first described in boas and pythons in 1994. Over the last four years many epizootics have been reported, with recent first reports in Australia, Spain, and Italy. Of all the pathogens known to affect snakes, this agent has had the greatest impact. Unfortunately, no serodiagnostic test has yet been developed to determine exposure. Because snakes and other reptiles are an extremely mobile group of animals in the pet trade, pathogens have been shipped around the world with their hosts. Mixing of snakes from widely different geographic ranges has probably resulted in a mixing of pathogens. The origin of paramyxovirus(es) and the agent of IBD are not known. As more and more snakes are being bred for the pet trade, a rise in outbreaks is an expected consequence. Control will ultimately depend upon establishing sound quarantine programs coupled with the use of specific diagnostic tests. However, funding for developing such tests is extremely limited and those diseases that are extremely complex may never be fully elucidated.

EVIDENCE FOR AUTOMICTIC PARTHENOGENESIS IN BISEXUAL SNAKES

Gordon W. Schuett, Department of Life Sciences, Arizona State University West, P.O. Box 37100, Phoenix, Arizona, 85069-7100, USA; e-mail: gschuett@asu.edu; phone: (602) 543-6021
Philip J. Fernandez, Department of Biology, Grand Canyon University, 3300 W. Camelback Rd., Phoenix, Arizona 85017, USA
David Chiszar, Department of Psychology, Campus Box 345, University of Colorado, Boulder, Colorado 80309-0345, USA; e-mail: chiszar@clipr.colorado.edu
Hobart M. Smith, Department of EPO Biology, Campus Box 334, University of Colorado, Boulder, Colorado 80309-0334, USA

Parthenogenetic reproduction, so-called "virgin birth," is widespread in natural populations of animals. One type, apomictic parthenogenesis, has been documented in multiple lineages of squamate reptilians, including a triploid, all-female scolecophidian snake (*Rhamphotyphlops braminus*). In parthenogenetic populations of squamates, conspecific males are absent (or very rare), and reproduction (i.e., development of embryos) can occur in the strict absence of sperm. In this presentation, we will present our recent discovery of parthenogenesis in several species of bisexual snakes held in captivity. Based on our results, we have proposed the model of automictic parthenogenesis, a novel type of parthenogenesis in squamates. Although it is presently too early to

make statements of the significance of this finding for natural populations, our finding immediately impacts the understanding of long-term sperm storage (LTSS) in female reptilians. We have re-examined published accounts interpreted to be LTSS by females and suggest an alternative hypothesis (automictic parthenogenesis) for several cases. We, therefore, recommend that researchers exercise appropriate caution in interpreting reproductive events that appear to be the result of LTSS.

HOW SNAKES WORK: THE PHYSIOLOGICAL REQUIREMENTS AND CONSTRAINTS OF CAPTIVITY

Harvey B. Lillywhite, Department of Zoology, University of Florida, Gainesville, Florida, 32611, USA; e-mail: hbl@zoo.ufl.edu

Captive snakes might differ from, or resemble, wild counterparts depending on their genetic history, time in captivity, and conditions of confinement. Inferences based on data from other vertebrates suggest that captive snakes derived from inbred lines are likely to behave and function differently from free-ranging specimens in their native habitat. Moreover, mixing of species from different geographic regions exposes snakes to pathogens they normally do not encounter. Of foremost concern is the maintenance of health and well being in captive specimens, which depends largely on avoidance of undue stress and suppression of the immune system. Both health and vigor of captive snakes are coupled importantly to considerations of ectothermy and metabolic requirements. Probably all physiological processes such as digestion, metabolism, reproduction, and immune responses change with temperature and require particular thermal regimens for optimal function. Food requirements are often lower, and activity requirements greater, than are sometimes provided by keepers of captive reptiles. Two consequences are unnaturally rapid growth and obesity, which have implications for health that are little studied in lower vertebrates generally. Early and frequent breeding of captive snakes may also be unnatural and produce chronic stress. Temperate and tropical species are often cooled prior to breeding, but such practice is usually employed without knowledge of "normal" hibernation regimens. While many keepers of reptiles understand the importance of thermal choices, there is little understanding of how requirements for light interact with heat availability. The water balance of snakes also interacts with temperature and requires consideration of cutaneous as well as whole body water fluxes. Thus, the hydration status of the integument depends on an appropriate microclimate and poses a potentially challenging problem for husbandry of squamates. The timing, quality, and fecundity of reproduction are coupled in important ways to these and other aspects of physiology.

STUDIES ON PHENOTYPIC PLASTICITY IN SNAKES: DOES LABORATORY DATA TELL US ANYTHING ABOUT SNAKES IN THE WILD?

Neil B. Ford, Professor of Biology and Director of the UT Tyler Ophidian Research Colony, University of Texas at Tyler, Tyler, Texas 75799, USA

Some aspects of the ecology and behavior of snakes are difficult to study in the field and such subjects as reproductive characteristics, growth, courtship patterns, and other life history traits are often examined in animals kept in captivity. Laboratory conditions allow for better control of environmental variables and the data obtained can be rigorously defended for accuracy. Of course,

whether the same results occur in the field can be argued. Factors that have strong effects in captivity, both genetic variation and phenotypic plasticity, are, however, likely to be important in natural situations. I have evaluated the effect of variation in food intake (which should reflect variation in prey availability in the wild) on reproductive traits of a number of snakes. When this data is compared to data from reproduction in snakes that have been freshly captured, the differences seem to suggest that in the wild reproductive traits are similar to those for animals in the laboratory on low levels of food intake. I have also found that it is possible to dramatically modify the reproductive responses of groups of snakes within one generation by selective breeding. These types of data are extremely important when considering reintroduction programs or other management strategies when information on the species in the wild is limited.

ECOLOGY AND EVOLUTION OF MALE-MALE FIGHTING IN SNAKES: NEW DIRECTIONS

Gordon W. Schuett, Department of Life Sciences, Arizona State University West, P.O. Box 37100, Phoenix, Arizona, 85069-7100, USA; e-mail: gschuett@asu.edu; phone: (602) 543-6021
Erik W.A. Gergus, Arizona State University Tempe, Department of Biology, Tempe, Arizona 85287, USA; e-mail:egergus@asu.edu

Male-male fighting in snakes has not, in general, received serious attention from the scientific community, and few studies have embraced fundamental questions in ecology and evolution. This lack of information is unfortunate in light of the fact that male fighting behavior is important to our understanding of the dynamics of mating systems and male fitness. I will discuss a variety of issues concerning this topic and attempt to explain the reasons for the deficiencies. Male-male fighting in snakes will be discussed from: (1) an historical overview, (2) current knowledge, and (3) new directions and roles for herpetoculturists. I will emphasize the utility of approaching future research of male fighting in snakes from the perspective of phylogenetic systematics.

REAR-FANGED SNAKES AND THEIR VENOM

Sherman Minton, 4840 E. 77th, Indianapolis, Indiana 46250, USA

Venom is present in at least nine lineages of colubrid snakes, produced in Duvernoy's gland and almost always associated with enlarged posterior maxillary teeth that may or may not be grooved. Evidence indicates venom glands and delivery systems have evolved independently several times among caenophidian snakes. Toxins of colubrid venoms are functionally similar to those of viperid and elapid venoms, but they are biochemically different. Role of venom in prey subjugation and digestion shows considerable variation among colubrid species. The defensive role of venom in colubrids is almost unknown. There is one report of a boomslang biting a dog. Except in Guam, human envenomation by colubrids nearly always results from handling or catching snakes, so a captive rear-fanged snake differs from a wild one in that it's more likely to bite someone. A practical point of some importance is the legal definition of a venomous snake.

CAPTIVE MAINTENANCE AND BREEDING OF *Neurergus crocatus* AT THE CINCINNATI ZOO

Robin Saunders, Department of Herpetology, Cincinnati Zoo and Botanical Garden, 3400 Vine St., Cincinnati, Ohio 45220, USA

Information on captive maintenance, natural breeding, and larval care will be presented. The method of spawning stimulation, care of animals, conditions for egg deposition, and species peculiarities will be described. If time permits, an update on the *Andrias* breeding program will be given.

EARLY HISTORY OF THE OHIO HERPETOLOGICAL SOCIETY

David M. Dennis, 340 Kossuth St., Columbus, Ohio 43206, USA

(Abstract not applicable)

THE SOUTHWESTERN OHIO MAFIA: A DEAD POETS HERPETOLOGICAL CLUB IN THE QUEEN CITY

Joseph T. Collins, Herpetologist Emeritus, Natural History Museum, The University of Kansas, Lawrence, Kansas, 66045-2454, USA; e-mail: jcollins@ukans.edu

(Abstract not applicable)

THE EVOLUTION OF HERPETOCULTURE

Bill Love, Blue Chameleon Ventures, P.O. Box 643, Alva, Florida 33920, USA; e-mail: blove@cyberstreet.com

Bill Love, Randall Berry, and Kathy Love are amassing information for a book to document the evolution of the entire herpetocultural phenomenon. A chronological history of significant events, discoveries, first breeding successes, and short biographies of the people who have fueled it will be included. The presentation will give an overview, illustrated with slides, featuring the public and private herpers, institutions, and animals that are among those involved prominently. A call for contributions of information and photos will also be made to assist in the completion and thoroughness of this project.

KOMODO DRAGONS, *Varanus komodoensis*, KILLERS OR LIFESAVERS?

Johnny R. Arnett, Area Supervisor, Department of Herpetology, Cincinnati Zoo and Botanical Garden, 3400 Vine St., Cincinnati, Ohio 45220, USA
Don Gillespie, Kansas City Zoo, 6700 Zoo Dr., Kansas City, Missouri 64132-4200, USA

The answer is probably both! An international team of specialists was assembled for an expeditionary effort to capture Komodo dragons in-situ. Saliva, blood, fecal, and tissue samples were obtained from these animals in order to rediscover this dynamic species from the inside out.

It is known that *Varanus komodoensis* has a potentially lethal bite. Walter Auffenberg's groundbreaking study found a few species of bacteria thought to be responsible. This new study has discovered over 40! When the dragons bite each other, however, infections do not occur. Why? What is the resistance factor? We hope to answer these questions, and others, as a result of this study.

PRESSURE/IMMOBILIZATION AS FIRST AID FOR VENOMOUS SNAKEBITE IN THE UNITED STATES

David L. Hardy Sr., Research Consultant, Arizona Poison and Drug Information Center, P.O. Box 245079, Tucson, Arizona 85724-5079, USA; e-mail: dhardysr@theriver.com

Pressure/Immobilization (P/I) was developed 20 years ago for field management of Australian elapid snakebite when medical care is distant. The entire extremity is wrapped firmly with an elastic bandage, and then immobilized using a splint with additional wrapping. Venom is confined to the bite site, delaying systemic absorption during evacuation to a medical facility. Recently, P/I has been promoted in the United States for pitviper bites which often result in pain, swelling, hemorrhage into tissues, and local necrosis. Although these local affects may be aggravated by the use of P/I, its advocates argue the benefit of delaying severe systemic effects is worth any increase in local necrosis. In recent years, fatal pitviper bites in the U.S. have been significantly reduced to < 0.5% whereas the morbidity of local necrosis, especially in finger bites, remains a major problem. For this reason, and the fact that there are no clinical reports to support its use, physicians do not recommend P/I as first aid for pitviper bites in the U.S.

A number of cobra bites in the U.S. with several fatalities suggests those keeping elapids should be prepared to use P/I if it does not delay transport to a medical facility, and the species' venom produces paralysis rather than local necrosis.

GECKOS OF THE SOUTHERN HEMISPHERE OR WHY ROCKS ARE BETTER THAN TREES

Aaron M. Bauer, Department of Biology, Villanova University, 800 Lancaster Avenue, Villanova, Pennsylvania,19085-1699, USA; e-mail: abauer@king-kong.vill.edu

Gekkotan lizards are an extremely old group whose origins may predate the break-up of Panagaea. Much of the modern diversity of the group (both in terms of phyletic diversity and species richness) is centered in the land masses derived from Gondwanaland. In particular, the eastern portions of Gondwanaland (the modern Australia, India, Madagascar, and Africa) are

especially rich. The high diversity of geckos at individual sites is a reflection of both ecological factors and historical ones. Chief among the historical factors contributing to gecko diversity is the complex interplay between geological evolution and climatic change throughout the Tertiary. This interaction has resulted in the fragmentation of rocky habitats throughout much of the southern hemisphere and the resultant isolation of substrate-specific gecko populations from one another. This, in turn, has yielded extensive lineage-splitting (cladogenesis) and the subsequent diversification of many gecko groups. Although there are some notable exceptions (like Madagascar and Southeast Asia), most parts of the world support far more rupicolous geckos than arboreal ones. Especially at the level of generic differentiation, rocky landscapes are "better" than forested ones for producing gecko diversity.

CAPTIVE PROPAGATION AND HUSBANDRY OF THE EUROPEAN FIRE SALAMANDER

John McGrath, 3815 Evergreen Lane, Columbia, Missouri, 65201, USA; phone: (573) 474-8183

Over the past decade, the number of amphibians and reptiles being bred in captivity has grown tremendously as herpetocultural technology has advanced. To date, few species of salamanders have been bred consistently in captivity. In 1988, a wild-caught group of 40 *Salamandra salamandra* was acquired with the intention of establishing a long term, multi-generational breeding colony of this species. This paper gives a brief overview of the natural history and distribution of *Salamandra salamandra*, then provides information on adult and larval husbandry, growth rates, nutrition, temperature cycling, and unusual color morphs of this species.

THE HERPETOFAUNA OF TRINIDAD AND TOBAGO

John C. Murphy, Division of Amphibians and Reptiles, Field Museum, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605, USA: e-mail: jksmurphy@aol.com

The Trinidad and Tobago herpetofauna is composed of a possible 130 species and subspecies. About 27% are widespread taxa, 25% are Amazonian taxa, and 23% are taxa associated with the Caribbean Coastal Range of South America. The remaining taxa originated from more restricted areas of the mainland, some introduced forms from the Lesser Antilles, and marine turtles. The diversity is exceptional considering that the islands have a land area of approximately 5000 km^2. This presentation will focus on taxa that are of interest to herpetoculturists and ecotourist such as hylid frogs, the so-called luminous lizard, geckos, boids, colubrids, and crotalines.

BANQUET SPEAKER

THE HERPETOFAUNA OF CHINA

Kraig Adler, Section of Neurobiology and Behavior, Cornell University, Ithaca, New York 14853, USA; e-mail: kka4@cornell.edu

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