



is complex, from semi-arid thorn scrub and acacia savannah below 1200m to pine forest at 2400 m. Monkeys of several species occur throughout. Most confirmed cases lived in wooded areas between 1500 m and 1920 m. We made human bait collections (March 1993) in (i) non-thorny bush/woodland, associated with the majority of confirmed cases; (ii) gallery woodland on the semi-arid floor of the valley, associated with early cases; (iii) banana orchard/thornbush thicket. In the non-thorny bush/woodland *Aedes africanus* was often abundant, and by far the most commonly collected species, although some sites yielded significant numbers of *Ae. ingrami* and *Ae. keniensis*. In the discontinuous gallery woodland *Ae. luteocephalus*, *Ae. metallicus* and *Ae. vittatus*, all implicated as YF vectors in semi-arid or arid regions of the continent, were present. *Ae. bromeliae*, an important peri-domestic YF vector, was collected in the thornbush thicket but not in banana orchards. To date, we have isolated yellow fever virus from *Ae. africanus* (1 pool) and *Ae. keniensis* (2 pools). Water storage is not practiced in the area; domestic vectors were rare and there was no indication of domestic transmission. We conclude that this was a sylvatic outbreak in which human cases were directly linked to an epizootic and were independent of each other. The epidemiologic data fully corroborate this interpretation. There is an urgent need to identify potential sylvatic corridors that could conduct the enzootic from the Kerio Valley to adjacent areas where water storage practices support domestic vectors and the human population has not been vaccinated.

159 NATURAL VERTEBRATE HOSTS IN THE TICK-BORNE ENCEPHALITIS VIRUS TRANSMISSION CYCLE: AMPLIFICATION OF INFECTION PREVALENCE BY NONVIREMIC TRANSMISSION. Labuda M*, Kozuch O, Eleckova E, Zuffova E, and Nuttall PA. Institute of Virology, Slovak Academy of Sciences, Bratislava, Slovakia; and NERC Institute of Virology and Environmental Microbiology, Oxford, U.K.

Tick-borne encephalitis (TBE) is the most important human arboviral disease in Europe with TBE virus activity permanently high in some countries (e.g. Austria), and apparently on the decline in others (e.g. Slovakia). From blood and target organs of more than 6,000 small terrestrial mammals live-trapped in selected territories of Central Europe during 1964 to 1991, 48 TBE virus isolates were recovered; 20 isolates were obtained from *Apodemus flavicollis* and 22 from *Clethrionomys glareolus* species. About 15% of these abundant rodent species had neutralizing antibodies to TBE virus. The field collected data raise the question: how do these rodent species support the spread of infection into newly feeding ticks? Laboratory experiments were designed to mimic natural conditions of virus transmission by allowing infected and uninfected *Ixodes ricinus* ticks to feed together on uninfected hosts. The greatest numbers of infected ticks were obtained from *Apodemus* field mice, even though they had undetectable or very low levels of viremia. In contrast, bank voles (*C. glareolus*) and pine voles (*Pitymys subterraneus*) developed substantial levels of viremia but gave rise to 4- to 5-times fewer infected ticks compared with field mice. The results suggest that *Apodemus* mice are the most important amplifying hosts of TBE virus and "nonviremic" transmission is an important mechanism for the survival of TBE virus in nature.

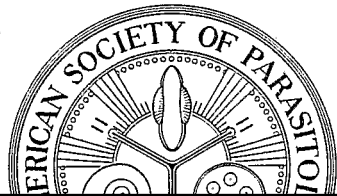
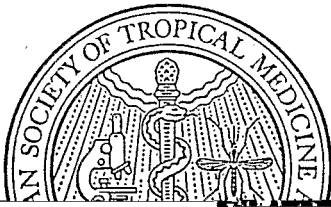
160 HOST-PARASITE BIODIVERSITY: THE INTERFACE OF FIELD PARASITOLOGY, SYSTEMATICS, AND MAMMALOLOGY. Gardner SL*. Department of Nematology, University of California, Davis, CA.

From 1984-1993, approximately 10,000 mammals and their parasites have been collected from throughout Bolivia. Techniques of field parasitology-mammalogy developed during the period of this study have been applied to other disciplines such as botany, herpetology, and ornithology. During our field studies and subsequent laboratory analyses, the highest priority continues to be the acquisition and tracking of accurate data. These data can be used for studies from the level of molecular phylogenetics through ecosystem ecology. Accurate logging of habitat types through the use of field notes, photographs, and now video tape, and digital photography is extremely important for documentation and archival storage of data. In the field, specimens are collected, habitat noted,

**PROGRAM AND ABSTRACTS OF THE
JOINT ANNUAL MEETING
OF THE AMERICAN SOCIETY OF
TROPICAL MEDICINE AND HYGIENE
AND THE AMERICAN SOCIETY OF
PARASITOLOGISTS**

**The Hyatt Regency
Atlanta, Georgia
October 31–November 4, 1993**

**Supplement to
THE AMERICAN JOURNAL OF
TROPICAL MEDICINE AND HYGIENE**



7.342 ex 1

1993