



## Insectivorous Bats on Public Display: The Position of Bat World Sanctuary

Insectivorous bats can be maintained in captivity with the proper care. However, bats are extremely poor candidates for permanent display in zoo, museum, and science or nature center exhibits. It is our position that, with proper training and management practices, zoos may be appropriate facilities for captive propagation of endangered or declining insectivorous North American bat species. We encourage and welcome the opportunity to work with the zoo community to develop appropriate and successful captive propagation projects for rapidly diminishing North American bats.

### 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<sup>1</sup>. Insectivorous bats frequently develop infected teeth or gums resulting in subsequent systemic infections and/or poor nutritional condition due to the inability to chew. These conditions often result in death; therefore it is crucial to observe insectivorous bats for subtle signs of failing health.<sup>1,2,3</sup> Avoiding these problems necessitates daily examination of individual bats. Public display facilities are generally not equipped to provide such time intensive care for individual animals.<sup>1,2,3</sup>

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. Bats that do not learn to self feed or that suffer from dental disorders or other health issues must be individually hand-fed twice daily. As noted above, public display facilities are generally not equipped to provide such time intensive care for individual animals.

To date, mortality in captive colonies of insectivorous bats in zoos, museums, and nature centers is unacceptably high. Unless caretakers are adequately trained and are able to provide the intensive daily care requirements needed to maintain insectivorous bats over extended periods of time with low mortality rates, it is inappropriate to house insectivorous bats.

### 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. Unnatural or unstable colonies often result in aggression and stress that increase mortality.<sup>1</sup>

Unintentional breeding in these colonies may also result in undue aggression and increased mortality.<sup>1</sup> Culling is not an acceptable method for population control. Neutering or contraception (effective methods for contraception have not been established) are the only acceptable methods of population control for mixed-gender colonies of insectivorous bats.<sup>1</sup>

Large colonies are frequently managed as “groups” rather than individuals. As a result, individual bats do not receive daily exams by keepers familiar with their individual behaviors and dispositions, which are needed to maintain good health. Systemic infections in insectivorous bats can result in death within as little as 24 hours.<sup>1</sup> 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.<sup>3</sup>

Environmental enrichment is as necessary for small insectivorous bats as it is for many other mammals. These bats are highly intelligent and long-lived.<sup>5,6</sup> 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.<sup>7</sup> Enriching environments for large groups of animals is more difficult, but should not be overlooked.

### 3. ADDITIONAL FACTORS

Most insectivorous bats are crevice-dwelling species.<sup>4</sup> These bats seek the shelter of tight, darkened crevices that increase a sense of security. The secretive nature of colonial insectivorous bats makes them poor candidates for display. Displays must simulate natural conditions so bats are unaware of the presence of observers, which results in bats being invisible to most visitors.

Attempts to elicit responses from bats, such as knocking on glass or loud noises, are extremely distressing, and bats do not seem to acclimatize well to noise stressors. Directing bright viewing lights into such exhibits is unacceptable. Failure to provide appropriate conditions often results in serious signs of stress including alopecia, hypophagia, vomiting, and death.<sup>1,2,3,7</sup>

#### 4. PROCUREMENT

Common colonial species (such as those in the genera *Eptesicus* and *Tadarida*) may currently exist in the wild. Nonetheless, most conservation organizations object to the capture and removal of healthy animals from wild populations for use in public display exhibits. While life expectancy for some insectivorous bats in the wild can exceed 30 years, captives seldom live for even one-tenth of the normal lifespan.<sup>6,3</sup>

Non-releasable solitary foliage dwellers (e.g., *Lasiurus sp.*) available through wildlife rehabilitators do not adapt well to captivity<sup>1,4</sup>, and often die less than a year in captivity.<sup>1</sup>

Hand-reared pups of many species may become acclimated to human presence. However the physical and psychological issues addressed above also pertain to hand-reared young. There are unlikely to be sufficient hand-reared insectivorous pups available to meet the demand for these animals.

In fact, *Carrollia perspicilata* and *Artibeus jamaicensis* exist in such abundance in zoos that they are culled in 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.<sup>8</sup> the use of time-intensive, highly sensitive insectivorous bats in 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 *Carrollia perspicilata* and *Artibeus jamaicensis*, rather than any insectivorous species, for exhibit in zoo, museum, science and nature center exhibits.

#### 5. RABIES

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

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

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