

Vertebrate Reservoirs of Disease

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OBJECTIVE: To provide prompt identification of specimens and to advise concerning the ecology of vertebrates involved in the transmission of human disease.

BACKGROUND: Our large vertebrate collection was moved to the Applied Scientific Research Corporation of Thailand, where it became the nucleus of the Thai National Reference Collections under the curatorship of the late Mr. Kitti Thonglongya. A definitive collection of Asian rats and mice is still housed at SEATO Medical Research Laboratory.

Vertebrate studies starting with birds in the ecology of Japanese Encephalitis virus later shifted to mammals. Surprising discoveries in Thai mammals upset previous taxonomies, necessitating revisions throughout the entire Asian range of some genera. (Travel outside of Thailand was at personal expense).

DESCRIPTION: All possible evidence for species—limits has been assembled including scientific study—skins and skulls, tape recordings of vocalizations, observations of behavior and ecology in the natural state, host—specific ectoparasites, karyograms, and breeding experiments. Native mouse colonies have been distributed to laboratories at Yale, Roswell Park Memorial Institute, NIH, Houston, Woods Hole, Bonn, Cambridge, Lausanne, and New Zealand. At the moment we have requests for shipment of mice to Buffalo, NIH, Houston, and Hannover. The above laboratories are studying viruses, cancer, cytogenetics, chromosome banding patterns, and satellite DNA. Our colony of the Asian house mouse, *Mus musculus castaneus*, has been especially valuable for cytologic and cancer research because of its wealth of novel alleles unknown in the laboratory house mouse.

PROGRESS: *Identification of Infected Animals.* Some identifications for various studies are listed in Table 1.

Taxonomic Research: Table 2 is an addition to the taxonomic checklist previously reported (1). Determination of the number of species of gibbons (Table 3) grew out of interest in rearing these apes at SEATO Medical Research Laboratory, where vocal distinctions were first noticed, and where karyotypes of three species were prepared. With E. Marshall, tape recordings were made of every species (in the wild except for *Hylobates concolor* (Figure 1)). We discovered previously unknown areas of *Hylobates agilis* in Southern Thailand and Central Kalimantan (Figure 2). We are the first to possess data permitting a definitive enumeration of the species (Table 3).

REFERENCE:

1. Marshall, J. T.: SEATO Medical Research Laboratory Annual Report, April 1974

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Table 1. Identification of Infected Animals

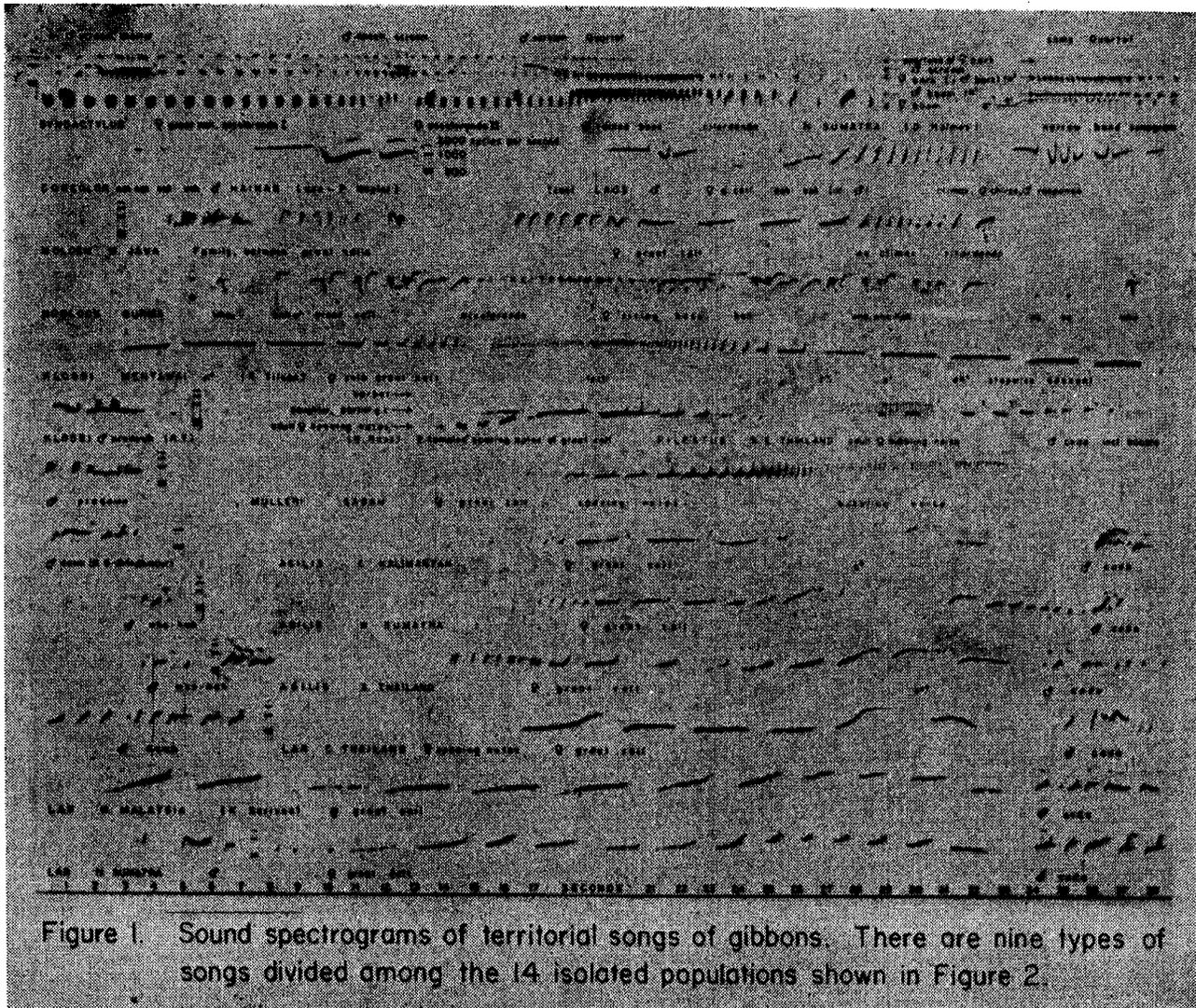
Study Project	Animals Identified	Remarks
Medico-ecology and Economic study, Nepal	<p><i>Bandicota bengalensis</i></p> <p><i>Mus musculus homourus</i></p> <p><i>Mus musculus castanens</i></p> <p><i>Rattus turkestanicus</i></p> <p><i>Rattus nitidus</i></p> <p><i>Rattus brunneus</i></p>	<p>Large mounds in fields, burrows to 60 feet long, also in houses; first records for Kathmandu Valley high altitude villages; also fields at Kathmandu</p> <p>Houses at Kathmandu and Hetaura</p> <p>High altitudes, in the house</p> <p>Kathmandu, buildings</p> <p>Buildings and fields, Kathmandu, Giant form of, or related to, <i>Rattus rattus</i>.</p>
Rabies (positive, diagnosed by CPT Dill)	<p><i>Rattus rattus mindanensis</i></p> <p><i>Rattus exulans</i></p> <p><i>Rattus rattus</i></p>	<p>Karyotype unlike <i>R. rattus</i> fide A. Gropp.</p> <p>Young male, no. 4-499; on 16 Sept 74 entered base bowling alley and bit sailor; Subic Bay, Philippines</p> <p>Host of fleas; indoors at Paktongchai and Bangkok</p> <p>Host of chiggers; forest at Sakaerat Station, fields at Paktongchai, houses and trees at Bangkok</p>
Kaeng Khoi virus	<p><i>Rattus hipoon</i> sp. nov.</p> <p><i>Rattus rattus</i></p> <p><i>Rattus neilli</i> sp. nov. (Table 3)</p> <p><i>Falca severus</i></p> <p><i>Taphozous theobaldi</i></p> <p><i>Tadarida plicata</i></p>	<p>Limestone cliffs, mouth of cave</p> <p>Cave mouth, also far inside</p> <p>Limestone cliffs, including mouth of cave</p> <p>A falcon which takes bats during their exit flight at dusk</p> <p>A larger bat in the cave</p> <p>The lesser, more numerous bat, and the one subject to fatal liver disease from the virus</p> <p>Hosts of ticks</p> <p>Coordination of scientific names used by Russian authors</p> <p>Hosts of ticks; fields at Paktongchai and Bangkok</p>
Tick virus survey <i>Gnathostoma spinigerum</i> Rickettsiae; systemic poisons against ectoparasites	<p>Small carnivores, rodents</p> <p>Mustelidae</p> <p><i>Bandicota indica</i></p> <p><i>Bandicota savillei</i></p> <p><i>Rattus surifer</i></p> <p><i>Rattus norvegicus</i></p> <p><i>Rattus losea sakeratensis</i></p>	<p>Hosts of ticks; fields at Paktongchai</p> <p>Host of fleas; forest at Sakaerat Station</p> <p>Host of fleas; indoors at Paktongchai (Black phase) and Bangkok</p> <p>No known ectoparasites; fields at Paktongchai</p>

Table 2. Changes in Checklist of Thai Rats and Mice (1)

Former Name	New Name
Subgenus <i>Leggadilla</i>	Subgenus <i>Pyromys</i>
Rajah Rats	Subgenus <i>Maxomys</i>
Niviventer Group	Subgenus <i>Niviventer</i>
<i>Rattus niviventer</i>	<i>Rattus confucianus</i>
<i>Rattus fulvescens</i>	<i>Rattus bukit</i>
<i>Rattus fulvescens fulvescens</i>	<i>Rattus bukit gracilis</i>
<i>Rattus nielli</i> is added, as number 37, in the Subgenus <i>Leopoldamys</i> .	
" <i>Rattus sakeratensis</i> "	<i>Rattus losea sakeratensis</i>

Table 3. Taxonomy of Gibbons (Lesser Apes), Genus *Hylobates*

Scientific Name	Common Name	Characteristic
A. Subgenus <i>Symphalangus</i>		50 chromosomes
1. <i>Hylobates syndactylus</i>	Siamang	
B. Subgenus <i>Nomascus</i>		52 chromosomes
2. <i>Hylobates concolor</i>	Hainan gibbon	
C. Subgenus <i>Hylobates</i>		44 chromosomes
I. Peripheral, isolated species		
3. <i>Hylobates moloch</i>	Javan gibbon	
4. <i>Hylobates hoolock</i>	Hoolock	
5. <i>Hylobates klossi</i>	Mentawai gibbon	
II. The Lar complex		
a. Superspecies of <i>pileatus/muelleri</i>		Bubbling great-call
6. <i>Hylobates pileatus</i>	Pileated gibbon	
7. <i>Hylobates muelleri</i>	Bornean gibbon	
b. Superspecies of <i>agilis/lar</i>		"Soaring" great-call
8. <i>Hylobates agilis</i>	Agile gibbon	
9. <i>Hylobates lar</i>	White-handed gibbon	



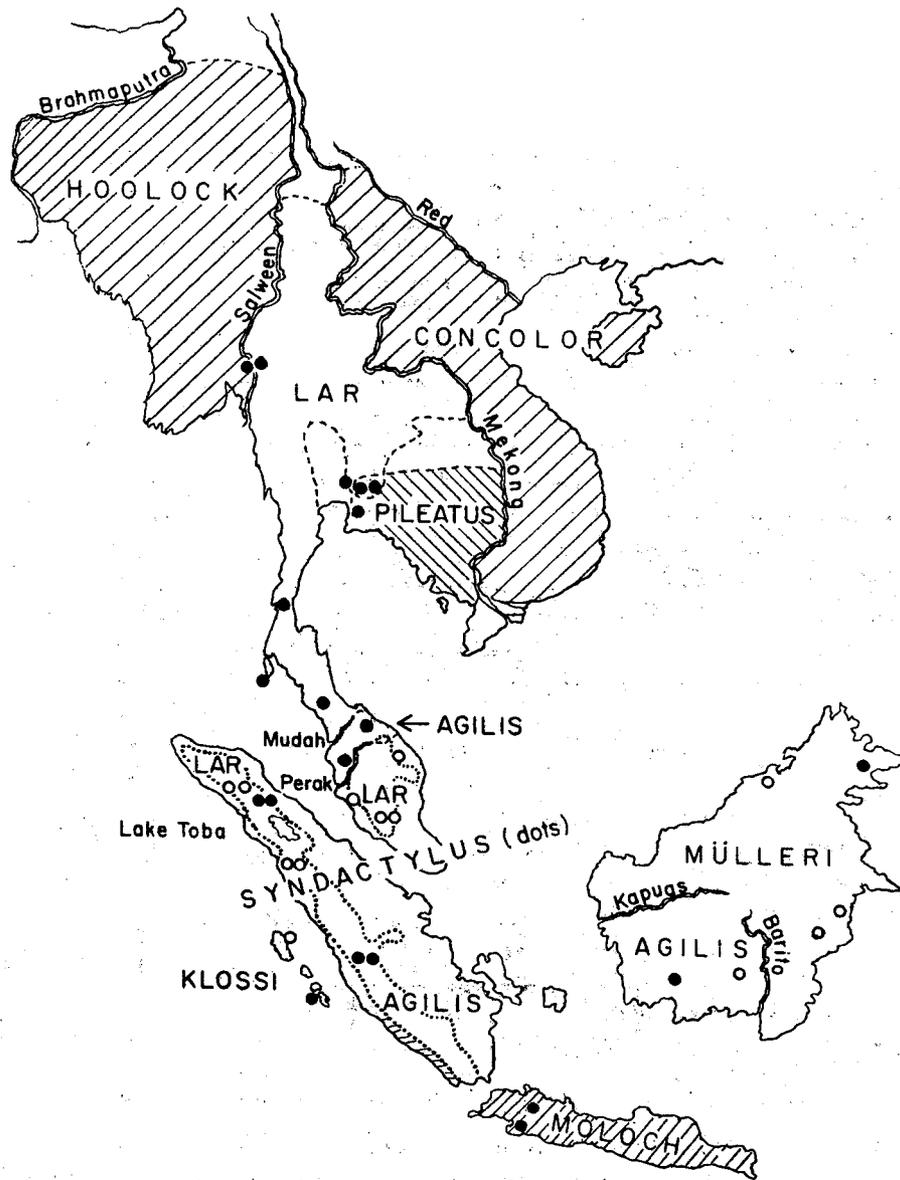


Figure 2. Distribution of species of gibbons. Solid circles indicate the places where the author tape-recorded wild gibbons, open circles are places whence recordings were supplied by colleagues.