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Towards
the veterinary
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of the
future

Main topic : Surveillance and control of emerging diseases

Diversity of Bats During different seasons for the Survey for Emerging Zoonotic Pathogens in Georgia

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Background: Bats (Order: Chiroptera) are hosts of a wide range of zoonotic pathogens. The importance of bats as reservoirs of potentially transmissible infectious viruses to humans and other animals, has become more evident in the past decades. Zoonotic diseases can be transmitted to humans directly or indirectly. These contacts are often driven by environmental factors, especially seasonal variations in temperature, humidity and rainfall that impact food resources and habitat.

Objectives: The goal of the survey is to understand the probability of a zoonotic spillover with seasonal variation and origins of potentially dangerous viruses and bacteria endemic in bat populations.

Methods: Georgia NCDC conducted 7 field trips: Four in summer, one in autumn and two in the winter period (it was the first-time sampling from bat wintering colonies in Georgia) in four different locations of Georgia from April 2022 till February 2023.

Samples included: oropharyngeal swab; urine (free catch method or urogenital swab); blood (wing punch biopsies); fresh fecal sample (or rectal swab); and ectoparasites (in 95% ethanol). Hibernation site survey was carried out under the guidance of license expert zoologist without causing unreasonable disturbance to bat roosts.

Results: In total, 280 bats of 6 different species were sampled as well as 2 new hibernating colonies were found during monitoring. Endemic species that were identified included: *Rhinolophus ferrugineus*, *Myotis blythii*, *Rhinolophus hipposideros*, *Miniopterus schreibersii* (carrying West Caucasian bat lyssavirus); *R. euryale*; (in China, SARS-related CoV was in horseshoe bats). Samples were separated and transferred to bacteriology and virology groups within NCDC to screen for bacterial and viral pathogens. In addition, ectoparasites were collected from 30 bats, which were stored for further identification and laboratory investigations.

Conclusion: Approach with Seasonal sampling will lead to understand relationship between biodiversity change, disease emergence predictable at different landscape and seasons.

Further laboratory testing of bat samples for high-consequence viral and bacterial pathogens will provide us with data to assess the risk for the potential emergence of new epidemics or pandemics.