BODY OF REPORT

SEATO Medic Study No. 49	Ectoparasites of the Vertebrates of Thailand
Project No. 3A 025601 A 811	Military Medical Research Program S. E. Asia
Task 01:	Military Medical Research Program S. E. Asia
Subtask 01:	Military Medical Research Program SEASIA (Thailand)
Reporting Installation:	US Army-SEATO Medical Research Laboratory APO San Francisco 96346
	Division of Medical Research Laboratories
	Department of Medical Entomology
Period Covered by Report:	1 April 1964 to 31 March 1965
Principal Investigators:	Major John E. Scanlon, MSC (1) Douglas J. Gould, Ph.D. (2)
Associate Investigators:	Kitti Thonglongya, B. S. Panita Lakshana, B. S. C. M. Clifford * T. C. Maa ** Colonel R. Traub, MSC, (Ret.) ***
Reports Control Symbol:	MEDDH-288
Security Classification:	UNCLASSIFIED

Objective: To establish a list of the ectoparasites of the vertebrates of Thailand. To assemble information on the host-parasite relationship of the various species, information on their geographical distribution, abundance, and other facts of their biologies.

(1) Departed for CONUS on PCS, June 1964
(2) Arrived from CONUS on PCS, July 1964

* United States Public Health Service, Rocky Mountain Laboratory, Hamilton, Montana

** Bishop Museum, Honolulu

*** University of Maryland, School of Medicine, Baltimore

Description: The collection of vertebrates during the period of this report was carried out in support of studies of the ecology of rickettsial diseases and of leptospirosis by the Department of Rickettsial Diseases and the Department of Veterinary Medicine, respectively. The ectoparasites removed from mammals, birds and reptiles collected were preserved, sorted into major groups and identified by Department personnel or submitted to specialists outside the SMRL for identification. Emphasis was placed on the identification of aliquots of collections used for inoculation of test animals employed in the isolation of pathogenic rickettsiae and leptospires. Taxonomic and ecologic studies were conducted on the vertebrate hosts, chiefly the mammals.

Progress: In cooperation with the Thai and U.S. Component rickettsial disease specialists, five field trips were made during the period of this report to the following regions for the purpose of collecting vertebrates and their ectoparasites:

1. Chiengmai, Amphoe Chiengdao and Amphoe San Kam Phaeng
2. Udonthani, Nongkai and Nakorn Panom
3. Ubolrajthani, Chong Mek and Khong Kium
4. Pattani, Yala and Narathivas
5. Chiengrai, Mae Jan, Mae Sai and Chieng Saen.

Over 800 vertebrates chiefly mammals were collected and examined for ectoparasites during these trips (Table1). More than 1000 collections of ectoparasites were made from these vertebrates.

Chiggers: Because of emphasis on scrub typhus studies during the year most of the effort in ectoparasite investigations have been concerned with this group. Over 12,000 microscope slide mounts of chiggers were prepared. These specimens were removed from 414 collections involving 13 host species from six localities. A new species of each of the following genera was found-- Leptotrombidium, Ascoschongastia (Laurentella), Doloisia and Schongastia. The following four species constitute new records for Thailand: Leptotrombidium oreophilum, Gahrliepia marshi, G. isonychia and G. ewingi ewingi. The total number of species of Trombiculid mites now recorded from Thailand is 111. During the year descriptions of 19 new species of chiggers were prepared by Department personnel in cooperation with specialists in Malaysia and U.S. Descriptions of two new species, Walchiella hanseni and Susa traubi have been submitted to journals for publication. The description of a third new species, Leptotrombidium (Lorillatum) panitae, was published during the year.

Fleas: During March 1965 a collecting trip was made to the Chiengrai region by Department personnel with members of the Rickettsial Diseases project. From three localities, Mae Chan Mae Sai and Chieng Saen, 198 mammals were trapped. The majority of these were rodents, with Rattus exulans and R. rattus predominant. In the Mae Chan area, the rat flea Xenopsylla cheopis was very abundant on these hosts. The cheopis index in that area ranged from 1.0 to 8.25. A strain of murine typhus rickettsiae was isolated from a pool of fleas collected at Mae Chan. At

Table 1

VERTEBRATES AND ECTOPARASITES COLLECTED IN THAILAND, APRIL 1964 TO MARCH 1965

Vertebrate Species	Number collected	Ectoparasites *				
		Lice	Chiggers	Ticks	Mites	Fleas
1. Bandicota indica	13	2	12	8	3	1
2. Bandicota sp.	1	-	-	-	1	-
3. Callosciurus caniceps	9	2	7	1	5	-
4. C. macclellandi	2	-	1	-	-	-
5. C. notatus	1	-	-	-	-	-
6. Cannomys badius	2	1	2	-	2	-
7. Cynopterus brachyotis	1	1	-	-	1	-
8. Gecko gecko	1	-	-	-	1	-
9. Herpestes javanica	1	1	1	-	-	-
10. Menetes berdmorei	6	2	7	-	1	-
11. Rattus berdmorei	22	-	14	11	12	4
12. R. cremoriventer	8	2	6	2	7	-
13. R. exulans	293	44	18	-	21	53
14. R. muelleri	2	-	2	-	2	-
15. R. niviventer	1	-	1	1	1	-
16. R. rajah	99	1	79	8	85	-
17. R. rattus	357	56	279	72	136	11
18. R. sabanus	1	-	1	-	1	-
19. Tupaia glis	39	1	30	17	10	-
20. Varanus sp.	2	-	-	1	-	-
21. "cow"	1	-	-	1	-	-
22. "dog"	2	-	-	-	-	-
Total	864	113	461	122	289	71

* Number of collections

nearby Ban Pha Tang both Ctenocephalides canis, the dog flea, and X. cheopis were also abundant on rats. The children of this hamlet were reportedly frequently bothered by flea attacks. The high cheopis index observed in this region may be significant in light of the recent outbreaks of plague in South Viet nam.

Mammals: Rattus exulans - This small rat has adapted itself to living in close proximity to man, and in some domestic situations it may be more common at times than R. rattus. The repeated isolation of R. tsutsugamushi from the tissues of this rat in the vicinity of Udornthani suggests that this species may play an important role in the dissemination of scrub typhus. It has been reported to be a reservoir of that disease in Burma. In addition, the rat flea Xenophsylla cheopis -- vector of both bubonic plague and murine typhus -- was collected in abundant numbers from R. exulans in Chiengrai province. One isolation of murine typhus rickettsiae was obtained from rat fleas from that province this year.

Herpestes javanica - The mongoose is apparently not common in Thailand, but is widely distributed in this country. The isolation, this year, of a strain of R. tsutsugamushi from the tissues of this carnivore makes a new addition to the list of potential reservoirs of scrub typhus.

Summary: Ectoparasites were removed from as many as possible of the 800 vertebrates captured during the year in studies of scrub typhus and other diseases. Nineteen new species of chiggers were illustrated and are being described by Department personnel or cooperating specialists. Approximately one hundred and

eleven species of chiggers have now been found in the Thailand collections. Host data, geographical and habitat data are being tabulated for all of the vertebrate hosts and ectoparasites.

Conclusion: The ectoparasite fauna of certain small mammals groups in Thailand (chiefly rodents) was extensively studied during the year. The chiggers were by far the most important ectoparasites from the disease viewpoint. Further studies on mammals collected in the various disease programs will undoubtedly produce additional records. The eventual aim of the study is the production of a catalog of all of the important ectoparasites in Thailand, for the support of future disease studies.