

The Bud Heller Conservation Fellowship for 2005: Assisted Reproduction in Snakes

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Established by the Heller Foundation of San Diego in memory of the late Bud Heller, a longtime friend of the Zoological Society of San Diego, the Bud Heller Conservation Fellowship is awarded annually to a researcher who will be working in one of the CRES divisions, specifically on a species found at the Wild Animal Park.

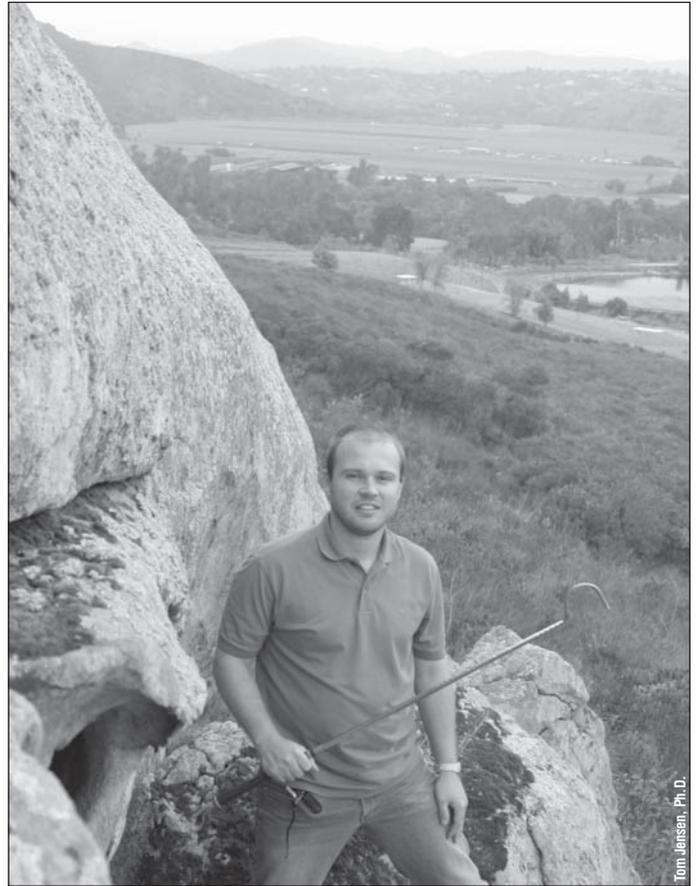
Since the Reproductive Physiology Division added the Germplasm Repository to the Frozen Zoo® in 1980, more than 13,000 samples have been banked from 1,040 individual animals of 280 species. Of these species, only six are reptiles, but snakes are not yet represented. There are currently only four Species Survival Plans (SSP) for snakes, but none of them are actively involved in semen preservation or artificial insemination. For example, basic semen parameters are known for just 3 of the world's approximately 2,900 snake species. This alarming statistic underscores the urgent need to conserve the (probably underestimated) 80 species of snakes currently listed as threatened by World Conservation Union (IUCN).

The majority of the Wild Animal Park's coastal sage scrub habitat is undeveloped. This area is home to 16 native snake species, representing the greatest diversity of snakes in Southern California. The Applied Conservation Division of CRES studies critical conservation parameters, such as habitat requirements, home range size, and dispersal patterns of some of these species, but the reproductive physiology of these

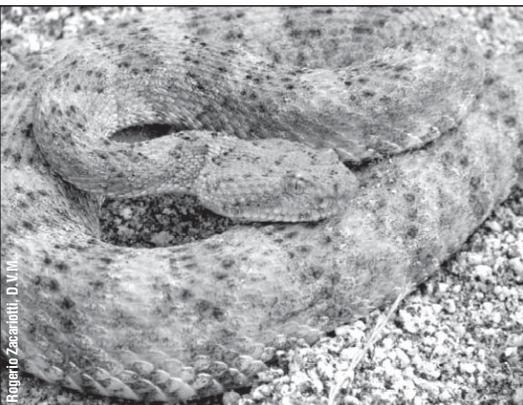
fascinating denizens of San Diego County is largely unknown. Controlling the rodent population is only one of the important roles snakes play in the wild, so understanding and protecting these species is critical to the maintenance of their endangered habitat.

In May 2005, the Reproductive Physiology Division of CRES initiated a project of assisted reproduction in snakes. A Brazilian veterinarian and Ph.D.

student, Dr. Rogério Zacariotti, joined Dr. Barbara Durrant, head of the division, in this project, in an international collaboration between the University of São Paulo, Brazil, the Reproductive Physiology and Applied Conservation divisions of CRES, and the Zoo's Herpetology Department. This team brings together Dr. Durrant's knowledge of mammalian and avian reproductive physiology, Rogério Zacariotti's five years of experience studying snakes in Brazil, as well as the field experience of the Applied Conservation Division's staff and the expertise of the Zoo's Herpetology Department. The main goals of this project are the generation of information about the reproductive physiology of free-ranging snakes at the Wild Animal Park and captive specimens at the Zoo, and the development of a protocol for semen cryopreservation for snakes. All the data generated will be used in a future program of artificial insemination in snakes.



Tom Jensen, Ph.D.



Rogério Zacariotti, D.V.M.

Speckled rattlesnake Crotalus mitchellii phyrus at the Wild Animal Park.

Rogério has spent considerable time locating snakes on the grounds of the Wild Animal Park (pictured above), collecting and processing semen samples, and performing ultrasound exams on both free-ranging and captive snakes. His forays into the field have resulted in the identification of three new snake den areas at the Wild Animal Park, which will be useful for the long-term study of free-ranging snakes in an endangered habitat. In the last 8 months, data have been compiled from 12 captive snakes and 42 wild-caught individuals of 15 species. Seasonal variations in semen characteristics and ovarian activity have been recorded, and the study will continue through the next breeding season to document the full range of seasonal effects on reproduction.

The future goal for this project is the utilization of semen cryopreservation and artificial insemination in a program for the conservation of these amazing reptiles.