BODY OF REPORT

SEATO Medic Study No. 41	Japanese Encephalitis Virus at Bang Phra, Cholburi
Project No. 3A 025601 A 811	Military Medical Research Program S. E. Asia
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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
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Objective: To determine the presence of Japanese encephalitis virus and other viral agents in mosquitoes at the Bang Phra horse farm of the Queen Saovabha Institute (Red Cross Society of Thailand), at Cholburi, Southeastern Thailand. Japanese encephalitis was detected in horses on the farm by clinical and serological means several years ago. Mosquitoes were also collected for determination of population trends.

Description: Mosquitoes are collected several times a week by means of a Magoon trap baited with a horse and a WRAIR model light trap. Mosquitoes are identified, pooled by species and frozen at -70°C until they can be inoculated

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

Table 1

SPECIES OF CULICIDAE FOUND AT BANG PHRA IN THIS STUDY

Anopheles

(Anopheles)

1. argyropus (Swellengrebel), 1914
2. barbirostris Van der Wulp, 1884
3. campestris Reid, 1962
4. indiensis Theobald, 1901
5. lesteri Baisas and Hu, 1936
6. nigerrimus Giles, 1900
7. peditaeniatus (Leicester), 1908
8. sinensis Wiedemann, 1828

(Cellia)

9. aconitus Donitz, 1902
10. annularis Van der Wulp, 1884
11. jamesii Theobald, 1901
12. kawari (James), 1903
13. kochi Ludlow, 1902
14. philippinensis Ludlow, 1902
15. subpictus subpictus, Grassi, 1899
16. subpictus malayensis Hacker, 1921
17. tessellatus Theobald, 1901
18. vagus Donitz, 1902

Ficalbia

(Ficalbia)

19. minima (Theobald), 1901

(Mimomyia)

20. hybrida (Leicester), 1908
21. chamberlaini (Ludlow), 1904

(Etorleptiomyia)

22. luzonensis (Ludlow), 1905

Mansonia

(Coquillettidia)

23. crassipes (Van der Wulp), 1881

(Mansonoides)

24. annulifera (Theobald), 1901
25. indiana Edwards, 1930
26. uniformis (Theobald), 1901

Uranotaenia

27. edwardsi Barraud, 1926
28. campestris Leicester, 1908
29. lateralis Ludlow, 1905

Aedes

(Stegomyia)

30. albopictus (Skuse), 1894

(Aedimorphus)

31. mediolineatus (Theobald), 1901
32. taeniorhynchoides (Christophers), 1911
33. vexans

(Neomelaniconion)

34. lineatopennis (Ludlow), 1905

Aedeomyia

35. catasticta Knab, 1909

Armigeres

(Armigeres)

36. subalbatus (Coquillett), 1898

Culex

(Lutzia)

37. fuscanus Wiedemann, 1820

(Neoculex)

38. brevipalpis, (Giles), 1902

(Lophoceraomyia)

39. rubithoracis (Leicester), 1908
40. infantulus Edwards, 1926

(Culiciomyia)

41. nigropunctatus Edwards, 1926

(Culex)

42. annulus Theobald, 1901
43. bitaeniorhynchus Giles, 1901
44. fuscocephalus Theobald, 1907
45. gelidus Theobald, 1901
46. quinquefasciatus Say, 1823
47. pseudovishnui Colless, 1957
48. sinensis Theobald, 1903
49. sitiens Wiedemann, 1828
50. tritaeniorhynchus Giles, 1901
51. whitmorei (Giles), 1904

intracerebrally into suckling mice by the Virus Department.

Progress: From April 1964 to February 1965 a total of 217 collections were obtained the light trap and 106 collections from the Magoon trap yielding 220,069 and 1,553 mosquitoes, respectively. Of the mosquitoes collected, during this period 89 pools of C. tritaeniorhynchus, 89 pools of C. gelidus and 47 pools of C. fuscocephalus were tested for the presence of virus. Four isolations of Japanese B encephalitis virus were obtained from pools of C. tritaeniorhychus collected at Bang Phra on 24, 28 May, 3 June and 12 November 1964. No virus was obtained from pools of the other two species tested. This is the third year that an isolation of Japanese encephalitis virus has been made during November at Bang Phra.

Fifty one species of mosquitoes were collected during this period at Bang Phra (Table 1). The four most abundant species collected by light trap were Culex tritaeniorhynchus, C. gelidus, C. fuscocephalus and Aedes mediolineatus (Table 2). The peak period for abundance during 1964 fell between May and August. This was earlier than in previous years collections when the peak period occurred between September and November. The most abundant species collected in the horse-baited trap were C. gelidus, C. tritaeniorhynchus and Anopheles vagus (Table 3). The largest collections of these three species were obtained from horse-baited trap during May to July and C. gelidus collections rose again in January and February.

Summary: Four strains of Japanese encephalitis virus were isolated from pools of Culex tritaeniorhynchus collected at Bang Phra - - two from pools collected in May, one in June and one in November. This is the ninth virus isolation from mosquitoes collected at Bang Phra in the past three years. All isolations have come from C. tritaeniorhynchus and C. gelidus. The same species of mosquitoes predominated in the collections as in previous years, but the population peaks were reached earlier than before - - in the period May to August.

Table 2

LIGHT TRAP COLLECTIONS OF ABUNDANT SPECIES AT BANG PHRA

	Total No. females	Total No. collections	Total No. females	Total No. collections	Total No. females	Total No collections
	April 1964		May 1964		June 1964	
Anopheles peditaeniatus	0	18	0	14	12	24
Culex tritaeniorhynchus	1,539	18	23,700	14	23,617	24
Culex gelidus	750	18	4,439	14	10,634	24
Culex fuscocephalus	26	18	1,416	14	3,911	24
Aedes mediolineatus	100	18	318	14	4,178	24
Aedes vexans	86	18	186	14	773	24
Aedes taeniorhynchoides	8	18	134	14	204	24
Mansonia uniformis	207	18	85	14	176	24

	Total No. females	Total No. collections	Total No. females	Total No. collection	Total No. females	Total No. collections
	October 1964		November 1964		December 1964	
Anopheles peditaeniatus	337	18	1,179	20	579	21
Culex tritaeniorhynchus	10,068	18	6,020	20	2,950	21
Culex gelidus	4,375	18	4,751	20	7,937	21
Culex fuscocephalus	1,254	18	1,063	20	659	21
Aedes mediolineatus	876	18	82	20	6	21
Aedes vexans	136	18	16	20	2	21
Aedes taeniorhynchoides	35	18	4	20	0	21
Mansonia uniformis	169	18	371	20		

	July 1964		August 1964		September 1964	
Anopheles peditaeniatus	16	18	0	23	78	20
Culex tritaeniorhynchus	19,427	18	11,198	23	9,653	20
Culex gelidus	7,355	18	6,792	23	4,816	20
Culex fuscocephalus	3,564	18	2,939	23	830	20
Aedes mediolineatus	5,044	18	2,823	23	643	20
Aedes vexans	188	18	40	23	63	20
Aedes taeniorhynchoides	33	18	8	23	32	20
Mansonia uniformis	833	18	225	23	288	20

	January 1965		February 1965		Total	
Anopheles peditaeniatus	8	21	19	17	2,228	217
Culex tritaeniorhynchus	1,779	21	7,002	17	116,953	217
Culex gelidus	3,654	21	10,510	17	66,013	217
Culex fuscocephalus	314	21	2,039	17	18,015	217
Aedes mediolineatus	8	21	34	17	14,112	217
Aedes vexans	38	21	624	17	2,153	217
Aedes taeniorhynchoides	6	21	131	17	595	217

Table 3

MAGOON (HORSE-BAITED) TRAP COLLECTIONS OF ABUNDANT SPECIES AT BANG PHRA

	Total No. females	Total No. collections	Total No. females	Total No. collections	Total No. females	Total No. collections
	April 1964		May 1964		June 1964	
Anopheles vagus'	0	4	64	15	19	15
Culex tritaeniorhynchus	3	4	123	15	28	15
Culex gelidus	7	4	138	15	124	15
Culex quinquefasciatus	0	4	1	15	0	15
Culex fuscocephalus	0	4	7	15	4	15
	July 1964		August 1964		September 1964	
Anopheles vagus	21	14	19	9	4	4
Culex tritaeniorhynchus	24	14	6	9	3	4
Culex gelidus	53	14	10	9	6	4
Culex quinquefasciatus	0	14	0	9	0	4
Culex fuscocephalus	0	14	0	9	0	4
	October 1964		November 1964		December 1964	
Anopheles vagus	0	2	5	7	1	6
Culex tritaeniorhynchus	2	2	1	7	2	6
Culex gelidus	4	2	33	7	27	6
Culex quinquefasciatus	1	2	0	7	0	6
Culex fuscocephalus	3	2	0	7	0	6
	January 1965		February 1965		Total	
Anopheles vagus	1	13	4	17	177	106
Culex tritaeniorhynchus	5	13	18	17	432	106
Culex gelidus	91	13	345	17	838	106
Culex quinquefasciatus	29	13	38	17	69	106
Culex fuscocephalus	2	13	21	17	37	106