

## HABITAT PREFERENCE AND BEHAVIOR OF BREEDING JUNGLE FOWL IN CENTRAL WESTERN THAILAND

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THE Red Jungle Fowl (*Gallus gallus*) in some mountain areas of central western Thailand has a population density and behavioral patterns relatively undisturbed by man. During the breeding seasons of 1955 and 1956 I traveled widely in different parts of that country. An intensive ten-day study period was spent during February 1956 in the high bamboo forest area on the eastern slopes of the Tenasserim range. This is an area remote from human population, where fresh-water streams flow from heavy rains in the forest at the crest and transect these eastern slopes to disappear in the eastern low country during the dry season. Here, a bamboo forest area interspersed with patches of small deciduous trees and shrubs was the most favorable breeding habitat for jungle fowl I found in southern and central Thailand. Bamboo growing in scattered but tangled clumps, in a rocky soil which has been repeatedly burned over, seems to offer ideal roosting and nesting cover. And, I believe, an abundant supply of fresh water, with a minimum of human disturbance, is an important factor in sustaining a favorable breeding population.

The few crops examined showed only grains of mountain rice, a plant which grows sparsely in the area during the rainy season. There was no other obvious source of favorable food supply, a factor which needs investigation.

On these dry slopes, close to the banks of streams which the birds visited mornings and late afternoons, territories of the breeding harems showed the greatest density. The area occupied by each crowing cock and his female followers was easily determined by his crowing, which was repeated at frequent intervals from before daylight until dark. Predawn surveys (locating crowing males on the roost) were checked with daylight observations and gave a fairly accurate census of the areas occupied, and also their locations. Two to five females were the usual number found with a dominant male. Unaccompanied males in breeding plumage were found remaining quietly in the concealment of shrub patches on the periphery of harems. These male adults with long sicles (yearling males have the two center tail feathers only slightly longer than the other caudals) would doubtless take over the harem when the dominant male was lost, but were very quiet and secretive during this waiting role. The close supervision of harems by dominant males appeared to induce this secretive behavior of the subdominant male, a role in which they neither crowed nor otherwise revealed themselves (unless flushed) during the days when these observations were being made.

Each dominant male led his little group of hens to the riverlet to drink, usually soon after they left the roost in the morning. They remained at the water supply only a very few minutes, and the male often watched from a perch aboveground while the hens drank. After that, he took one or two gulps of water and hurriedly led the group back into its territory by a different trail. (A yellow-throated marten was collected while following these trails by scent.) During the afternoons when field observations were more easily made, the harems were continuously on the move; and yet, the birds were seldom seen. Frequent crowing of the cock made it possible to chart their travels in their respective territories by observing from a place of concealment. All birds were adept in methods of evading observation and in rapid escape.

In flatlands many miles east of the mountains, where no water appeared to be available, female birds were occasionally seen but their association in breeding harems was not apparent. Here also, small groups of yearling males, commonly three or four in a group, were often seen. These were not afraid of a passing truck, and because of this were often shot. Hens did not accompany these young-male groups, although it may be assumed that in this extensive area of dry and burned-over habitat there are local water holes near which breeding birds might gather. The geographical segregation of young males may be, to a great extent, due to their elimination in a behavioral sense from the crowded and competitive habitat of the breeding harems found in the higher altitude bamboo forests along mountain rivers. The seclusive behavior of subdominant males of breeding age noticed around the periphery of breeding harems indicates that this kind of social structure is one in which the total male population has functional value for successful breeding. New applicants for the role of dominant male, in all its vulnerability, are always present.

In February, new young birds were collected and fresh eggs were found on the forest floor. The breeding season appears to be of sufficient length that a given bird may make several attempts to nest. The presence of scattered eggs suggests a high rate of nest disturbance.

Roosting was in the large clumps of thorny bamboo. Birds belonging to a harem flew to individual perches 15 to 20 feet above the ground and selected a position well out on a bending cane and well screened above and below—a location offering easy exit in case of night prowlers. The birds of a harem were usually scattered in one or more overlapping bamboo clumps 10 to 30 feet apart.

In the few jungle villages I visited, and in outlying temple grounds, inquiry was made about the presence and habits of jungle fowl. The residents of these places keep a few domestic fowl. In one remote village I saw a male bird

which appeared to be of wild stock. The bird was thought to have been reared from an egg taken from the wild. Rand and Rabor (1960. *Fieldiana: Zool.*, 35:414-419) report a similar ecological separation of these forms in the Philippines.

Native tribesmen and other hunters in this mountain area report that the entire population of jungle fowl moves into the high rain forest, a distance of 5 to 20 miles, during the rainy season, April to November. A small population of tribesmen hunts throughout the year. The frequent crowing at dawn of dominant breeding males often leads to their destruction by men using decoys and snares. Firearms are scarce, at present, among these people. But the opening of roads to travel by jeeps and trucks is greatly increasing the amount of hunting and disturbance throughout the year. It seems unlikely, due to the rapidly changing frontier in a country which has no precedent for conservation concepts, that such examples of breeding populations can long endure.

#### SUMMARY

The Tenasserim Mountain range forms an effective barrier against dry season rains from the west in west-central Thailand. However, sufficient precipitation spills over the crest of the range to maintain a kind of summit rain forest and to produce a constant supply of fresh water in small rivers on the eastern slopes. A bamboo forest (possibly subclimax because of fire), which is dense in some places but open in others, covers the hills between the rivers.

In this cover where water is available and dead grasses of the dry season supply a seed crop (mountain rice), the jungle fowl breeding population appears to be at a maximum density. It may be significant that up to the present there have been no roads for American jeeps to bring in hunters with modern firearms. The birds move into the high rain forest during the nonbreeding rainy season. Master cocks with two to five hens hold definite breeding localities (territories) which may be easily located by the predawn crowing. Extra cocks, with no hens, move silently about the periphery of harems. Solitary hens and small groups of immature cocks (yearlings) were found in the dry flat country several miles from the best breeding habitat, where no water appeared to be available. Hunting by native tribesmen was more intense in pursuit of crowing males.

No evidence was found of intermixing between the domestic chickens in villages and the wild jungle fowl. In one village a bird was seen which appeared to have been hatched from an egg of a wild bird.

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