BAT CONSERVATION AFRICA (BCA)

http://www.batconafrica.net/

Position Statement on Bats and Ebola

Key facts about bats

Bats are flying mammals that occur on all continents except Antarctica. There are nearly 300 bat species in Africa, making up 20% of African mammalian diversity. Bats provide many ecosystem services by pollinating flowers and dispersing seeds of many plants, thereby contributing immensely to reforestation, vegetation regeneration and thus supporting livelihoods of people. By consuming agricultural pests, insectivorous bats contribute enormously to agricultural productivity through reduction in crop loss and pesticide usage. Of course, this natural subsidy to agricultural productivity depends critically on healthy populations of bats.

Bats and Diseases

Although the ecological effects of bats on people are overwhelmingly positive, bats can carry diseases transmissible to humans. As social mammals, many bats live in dense aggregations that are conducive to infections by pathogens and transmission of parasites. Globally, some common bat pathogens include rabies (a virus that is transmitted via saliva or blood of infected mammals and can cause fatal encephalitis in humans) and histoplasmosis (a respiratory disease caused by a spore-producing fungus that grows in accumulated bat and bird droppings). Although bats are known to carry rabies, more than 99% of human deaths from rabies occurring in Africa and Asia are caused by infections from carnivores, including domestic dogs. African bats have also been associated with viruses such as Ebola virus, Marburg virus, and Shimoni virus, but the nature of many associations, whether as reservoir, vector or accidental host, remains poorly understood. Indeed, the role of bats as reservoirs of Ebola virus in equatorial Africa has yet to be confirmed. The wildlife source of the current Ebola virus disease (EVD) outbreak in West Africa is as yet unknown.

Ebola – General information

Ebolavirus is part of the filovirus family, which is comprised of five species in Africa; *Bundibugyo ebolavirus* (BDBV), *Zaïre ebolavirus* (EBOV), *Sudan ebolavirus* (SUDV) and *Taï Forest*

ebolavirus (TAFV; formerly *Côte d'Ivoire ebolavirus*). These species cause periodic hemorrhagic fever outbreaks in humans and non-human primates with very high mortality rates.

Transmission

The virus is transmitted to people from close contact with wild animals including bats, and spreads in the human population through human-to-human transmission. Infection results from direct contact with blood, secretions, organs or other bodily fluids of infected (sick) people or animals or through indirect contact with environments or objects contaminated with such fluids.

For details about signs and symptoms of Ebola refer to these links

World Health Organization (WHO) - http://www.who.int/mediacentre/factsheets/fs103/en

Centre for Disease Control (CDC) - http://www.cdc.gov/vhf/ebola/

Bats as a reservoir of Ebola virus

Human disease is frequently linked to Ebola virus-infected primate carcasses but as with human, African primates such as gorillas and chimpanzees are susceptible hosts and succumb to the disease. Before 2005, the history of EVD outbreaks included known links to bat exposure, but it was not until 2005 that the first scientific evidence implicated bats as a reservoir of Ebola virus were forthcoming. Since then, several other wildlife species have been investigated as potential reservoirs of Ebola virus, including mammals, birds, reptiles, amphibians and plants, but evidence was only found. It is only in several fruit bat species (Table 1), including the hammer-headed fruit bat (*Hypsignathus monstrosus*), Franquet's epauletted fruit bat (*Epomops franqueti*) and the little collared fruit bat (*Myonycteris torquata*) that supportive evidence was found. Based on the detection of both anti-EBOV antibodies and EBOV nucleic acid in these species, they are considered putative reservoirs of Ebola virus. Serological evidence (antibodies against Ebola virus) has been identified in several other bat species, but this is inconclusive as evidence of Ebola virus infection. *Eidolon helvum* (Straw-coloured fruit bats), a migrating fruit bat widely distributed through sub-Saharan Africa, had very low levels of antibodies in one study in Ghana and no viral nucleic acids, making it an unlikely Ebola virus reservoir. Very few studies have focused on Ebola virus ecology, and the links between bats, non-human primates, humans and Ebola viruses are not clear. For a comprehensive review, see Olival, K.J., Hayman, D.T.S., 2014. Filoviruses in bats: Current knowledge and future directions. Viruses 6, 1759-1788. http://dx.doi.org/10.3390/v6041759

Table 1. Basic ecological and geographical information about bats implicated as Ebola virus reservoirs

Species	Distribution	Habitat	Day roosts	Migratory?
Franquet's epauletted fruit-bat (*Epomops franqueti*)	West to Central Africa, marginally East Africa	Common in rainforests, woodlands, and farmbush	Densely foliated large trees	Non-migratory
Hammer-headed fruit-bat (*Hypsignathus monstrosus*)	West to Central Africa, marginally in East Africa	Common in rainforests	Densely foliated trees, often near water	Non-migratory
Little collared fruit-bat (*Myonycteris leptodon*)	Nigeria eastwards	Common in rainforest, seasonally in woodlands	In bushes and trees in the forest	Seasonal migration between forests and woodlands

Misconceptions about Ebola, other viruses and bats

In light of huge number of victims of Ebola virus currently ravaging parts of West Africa and limited scientific information, there is a great deal of misconception about the virus, its source and transmission. In fact, there is currently no evidence suggesting that the source of the current outbreak of *Zaïre ebolavirus* (EBOV) in remote southeastern Guinea emanated from bats. While some bat species have been implicated as reservoirs, the wholesale condemnation of bats is uncalled for and may only serve to exacerbate the threats facing these otherwise ecologically beneficial animals. Here we endeavor to correct some misconceptions about Ebola and bats:-

- The Ebolavirus is not airborne and the mere presence of bats cannot lead to an outbreak of EVD. Therefore attempts to relocate or exterminate bats will only lead to break up of bat colonies and raise the risk of human contact.
- Chances that encounters with, or mere handling of, bats could lead to infections are minimal. However, we advise that only bat experts should handle bats with appropriate personal protective equipment.

- Habitat destruction and human encroachment on wildlife habitats, including forests; harvesting and consumption of bushmeat; and unlicensed trade in such wild animals as primates, may expose humans to hitherto unknown viruses and zoonotic diseases.

In conclusion, the wisest way forward it so simply leave bats alone. Don't disturb, touch or hunt them. Do not try to evict or cull/exterminate bat colonies. Wildlife hunting ("bushmeat"), including bats, is currently the most likely route for the Ebola virus to enter the human population.

A position statement by Bat Conservation Africa (BCA).
BCA is a network of bat researchers and conservationists working with African bats. Our mission is to facilitate research on, and conservation actions for, bats in Africa, through providing a network open to all bat conservation workers in the continent. Find more information on our website