REPRODUCTIVE HUSBANDRY AND PROBLEMS OF SNAKES

Ryan Centini

Department of Animal Dairy and Veterinary Sciences, College of Agriculture, Utah State University, Logan, UT 84321 USA

ABSTRACT

Snakes are commonly bred reptiles in captivity. Breeding occurs both in large numbers as a primary source of income for some herpetoculturists and on a lesser scale by hobbyists with a couple of pairs. It is important for the veterinarian to be familiar with breeding snakes in captivity and the problems that may prevent successful reproduction.

Snakes used for breeding should be in optimal health. Females should be slightly on the heavy side of ideal and males should in ideal to slightly lean body condition. Snakes are placed together after or during appropriate temperature cycling, are left together until the female ovulates, then separated. The female should be provided with a proper thermoregulatory ability for the developing eggs or young. Oviparous snakes need a proper spot for oviposition and the eggs need to be incubated at the optimal right temperature and humidity. Dystocia and failure of the female to ovulate are the most common problems with reproduction.

Introduction

Snakes are commonly bred reptiles in captivity. Breeding occurs both in large numbers as a primary source of income for some herpetoculturists and on a lesser scale by hobbyists with a couple of pairs. This may be due to the fact that breeding snakes does not require a large commitment of time as does breeding other animals. Problems with inappropriate breeding husbandry and medical conditions provide opportunities for veterinarians knowledgeable about snake reproduction to help.

Pre-breeding Condition

Reproductive adults need to be fed well and regularly in order to prepare for breeding. Females should be slightly heaver than ideal weight. Males should be anywhere from lean to ideal. The condition of males may vary depending upon species, breeding season, the habits of the individual snake, and whether or not it undergoes pre-breeding anorexia. If pre-breeding anorexia occurs, this duration this occurs should also be taken into account for preconditioning. All snakes to be bred should have a full examination including physical exam, fecal flotation and direct smear, CBC, blood chemistries, and radiographs. The lower temperatures of hibernation

and stress of breeding can render specimens vulnerable to a number of health conditions and diseases.

Breeding colubrids requires brumation before breeding. Brumation lasts for about 3 mo; temperatures vary with the species being bred. The mountain kingsnakes (*Lampropeltis pyromelana, L. zonata)* and some Asian ratsnakes (*Elaphe* spp.) brumate at temperatures in the range of 4-6˚C (the low 40˚F), whereas tropical milksnakes like the Honduran milksnake (*Lampropeltis trangulum hondurensis)* brumate at temperatures in the range of 13-15˚C (the high 50˚F). Food should be withheld for 2 wk before brumation begins so there is no food in the digestive tract when the temperatures drop.

Breeding

Boas and pythons breed best with temperature cycling in which the temperature is dropped 3-6˚C (5-10˚F). This period will last for 4-5 mo and in North America, generally takes place from November through February. During this time, both adults will often become anorexic. If they are fed during this time, a proper warming spot should be provided several hours during the day for proper digestion. A few weeks after the temperature drop or return to normal maintenance (for colubrids) the female will enter a shed cycle. After this shed is the best time for mating. Copulation lasts anywhere from minutes to a day and may be so brief that it is missed in some species. Snakes will often copulate many times before the female ovulates.

With some species, such as the black-headed python (*Aspidites melanocephalus)* and the diamond python *(Morelia spilota spilota)*, the use of multiple males may be important. This can also be useful in other species where fertility has been a problem. Care should be taken however, to avoid male combative interactions that can lead to serious injury or death. The breeding pair should remain together until ovulation if noticed or until the end of the breeding season. Ovulation can be manifested by a large caudal to mid-body swelling. After this time further mating will not lead to conception.

Gravid Female Care

Once gravid, the female should be maintained in the upper part of the preferred temperature range and have a basking spot available as she will bask extensively. Gravid snakes usually do not eat but, if they do, can be offered small pre-killed meals. After becoming gravid, a post-ovulation shed (POS) occurs. In oviparous snakes eggs are laid 10-30 days after the POS depending upon species with colubrids being sooner than pythons. Viviparous snakes may go through more than one post-ovulation shed before giving birth usually 4-5 mo after ovulation. Oviparous snakes need a spot to lay eggs this can be any container that is small enough to make the female feel secure, but large enough for her to be comfortable in and lay eggs. Media that holds moisture well and is not toxic such as sphagnum moss or vermiculite will work and should

be kept slightly moist. Viviparous snakes will also use such containers but can sometimes injure the young in a small container. Depending on the species, eggs can either be left with the female for maternal incubation or taken out for artificial incubation. Eggs taken for artificial incubation should be kept on a substrate like vermiculite that is kept slightly moist (no water should be able to be squeezed out). The egg container can then be put in a larger container with water in it. The eggs should be kept at the proper incubation temperature of 27-32˚C (80-90˚F) and in humid conditions of 85-100% depending on species. Eggs should not be wet themselves. Controlling humidity during maternal incubation is difficult, but local humidity around the female can be manipulated a little by the methods described above.

Problems

Dystocia and failure to ovulate are two of the most common problems with snake reproduction. Dystocia can have a number of causes including the female being young/small, oversized eggs or fetuses, improper place for oviposition or to give birth, presence of infertile ova, nutritional problems, and neoplasia. Treatment of dystocia varies with the cause and can include anything from providing a proper oviposition site to surgery.

Ovulation is poorly understood in snakes, and specific reasons for failure to ovulate are unknown. One thing that is understood is that females must be well fed and in good body condition. The presence of a male and the act of copulation, temperature cycling, proper husbandry, and stress all likely have some effects on ovulation. Some female snakes that are not temperature cycled can and do ovulate.

Conclusion

Breeding snakes is a common practice, with many different methods for successful reproduction depending on the species. Ovulation is poorly understood in snakes and more research needs to be done in order to better understand what triggers ovulation. Proper diet, husbandry, and preparation for breeding and care of eggs needs to be understood by the veterinarian to make suggestions to the client to prevent problems from occurring.

Suggested Reading

Articles in Reptiles magazine (P.O. Box 58700, Boulder, CO 80322-8700) and books from The Herpetocultural Library series published by Advanced Vivarium Systems (AVS, P.O. Box 6050, Mission Viejo, CA 92690) are excellent sources of species specific information on the care and breeding of snakes. The Reproductive Husbandry of Pythons and Boas by Richard A. Ross and Gerald Marzec published by the Institute for Herpetological Research Stanford, Ca is a great book dealing with the breeding of boas and pythons.