

study we evaluate the use of infrared thermography to detect thermal changes associated with experimental RABV infection in big brown bats (*Eptesicus fuscus*) in a captive colony. Our results indicated that 62% of rabid bats had detectable facial temperature decreases ( $-4.6^{\circ}\text{C}$ ,  $\text{SD} \pm 2.5$ ), compared to pre-inoculation baseline values. These data suggest potential utility for discriminating rabid bats in natural field settings. In addition, focusing upon RABV circulating in the United States between 2008 – 2012, we confirmed spillover events of bat RABV among carnivores and identified cross-species transmission events caused by four lineages of RABV associated with insectivorous bats. This study provides a glimpse into RABV pathobiology and spillover dynamics among and between bats and a variety of mesocarnivores.

#### CO.60 KNOWLEDGE, ATTITUDES AND PRACTICES AMONG POPULATIONS EXPOSED TO BATS IN SOUTHERN NIGERIA

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Among the currently recognized species in the *Lyssavirus* genus worldwide, all but one (Mokola virus) has been identified in bats. Recent discovery of emerging pathogens of zoonotic importance in bats raises concerns about health risks of populations that directly or indirectly come in contact with these diverse mammals. Idanre, an ancient city situated in Southwest Nigeria, conducts a unique bat festival twice annually, where the populations have traditional practices that involve capturing and consuming bats. These activities bring them into direct contact with bats that are important not only because of potential exposure to lyssaviruses, but also to other emerging pathogens. A knowledge, attitude and practices survey was developed and administered to investigate the potential risk of exposure to emerging diseases among these populations living around bat caves, as well as those who participate in the bat festival. Serum samples were collected from humans and bats in the study area, and were analyzed for lyssaviruses and other potential microorganisms. Participants ( $n=142$ ) were recruited from 90 households in 5 different communities (4 rural and 1 urban). Participant ages ranged between 9 – 83 years. Twenty-one (28%) participants claimed to have participated in the bat festival and 15 (71%) participated twice a year. Of those that participated in the festival, 14 (67%) were involved in multiple activities: 14 (67%) reported involvement in bat preparation/consumption, 12 (75%) hunted bats, 4 (19%) sold bats, and 5 (24%) watched the events. Thirty (26%) study participants claimed to have entered a bat cave and 53 (50%) touched a live bat. Eighteen (18%) participants who reported direct contact with bats also reported scratches and 14 (15%) reported bat bites. Ninety-three participants (92%) made no attempt to protect their families from bat bites, while 5 (5%) prevented bats from entering the home, and 1 (1%) reported destroying bats entering the home. Only 10 (15%) participants claimed to have an extensive knowledge of rabies. However, 33 (53%) would do nothing if bitten or scratched by a bat. A total of 102 blood samples were collected from humans. Neutralization against rabies virus was detected in 3 (3%). There was no evidence of neutralization against non-rabies lyssaviruses. Among the 145 bat sera, seroprevalence of Lagos Bat Virus (LBV) antibodies was observed in *Rousettus aegyptiacus* (51%) and *Eidolon helvum* (24%) species. Some of the LBV-positive samples additionally neutralized Shimoni bat virus (SHIBV). Our results indicate an insufficient knowledge about rabies among the study population and an increased exposure through practices and attitudes towards bats, that maybe harboring unknown zoonotic

pathogens. This calls for plans to provide continuous surveillance of important pathogens of risk to human health, and the need to have preventive measures and response strategies in place to safe-guard human health.

#### CO.61 SPACE-TIME DYNAMICS OF ATTACKS BY HEMATOPHAGOUS BATS AND GEOGRAPHIC ACCESS TO HEALTH CARE IN A REGION OF MEXICO.

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The objective of this study was to estimate the spatial patterns in rates of aggression by vampire bats (*Desmodus rotundus*) and identify human populations with limited geographic access to medical service with post-exposure prophylaxis. METHOD: A set of points georeferenced with case reports of aggression by bats in humans was used to model the rates-adjusted of aggression against residents of local communities in the south of the State of Mexico. A continuous prediction area was constructed based on the rates of aggression from events during the year 2000 (outbreak of rabies cases in animals, and attacks to humans) and during the period 2001 to 2009 (stability in the frequency of cases) using a spatial interpolation method (Poisson-Kriging). The coverage areas of health services were calculated through a network analysis, estimating travel times (30 to 60 minutes) to the nearest hospital unit. Both estimates were integrated with risk maps. RESULTS: Two thousand one hundred ninety people of different sexes and ages were attacked by vampire bats in the region; 94.8% of attacks were recorded in the municipalities of Tejupilco and Luvianos. In 2000, there was an outbreak of rabies in animals, with an increase of 74.4% in the number of attacks (1629 recorded). During 2001-2009, the rate of aggression by gender showed a significant increase in women (58.6%) in contrast to men (41.4%). By age group, the highest percentage of attacks was from ages 1 to 19. By anatomical region more attacks were recorded in the upper extremities with 784 cases. Seasonal aggression was observed, with greater frequency in the months of April to August. Mapping was developed for both Poisson-Kriging model designs, a trend toward a higher rate of aggressions being observed in both models in the north-west, in the municipality of Luvianos. This distribution and seasonality is related to several factors such as: high production and marketing of livestock in the municipality, the physical and geographical conditions in the region that favor the survival of hematophagous bat, and socio-economic conditions with high level of social vulnerability and limited access to health services of basic levels. CONCLUSION: The Geographic Information Systems in Health provide a tool for geostatistical analysis, management and planning which is essential because it is possible to address the risk of aggression toward humans by vampire bats from a perspective which is spatial, systemic, multi-causal and interdisciplinary. Acknowledgements The authors wish to acknowledge to María Eugenia Jaimes from Comite de Fomento y Protección Pecuaria del Estado de México. Facultad de Geografía-UAEMex for his assistance with the creation of cartography. MD Gabriel O'shea Cuevas from Instituto de Salud del Estado de México.