

Flying Fox Monitoring and Disease Research

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More Emerging Infectious Diseases than EVER...most come from wildlife!

- 60% of EIDs are zoonotic
- 72% of these zoonotic EIDs come from wildlife.
- Disease emergence is complex, and requires a “One Health” approach

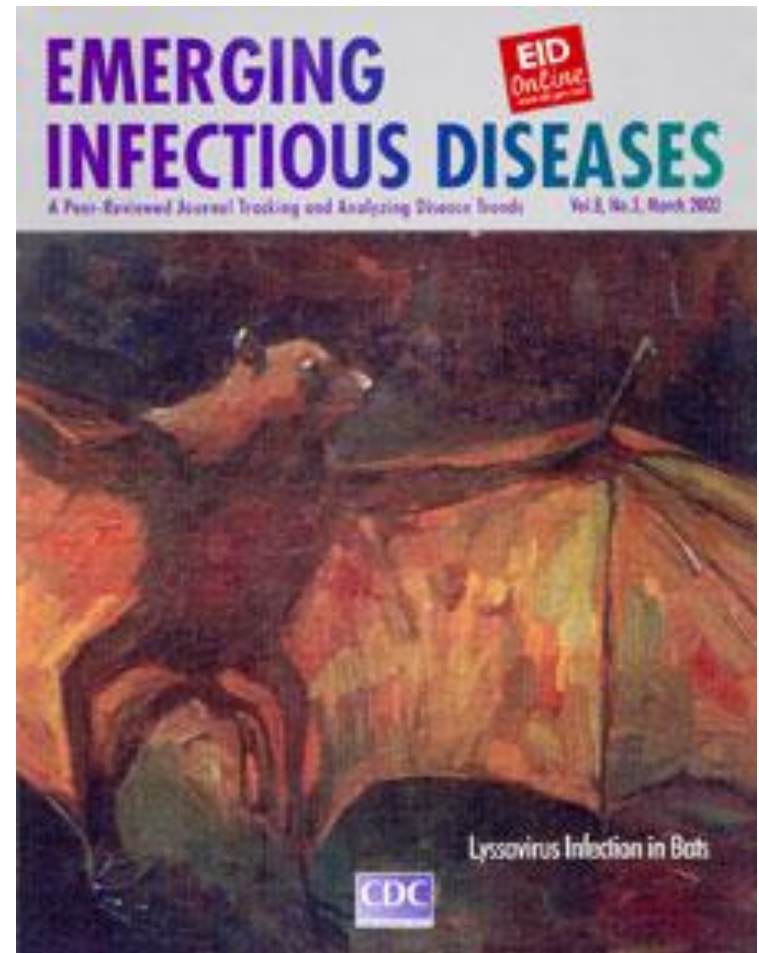


Important Emerging Viruses from Bats

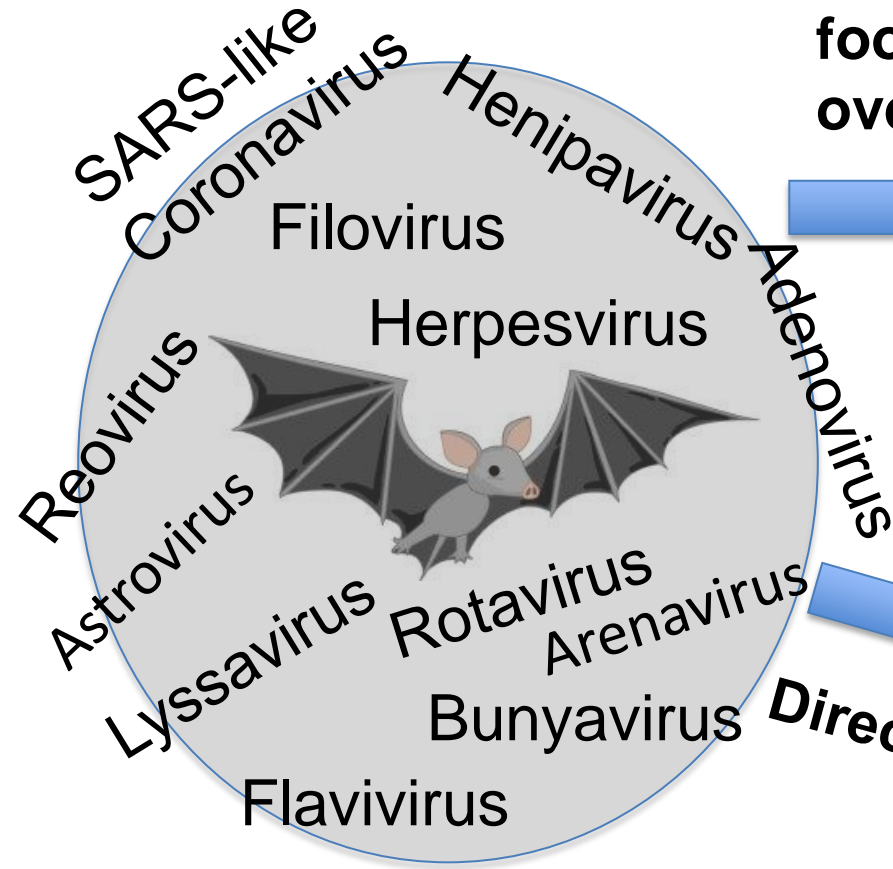
- ① Rabies and new lyssaviruses (n=12)
- ① Hendra virus (1994)
- ① Nipah virus (1998)
- ① SARS-CoV (2006)
- ① Ebola virus (1970s)
- ① Marburg virus (1970s)

① Calisher et al. 2006 – 66 known viruses

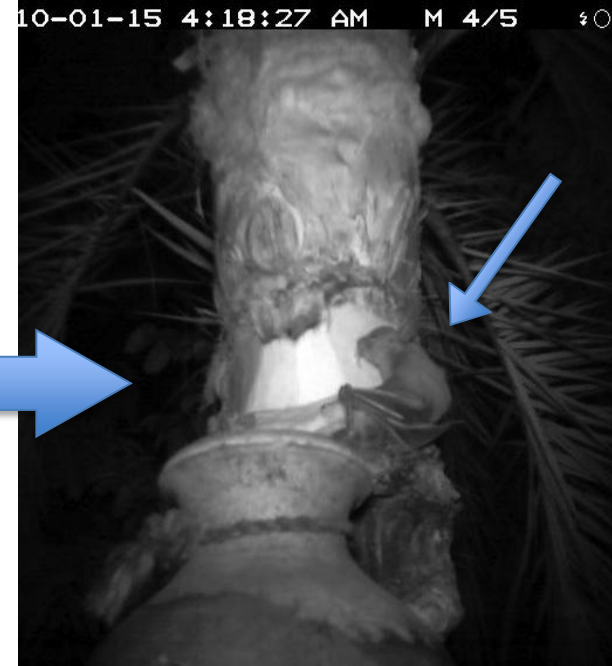
① Olival et al. 2012 - ~90 viruses



Viral “spillover”, bats to humans



Shared food/ecological overlap

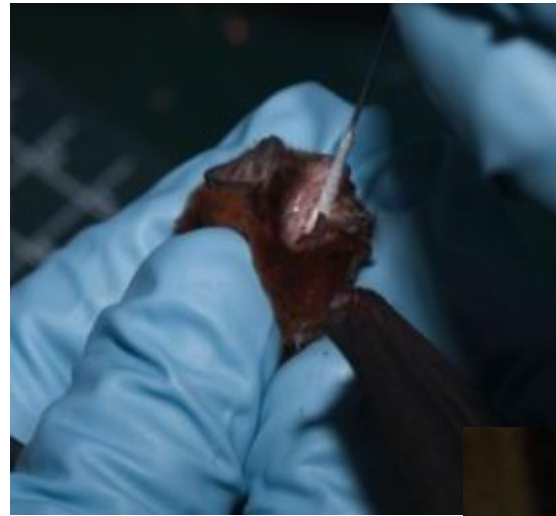
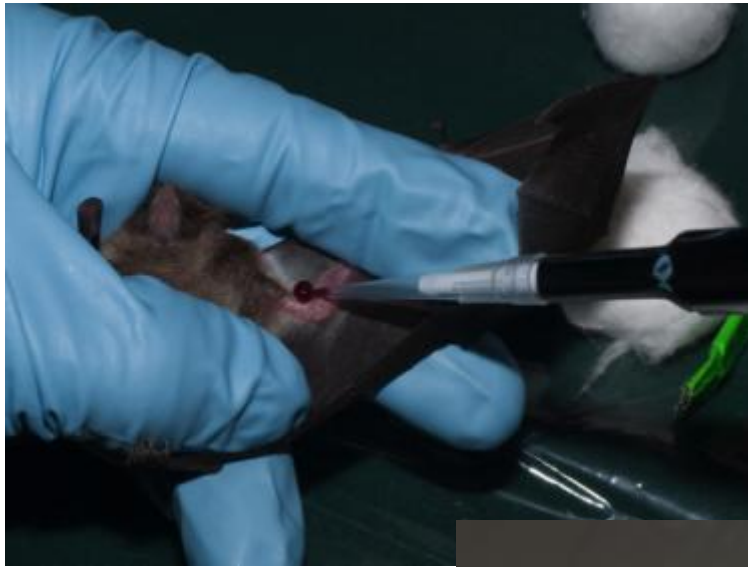


Direct contact



‘Zoonotic Pool’

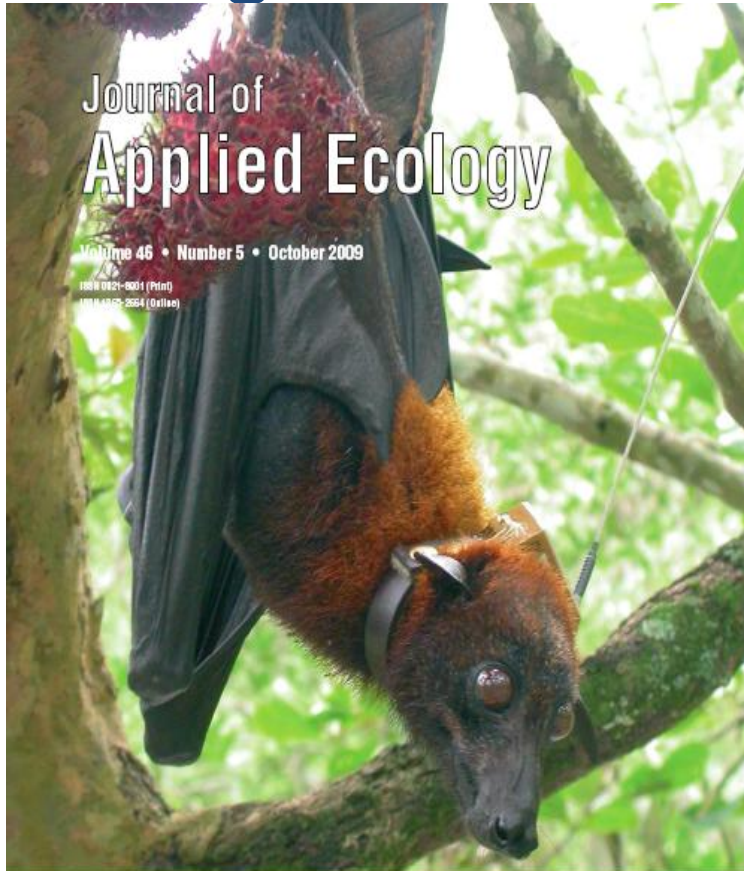
Active Bat Disease Surveillance



Blood, saliva,
feces, urine

Pics: Solon Morse,
Prateep Duangkae,
Jon Epstein

Ecology and conservation studies along with disease

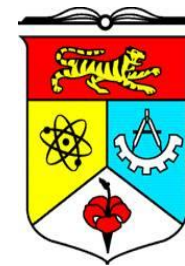


Editors: Jane Memmott, E. J. Milner-Gulland, Phil Hulme, Simon Thirgood, Marc Cadotte

- Conservation decision making
- Marine ecology
- Monitoring and management
- Population and biocontrol
- Methodological advances



JH Epstein, KJ Olival, JRC Pulliam, C Smith, J Westrum, T Hughes, AP Dobson, A Zubaid, SA Rahman, MM Basir, HE Field, and P Daszak. 2009. *Pteropus vampyrus*, a hunted migratory species with a multinational home-range and a need for regional management. Journal of Applied Ecology **46**:991-1002.



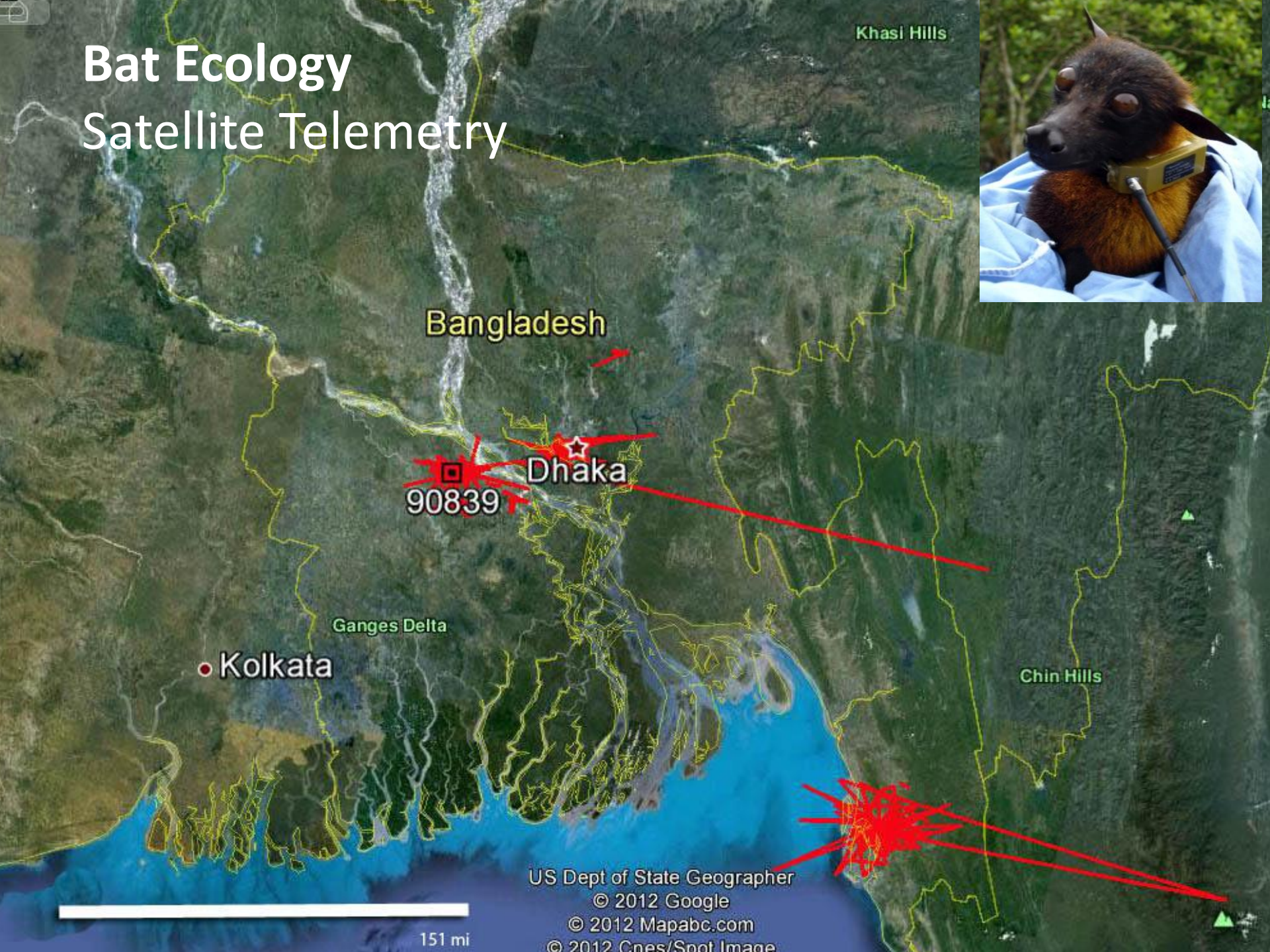
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EcoHealth Alliance
Local conservation.
Global health.

Bat Ecology

Satellite Telemetry



Bangladesh

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Kolkata

Ganges Delta

Chin Hills

US Dept of State Geographer

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151 mi

Flying Fox Roost Counts and Disease

- Species and roost locations (valuable for disease surveillance); Disease surveillance data can be used for conservation
- Population abundance
 - Determine optimal sample size for disease detection
 - Calculate prevalence
 - Roost movement (migration)
- Human-bat interactions for understanding disease “spillover” risk (e.g. bushmeat)