Bat World Sanctuary

Insectivorous Bats on Public Display

Insectivorous bats can be maintained in captivity with the proper care. However, they are extremely poor candidates for permanent display in zoo, museum, and science or nature center exhibits. We enumerate our concerns due to the growing interest in displaying insectivorous bats by these facilities.

1. CONCERNS REGARDING HEALTH, NUTRITION, AND TIME INTENSIVE CARE

Insectivorous bats maintained in captivity are prone to a variety of health problems including, but not limited to, gum disease, bladder stones, kidney disease and liver disease.[1] Insectivorous bats in these settings frequently develop infected teeth or gums resulting in subsequent systemic infections and/or poor nutritional condition due to an inability to chew. These conditions often result in death.[1,2,3] Avoiding these problems necessitates twice daily handling (examination and treatment) of each individual bat. Zoo facilities are generally not equipped to provide such time intensive care for individual animals.[1,2,3]

The nutritional needs of many insectivorous bat species are not well known and even in cases where they are, there is limited availability of appropriate food items. Almost all insectivorous bats are fed a diet of gut-loaded mealworms in captivity. No other mammal is assumed to do well on such an unvaried and potentially substandard diet. Many captive bats must be individually hand-fed twice daily. As noted above, zoo facilities are generally not equipped to provide such time intensive care for individual animals.[1,2,3]

To date, mortality in captive colonies of insectivorous bats in zoos is unacceptably high.[3] Unless caretakers are able to provide the intensive daily care requirements needed to maintain these bats over extended periods of time with low mortality rates, it is inappropriate to subject the animals to these captive conditions.

2. COLONY MANAGEMENT

Most bat species selected for exhibit are colonial. Colony size and makeup vary from one species to another and may change seasonally.[4] Unnatural or unstable colonies often result in aggression and stress that increase mortality.[1]

Breeding in these colonies can also result in undue aggression and increased mortality.[1] Culling should not be considered an acceptable method for population control. Neutering is the only acceptable method of population control for mixed gender colonies of insectivorous bats.[1] However, due to the small size of insectivorous bats, these surgical procedures can be difficult to perform. Large colonies are frequently managed as "groups" rather than individuals. As a result, individual bats do not receive the necessary daily exams by keepers familiar with their individual behaviors and dispositions needed to maintain good health. Systemic infections in insectivorous bats can result in death within as little as 24 hours.[1] Routine mortality in anything but geriatric populations is unacceptable. Without daily checks of all individuals in a colony, health issues may go undetected until the entire colony has been affected. [3]

Environmental enrichment is as necessary for small insectivorous bats as it is for many other mammals. These bats are highly intelligent and long-lived.[5, 6] Studies have demonstrated that poor quality of life can have a profound effect on both the physical and psychological well-being of insectivorous bats in captivity.[7]

3. ADDITIONAL FACTORS

Most insectivorous bats are crevice-dwelling species.[4] These bats seek the shelter of tight, darkened crevices that create a sense of security. Displays must simulate such conditions so bats are unaware of the presence of observers. Directing bright viewing lights into such exhibits is unacceptable. Failure to provide appropriate conditions often results in serious signs of stress including alopecia, hypophasia, vomiting, and death.[1,2,3,7]

4. PROCUREMENT

Common colonial species (such as those in the genera Eptesicus and Tadarida) may exist in current adequate numbers in the wild. Nonetheless, most conservation organizations object to the capture and removal of healthy animals from wild populations for use in zoo exhibits. While life expectancy for some insectivores in the wild can exceed 30 years, zoo captives seldom live even one-tenth this period of time.[6, 3]

Non-releasable bats available through wildlife rehabilitators are occasionally solitary foliage dwellers (e.g., *Lasiurus sp*.) which do not adapt well to captivity.[1,4] These species often die in less than a year in captivity.[1]

Hand-reared pups may become acclimated to human presence. However, the physical and psychological issues addressed above also pertain to hand-reared young. Also, there are unlikely to be sufficient hand-reared insectivorous pups to fill the demand for these animals.

Cave-dwelling, colonial fruit bats, very similar in size to insectivorous bats, are already available through AZA approved means. In fact, *Carrolia perspicilata* and *Artibeus jamacensis* exist in such abundance in zoos that they are culled by some facilities as a means of population control. These readily available fruit-eating species have proved their suitability for zoo exhibits over an extended period of time.[8] The use of time-intensive insectivorous bats in zoo exhibits cannot be justified when cave ecology and bat conservation can be effectively interpreted with a much hardier and abundantly available frugivorous species. We therefore recommend the use of the available *Carrolia perspicilata* and *Artibeus jamacensis*, rather than any insectivorous bat species, for zoo, museum, science and nature center exhibits.

5. RABIES

North American insectivorous bats are a rabies vector species.[9] Infected individuals have survived for as much as a year or more in captivity, seriously jeopardizing the heath of entire colonies as well as human caretakers.[10,11,12] We recommend that all captive bats be vaccinated annually, as does the AZA Chiropteran Advisory Group.[1,15] However, vaccination of insectivorous bats constitutes extra-label use of rabies vaccine.[13]

All caretakers working with insectivorous bats should be vaccinated against rabies.[14] Lack of adequately protected staff should not be used as an excuse for foregoing daily inspection of individual animals needed to ensure healthy captives.

References:

1. Lollar, A, and B. French. 2002. Captive Care and Medical Reference for the Rehabilitation of Insectivorous Bats. Bat World Publication. Mineral Wells, TX.
2. Lollar, Amanda. 1993—2003. Intake records and consultations.
3. Lollar, Amanda. 1995—2002. Pers. comm. with: Zoo America, PA; Dallas Museum of Natural History, TX; Living Materials Center, TX; Texas Wild-Fort Worth Zoo, TX; Virginia Marine Science Center, VA; Discovery and Science Center, FL.
4. Barbour, R. W. and W. H. Davis. 1969. Bats of America. The University Press of Kentucky.Lexington, KY.
5. French, B., A. Lollar, T. Ma, R. Page, R. Page, R. Steinberg, R. Xie. 2003. Library of social communication calls of the Mexican free-tailed bat (Tadarida brasiliensis). International Bat Rehabilitation Journal 1(1):1-13.
6. Davis, W. H. and H. B. Hitchcock. 1995. A new longevity record for the bat Myotis lucifugus. Bat Research News 36(1):6.
7. Johnston, Dave S. 1997. Social and behavioral well-being of captive bats. .Journal of Wildlife Rehabilitation 20(1):15-18
8. Lubee Foundation, and American Zoo and Aquarium Association. 1995. Fruit Bat Husbandry Manual. Kensington, MD.
9. Constantine, D. 1988. Health Precautions for Bat Researchers. In Ecological and Behavioral Methods for the Study of Bats. Ed. T. H. Kunz. Smithsonian Institution Press. Washington, D.C.
10. Kaplan, F. C. 1969. Epidemiology of rabies. Nature 221(5179):421.
11. Trimarchi, C. 1978. Rabies in insectivorous temperate-zone bats. Bat Research News 9(1):7.
12. Brass, D. 1994. Rabies in Bats Livia Press. Ridgefield, CT.
13. Trimarchi, C. 1996. Wild Today, Wild Tomorrow. Proceedings 1996. International Wildlife Rehabilitation Council Conference. Niagara Falls, New York.
14. United States Centers for Disease Control and Prevention (CDC). 1999 . Human Rabies Prevention-United States, 1999. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 48(RR-1):1-21.
15. Lollar, A. 2004. Vaccinating Insectivorous Bats Against Rabies. International Bat Rehabilitation Journal 2(1):1

