

STUDY REPORTS

2. Title: Ko Klet Kaeo: Habitat description

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This report provides a description of various features of the habitat of Ko Klet Kaeo, the island on which some of the studies of gibbons and other primates are being carried out. The island is the property of the Royal Thai Navy and has been made available to the SEATO Medical Research Laboratory for a period of ten years beginning June, 1966. It is located 400 meter from the coast on the grounds of the Royal Thai Navy Rating School at Kilometer 167 of the Bangkok-Sattaheep highway. This area of Thailand is described as having a Savannah climate, with an annual temperature average of 28°-30°C.; rainfall average of 1000-1200 mm. and evaporation average of 800-1000 mm.

The island is the extension of a ridge, Klet Kaeo, running in an east-west direction and interrupted by a sea channel approximately 400 m. in width. Ko Klet Kaeo is the section of the ridge west of the channel. The island itself is composed of two prominences on the west end and center of the island respectively, with a gradual slope to sea level on the east end. In the north-south dimension, the slopes are quite sharp throughout most of the length of the island. The central prominence, which is slightly higher than that on the west, has an elevation of 74 m. The island is 1 1/4 Km. long and has a maximum width of 300 m. The area in plane view is 23.5 hectares (58 acres).

The shore is generally rocky with beaches interspersed. The east half is bordered by rocks and sand-gravel beaches. There is a sand beach in the southwest section and a coral and shell beach in the northwest. A ring of coral surrounds the island at a distance of 50-100 m. from shore.

Water Heavy local showers of short duration constituted the precipitation during the past year. Dew fall was negligible or light and evaporated before 0700 h. As may be seen in Table 1, periods of rain were separated by long dry periods. There were streams of water only when it rained, but run-off was quite rapid because of the steep terrain. The only natural water reservoirs on the island are tree holes and depressions in rocks along the shore. During dry seasons, these holes dry up so that there are no natural fresh water sources.

Temperature Table 1 shows that maximum and minimum temperatures varied rather little during the year.

Flora Although there are a few tall (20-25 m.) trees on the ridge and north side of the island, the forest may be generally described as composed of low (3-8 m.) trees interspersed with a thick growth of saplings bushes and vines. Without trails, it is possible to make one's way through the forest, but passage is slow and difficult. Visibility varies roughly from 5-20 m. but usually is about 10 m. There are no natural cleanings of any dimension on the island except along the shore.

A list of some of the plants found on the island is presented in Table 2.

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Table 1. Mean daily rainfalls maximum—minimum temperature, and mean midmorning relative humidity at Ko Klet Kaeo, June 1967—March, 1968

Measure	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Rainfall (inches)	0	0.65	0.59	1.44	10.09	1.71	0	3.74	1.75
Temperature (°C)									
Maximum	33	34	33	34	31	30	29	31	31
Minimum	27	26	26	25	24	25	23	24	25
Relative humidity%	79	85	83	85	82	85	No. data	91	90

Table 2. Some representative species of plant at Ko Klet Kaeo

Araceae	<u>Amorphophallus sp.</u>	Melastomaceae	<u>Memecylon ovatum</u>
Combretaceae	<u>Lumnitaera littorea</u>	Meliaceae	<u>Xylocarpus moracana</u>
Comositae	<u>Eupatorium oderatum</u>	Myrtaceae	<u>Eugenia cumini</u>
Connerceae	<u>Connerus sp.</u>	Ochnaceae	<u>Ochna harmodena</u>
Cucurbitaceae	<u>Coccinia indica</u>	Oleaceae	<u>Olea imbricatos</u>
Euphorbiaceae	<u>Bridella sp.</u>		<u>Olea maritima</u>
	<u>Cleistanthus sp.</u>	Opiliaceae	<u>Opilia camentosa</u>
	<u>Phyllanthus emblica</u>	Rubiaceae	<u>Tarenna sp.</u>
Guttiferae	<u>Ochrocarpus siamensis</u>	Rutaceae	<u>Atalontia monophylla</u>
Leguminosae	<u>Abrus precatorius</u>	Sterculiaceae	<u>Heritiera sp.</u>
	<u>Albizzia sp.</u>	Verbenaceae	<u>Viter pinnata</u>
	<u>Bauhinia sp.</u>		
	<u>Dialium cochichinese</u>		
Malvaceae	<u>Thespesia populnea</u>		

Table 3. Mosquitoes and mammals indigenous to Ko Klet Kaeo

1. Mammals
 - Macaca fascicularis = M. irus
 - Rattus rattus
 - Bandicoota indicus
2. Mosquitoes
 - a. From tree holes
 - Culex litoralis
 - Aedes togoi
 - Aedes gureostriatus
 - Aedes dissimilis
 - Aedes (canraedes)
 - Aedes albopictus
 - b. From artificial water bowls
 - Aedes albopictus
 - Aedes aegypti

Fauna The Animal groups of main interest included mammals and mosquitoes, and those species indigenous to the island are listed in Table 3. There are, in addition, many types of birds (including a sea eagle) some of which breed on the island. There are three general of lizards, including at least one monitor lizard. Three snakes have been seen but have not been identified. Crabs live on the sand beach and on the rocks and hermit crabs may be found everywhere but especially on the coral-shell beach. There are several types of insects including red ants, bees, termites and also a variety of arachnids, including some scorpions. Snails and sea anenomes are found on the shore.

The monkeys (Macaca fascicularis) have lived on the island for at least five years. The total monkey population comprises about 25 individuals, in two groups. One small group stays primary on the east end of the island and is rarely seen. It includes at least six animals. The larger group, which ranges over the whole island has roughly 20 individuals: 3 adult males, 6 adult females and the remainder juveniles and infants. Last year, five of the six females carried infants. It is not clear how these macaques survive the long dry periods when there apparently is no fresh water available. It is possible that an adequate amount of moisture is contained in the vegetation they eat or in the animals for which they forage on the shore, but this has not been demonstrated.

Modifications: Several modifications have been made on the island to make it suitable as a facility for maintenance and study of primates of Thailand. The first of these is a network of trails which permits convenient access to all parts of the island. Approximately 20 km. of trails were cut and are maintained. A main trail runs the length of the island on top of the ridge and two others are cut parallel to it on the north and south sides. Additional paths transect these main trails at 30 m. intervals. Nylon ropes are strung to aid negotiation of the steep slopes. There are in addition four 15 m. × 15 m. clearings on the island.

Fifty-three food and water stations are distributed about the island, largely on the ridge and south main trails. Each station includes an aluminum bowl and a 15 cm. × 15 cm. × 15 cm. waterproof food canister nailed to trees. The canister has a cover which can be lifted by a gibbon and which falls into a closed position when released. The stations are tended on weekdays so that a supply of fresh water and dry laboratory biscuits are always available.

There are four 4 ft. × 8 ft. × 8 ft. metal sheds on the island which serve as storage facilities, rain shelters, water cachement areas, and one is used in addition as an animal observation blind.

A 400 gallon water tank and nine large clay jars are used for collecting rain water. These are ordinarily adequate to maintain a year-round water supply in the water bowls. However, in the event that they become depleted, water can be hauled from the Royal Thai Navy Rating School.

In one of the clearings a station has been established for recording rainfall, maximum—minimum temperatures and relative humidity. In another clearing a 2 m. × 4 m. × 13 m. metal frame and wire trap area was constructed and is baited routinely with bananas to permit close observation and trapping of monkeys.

A small commercial fishing boat is rented to serve the island and two caretakers are available for security and to maintain feeding stations, trails and the weather station.