



Lubee Bat
CONSERVANCY

Lubee News

Summer 2006

No. 5

Community Notes and Calendar of Events

July 19, 2006

Nocturnal Adventures presentation at
Main Library in Gainesville; 10:00am

July 25, 2006

Nocturnal Adventures presentation at
High Springs Library; 2:30 pm

September 20, 2006

Nocturnal Adventures presentation at
Archer Library/ Senior Center; 11:00
am

October 28th, 2006

Saturday, 12:30-3:30 pm
Lubee Bat Festival

More information about Lubee
events open to the general public,
as well as scheduling for our
education programs can be found
by emailing us at info@lubee.org

For information about bats in
Florida, visit Florida Bat Conser-
vancy (formerly Florida Bat Cen-
ter) www.floridabats.org

Contributors to "Lubee News"

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Edited by Michelle Seitzmeir

Photos by Pam Thomas, Dana
LeBlanc



Photo by Pam Thomas

Humans and Fruit Bats - Conflicts in Nature

Both the history and future of the fruit bats, particularly the larger fruit bats known as flying foxes, revolve around threats generated by people. The most obvious is the conflict that so often results when bats and people are pitted against each other. While shrinking rainforests, pollution and global warming afflict the environment on a scale large enough for people to sit up and take notice, for many species of fruit bats, it is the smaller, daily conflicts with humans that are pushing bat populations to the brink of extinction.

Whether eating or being eaten, fruit bat bats come under direct fire from people, blamed as crop pests and hunted as a source of bushmeat. As the competition for dwindling space and native forest resources continues to rise, so does human encroachment upon bat habitats, spiraling this conflict to levels where one side seems bound to lose.

Many of you no doubt enjoy the delicious fruits found in the tropics, and thanks to a global economy, even the most exotic fruits are now available in our corner stores. Fruit bats being fruit bats, there is also nothing more appealing than a freshly ripened mango, rambutan or litchi, creating a conflict when bats raid commercial fruit orchards for fine dining.

Raids may be more likely in areas where clearing for-
ested lands for

farming has left less native trees and plants available to the bats, although a predilection for sugary agricultural



The Mauritian fruit bat (*Pteropus niger*) is threatened by claims of increasing crop damage by fruit growers, who are calling for the culling of bats. Photo by Paula Senior

fruit may also be partly to blame (Nelson 2003). Common "solutions" include netting the bats, shooting them, and electrocution. The 1992 Old World Fruit Bats Action Plan reports that in the Maldiv Islands, the *Pteropus giganteus ariel* was culled almost to extinction based on supposed damage to fruit crops. Unfortunately, no concrete evidence was ever put forward that the bats were responsible for significant damage to fruit crops. The level of damage to crops by fruit bats is still largely speculative, and it is important to quantify their impacts relative to damage inflicted by other frugivores (rodents, birds), who may be equally or more to blame. We also need to carefully evaluate alternate exclusion or control measures that will both protect valuable crops and ensure some protection for threatened fruit bat populations. Fruit bats need to eat, and excluding bats from crops with nets will not stop their nightly search for food. Some innovative solutions reported recently include the planting of fruit tree corridors by volunteers in Australia, and the planting of sacrificial crops around the periphery of orchards in India, where it has been shown that bats do most damage at the edges of orchards. Grower awareness about the beneficial role of bats in seed dispersal and pollination of both agricultural crops and native forests is key to promoting measures that avoid direct culling of bats, a method which is unlikely to provide an effective long term solution.

Turning the tables, bats on the menu as food for people (either as a luxury traded food item or for local subsistence) is another human-bat conflict where bats have for a long time been on the losing side. Widespread deforestation, along with the creation of access roads into previously inaccessible areas, provides increased access to forests by hunters. This in turn has led to an explosion in the amount of wildlife, including smaller as well as larger fruit bats, killed as bushmeat. Bats roosting in large camps in

Bat-Human Conflicts (Cont. on pg 2)

Fertility and Contraception in Variable Flying Foxes

This fall, Dr. Linda Penfold, Research Coordinator at White Oaks Conservation Center and Dr. Allyson Walsh, Director of Lubee Bat Conservancy, are embarking on a study that aims to advance the use of hormonal implant contraception in both male and female Variable Flying Foxes (*Pteropus hypomelanus*).

With limited space available in most zoos, males and females are together, leading to unrestricted breeding, a lack of pedigree data, and subsequent captive bat overpopulations. The Association of Zoos and Aquarium's (AZA) Bat Taxon Advisory Group and Contraceptive Advisory

group recently cited these issues as priorities to improve the genetic management of captive bat populations. To tackle them, Penfold and Walsh have teamed up with Dr.'s Verstegen and Heard at the University of Florida's College of Veterinary Medicine to test a newly available hormone implant, which if successful, will provide safe and reversible contraception for bats. The small implants are similar to those used subcutaneously in humans, and work by temporarily suppressing the reproductive endocrine system, which prevents production of pituitary (FSH and LH) and gonadal hormones (estradiol and progesterone in

Variable Flying Fox (Cont. on pg 2)

Bat-Human Conflicts (Cont. from P1)

forest fragments make highly visible targets. Bushmeat (the meat of wild animals) has long been an important source of protein for many rural communities around the world. In more recent years, bushmeat consumption has increased as a supplement for depleted fish stocks, and has become a lucrative commercial enterprise so widespread that it threatens many species with extinction. The most significant impact of hunting on bats remains in the Pacific islands and South-east Asia where species are being hunted unsustainably. In just the last year, *Pteropus vampyrus* has been elevated from an IUCN status of vulnerable to endangered in the Philippines (Global Mammal Assessment pers comm.), where bat hunting is often regarded as a 'sport' for male society. Across Asia bats frequently end up at "live" markets, where they are inhumanely treated, and come into close contact with other animals and people.

Both the bushmeat industry and the increased contact of fruit bats with humans creates the potential for public health threats, since bats, like most other mammals, carry a variety of zoonotic diseases (those that can infect humans). Conversely, public health threats have the potential to conflict with the conservation of endangered bat species, as risks from bats are often falsely magnified by the uncertainty/lack of data about the life histories of disease transmission, and low regard with which bats are perceived. This conflict is newly emergent, and one where Lubee's investment in fundamental research, conservation science and education outreach can play a role bringing together wildlife biologists, veterinarians, public health scientists, virologists, and other scientists, in providing the knowledge base needed to mitigate potential human-bat conflicts.



Copyright USFW; Dried fruit bats in the bushmeat trade

Working with researchers at the University of Florida's College of Medicine (Department of Pathology, Immunology and Laboratory Medicine), Lubee's captive animals are aiding an exploration of the basic immune system function of bats, which is important in the understanding of how diseases may or may not be transmitted. Working with conservation partners across the range of Old World Fruit Bats, Lubee is supporting projects that focus broadly on collecting regional estimates of bat population change (such as community monitoring of the Pemba Flying Fox, Livingstone's Flying Fox, Madagascar Flying Fox, and Bat Count Philippines), and more narrowly on topics including identifying the scale of fox trade and bat/hunter contact in Central Kalimantan, Indonesian Borneo. These community science programs train local residents to carry out long-term monitoring and are also important steps in developing a bat conservation ethic through targeted education programs. In the Philippines, researchers Tammy Mildenstein and Sam Stier reported that they found it most effective to conduct population estimates by using local hunters as guides to find bat roosts. While most hunters began the project adamant that the roosts contained millions of bats, by directly participating in the counting of bats, they were quick to see that the bat populations are limited resources. This then made them strong proponents of hunting regulations in order to maintain a stable population of bats, giving protected area managers a better chance of implementing management decisions (Mildenstein & Stier, [Bat Count Philippines Report to Lubee 2002](#)).

While conflict often results in the future seeming bleak, it is important to remember that just as broad scale losses of bats are the cumulative result of local small-scale interactions, so local small-scale solutions can add up to halt and reverse this trend. As a smaller organization, Lubee cannot single-handedly solve the conflicts between bats and people. However, by working with a network of larger conservation organizations and through supporting multi disciplinary research to better understand the basic ecology of fruit bats, Lubee is able to bring attention to bats' needs and ensure that their positive role in healthy forest and agriculture ecosystems is not overlooked.

"...just as broad scale losses of bats are the cumulative result of local small-scale interactions, so local small-scale solutions can add up to halt and reverse this trend."

For further reading see : Bushmeat Crisis Task Force www.bushmeat.org.

By: Dr. Allyson Walsh & Michelle Seitzmeir

Tribute to Pamela Mizell Poppell Thomas

It is with great sadness that the Lubee Bat Conservancy announces the loss of our team leader and dear friend Pamela Thomas. Pam passed away on April 30th, 2006 after a year long struggle with cancer. She started work at Lubee on September 27, 1999, and was the cornerstone of our animal keeping department for close to seven years. Pam's love of her job shone through in everything she did and to all the people that she worked with. She was devoted to the care of the bat collection at Lubee, and knew each bat by name and character. Pam Thomas was a trusted friend, a leader to the staff, a

mother of three sons, a loving wife, and a source of inspiration to all that knew her. Her joy for life and love of nature lives on through her incredible wildlife photographs and in our memories. Pam was truly an extraordinary person, and she will be missed by all who knew her.

Picture : Pam Thomas training visiting keeper Victor Alm from Oakland Zoo.



Variable Flying Fox (cont from P.1)

females and testosterone in males). As well as the absence of pregnancies, the effects of the implants on female hormone cycles and on male testicular size and semen quality, including motility, status, and morphology will be assessed. If the implants are successful in providing safe and effective reversible contraception for fruit bats, they could be used in zoos to prevent overpopulation and ensure that genetically overrepresented individuals don't continue to reproduce. In addition, the project will provide important information about sperm morphology and male fertility and may benefit the design of cryo-storage protocols and artificial insemination procedures for bats. Captive populations are an important assurance genetic "savings bank" for many species, but re-introduction to the wild is often not possible or realistic for most captive held bats. Artificial insemination could be the key to capitalizing on the genetics of captive held bats, providing the opportunity to effectively conserve and manage critically endangered species.



Mark Your Calendars Now!

2006 BAT FESTIVAL

will be held on **Saturday, October 28th from 12:30-3:30pm at Lubee**

Did You Know?

Despite some superficial similarities, the mechanics of flight among bats, birds, and insects are quite different. Anatomically, insect wings possess no internal joints, and bird wings only a few. In contrast, the three-dimensional conformation of bat wings (similar to human hands), is determined by at least 18 intrinsic joints, and because the bat wing has internal musculature (unlike birds or insects) each of these joints is under at least partially independent control. This vastly increases the degrees of freedom in determining dynamic wing shape and structure. Moreover, bat wing bones have strong gradients in mineral density, resulting in aero elastically tailored supportive 'struts' that undergo extreme deformations during flight. Lastly, unlike bird or



insect wings, bat wing membrane skin is a unique biological material and can elongate to as much as 400% of resting length.

Pteropus in flight at Lubee, demonstrating the wing elasticity and dynamic wing shape characteristic of bats. Photos by D. LeBlanc



Join us for an afternoon celebration of bats here at the Lubee Bat Conservancy. There will be presentations about bats, raffles, crafts for the kids, t-shirts and photographs for sale, and lots to see and learn.

All ages are welcome and admission is free.

Bring an empty printer cartridge or old cell phone and receive a ticket to a special raffle!

Stay tuned for more details as we get closer to the event.

Browse Garden Project Continues to Grow at Lubee



P.hypomelanus "Prince" with Purselane baskets donated in 2006. Photo by D. LeBlanc

Last year's inaugural Browse Garden has grown so well that the plants are finally large enough for the bats to begin enjoying cuttings from the garden, providing a plentiful source of enrichment for our bats.

This year, Gainesville area nurseries have

generously donated again to aid our plant-based enrichment activities for the bats. This year's activities will focus on incorporating hanging baskets into the enclosures, include plants such as Bougainvilleas, Creeping Jenny, Portulaca, Bugleweed, Salvia, along with a wide variety of fragrant herbs. Herbs are also used to brew flavored vinegar, which is used to scent mark the bats' enclosures and give their noses an olfactory workout!

Many thanks to Hatchett Creek Nursery and Grandiflora, who kicked off this year's browse garden donations. It is worth noting that bats pollinate the tree *Ceiba grandiflora* in the wild!

If you would like to participate, please email Michelle at info@lubee.org.

Please remember to donate your old printer cartridges and cell phones to Lubee

Your donations of used printer cartridges give Lubee a much needed donation and keep the cartridges out of our landfills!

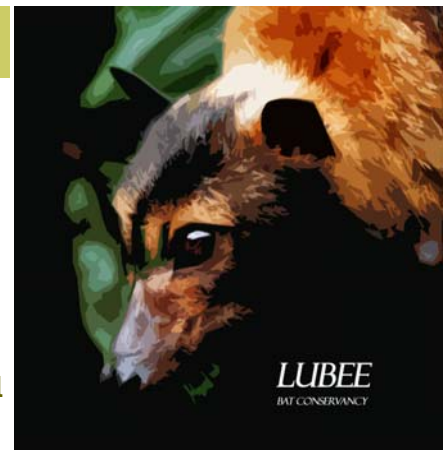
A prepaid shipping label will be mailed to you as long as you have at least 15 cartridges or cell phones to send, or local donations can be dropped off at several locations around town. Please email us at info@lubee.org for more information.



LUBEE BAT CONSERVANCY

Saving Bats Conserving Ecosystems

Lubee Bat Conservancy is an international non-profit organization working with others to save fruit and nectar bats and their habitats through conservation, research, and education. Healthy ecosystems depend on fruit and nectar bats that pollinate flowers and disperse seeds. These bats are among the least studied and most threatened in the world. Lubee is working to promote understanding and responsible management of the vital relationship between bats, plants, and people, leading to a sustainable future for all.



The Challenge

Fruit and nectar bats visit plants for their food and are vegetarians. While feeding they perform important ecological functions for the plants, sharing the role of seed dispersal and pollination with birds and insects. In rainforests, these bats play a vital role in forest regeneration and the maintenance of forest diversity. In some island countries, they are often the only native mammal and are of cultural and economic importance to local people dependent on natural forest for protection, water, timber, and other forest products.

It is estimated that more than 134 plants that yield products used by humans are entirely or partially reliant upon bats for seed dispersal or pollination. Fruit & nectar feeding bats are important pollinators of many wild as well as agricultural plants such as mangoes, cashew nuts, figs and columnar cacti in the desert Southwest of North America.

Over half of the bat species on our planet are considered threatened or near threatened with extinction. Flying foxes, like the one pictured here, are one of the most persecuted of all wildlife groups. Culled as crop-pests, hunted for food, and losing the habitats that they live in and support, fruit bat populations are disappearing at an alarming rate. Their loss is our loss.

Our Approach

We work with a world-wide team of conservation scientists, educators and zoological institutions.

We link field studies with our premier center for bat conservation, research, and training.

We build capacity of communities to conserve fruit and nectar bats and their essential ecosystem services through education and outreach.

How You Can Help

For more information about Lubee or to receive information about our local Florida education outreach program, *Nocturnal Adventures*, please email us at info@Lubee.org. To make a donation, log on to our website at www.Lubee.org and click on "Join Us" or mail in your membership form below to:

Lubee Bat Conservancy
1309 NW 192nd Ave.
Gainesville, FL 32609

------(tear here)-----

Yes, I would like to become a member of Lubee Bat Conservancy. Enclosed please find my gift of

- \$25
- \$35
- \$50
- \$100
- (other) _____

Name _____

Address _____

Phone _____

Email (to receive newsletter) _____