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RESEARCH REPORT

The Yellow-cheeked Gibbon (*Hylobates gabriellae*) in Nam Bai Cat Tien (Southern Vietnam) Revisited

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ABSTRACT. Data concerning the status, habitat and vocalisations of yellow-cheeked crested gibbons (*Hylobates gabriellae*) were collected during a short field trip to the Nam Bai Cat Tien National Park (southern Vietnam). Nam Bai Cat Tien may be the southernmost locality where crested gibbons (i.e. the *Hylobates concolor* group) still survive. Fewer songs were heard at Nam Bai Cat Tien National Park than at other crested gibbon sites visited by the author. At least two gibbon groups appear to have been greatly reduced in number since previous surveys in the park. There is some evidence that both the gibbon population and the gibbon habitat in Nam Bai Cat Tien are disturbed. The first case of a great call solo song in wild gibbons of the *concolor* group is reported. Great calls of *H. gabriellae* are described and documented with sonagrams for the first time. They differ from those previously described for *H. leucogenys.*

Key Words: Gibbons; Yellow-cheeked gibbon; *Hylobates gabriellae*; Vietnam; Song; *Hylobates concolor* group.

INTRODUCTION

The wildlife and habitat in Vietnam have been (and still are being) rapidly reduced (LE TRONG CUC, 1989). Although historically almost completely forested, Vietnam has now lost over 80% of its original forest cover, and of the remaining 10–12% of closed tropical forest less than 1% remains in a pristine state (COLLINS et al., 1991). All Vietnamese primates are endangered, but gibbons are among the most endangered species (EUDEY, 1987). The yellow-cheeked crested gibbon (*Hylobates gabriellae* THOMAS, 1909) of southern Vietnam, southern Laos and eastern Kampuchea has not been studied so far in the wild.

Traditionally, crested gibbons (i.e. the *Hylobates concolor* group) were treated as a single species with several subspecies (GROVES, 1972; MARSHALL & SUGARDJITO, 1986), but recent evidence of sympatry, morphology, and vocalisations (reviewed in GEISSMANN, 1989, 1993, 1994a) suggests that crested gibbons may include as many as four species, one of which still remains to be named (*H. concolor*, *H. gabriellae*, *H. leucogenys*, and *H.* cf. *nasutus*).

The Nam Bai Cat Tien National Park may be the southernmost locality where crested gibbons still survive. Evidence for the occurrence of *H. gabriellae* there has been presented in several reports (ADLER, 1990, 1991, 1993, EAMES & ROBSON, 1993; ROBSON, 1990): After having heard two groups in one locality in the northeast part of the park in January 1989, ADLER (1991, p. 63; 1993, p. 55) emphasized "the special suitability of Nam Bai Cat Tien for observations on the distribution and the life of the yellow-cheeked gibbon." During a survey from December 1989 to January 1990, ROBSON (1990) heard gibbon groups singing

in three areas in the northeast of the park (Fig. 1) and in additional areas during a survey in June 1991 (EAMES & ROBSON, 1992, 1993). In addition to gibbons, black-shanked douc langurs (*Pygathrix nigripes*) have also been sighted in the park (EAMES & ROBSON, 1993).

As part of an ongoing study on evolution and conservation biology of the crested gibbons (*Hylobates concolor* group), the author wished to evaluate the possibilities for carrying out a field study on *H. gabriellae*. This paper presents the results of a brief survey carried out in the eastern part of Nam Bai Cat Tien National Park during four days in September 1993.

MATERIAL AND METHODS

The Nam Bai Cat Tien National Park (Dong Nai Province) is situated in the east part of south Vietnam, about 120 km northeast of Ho Chi Minh City (the former Saigon). EAMES and ROBSON (1992) report its coordinates as 11°21'–11°34'N, 107°11'–107°28'E. The park can easily be reached by car via Bién Hòa. The Dong Nai River, which merges with the Sai Gon River just a few kilometres east of Ho Chi Minh City, forms the natural eastern boundary of the Nam Bai Cat Tien National Park (Fig. 1).

Until recently, the park covered an area of about 350-365 km^2 (COLLINS et al., 1991; EAMES & ROBSON, 1992, 1993; MACKINNON & MACKINNON, 1986), but it was considerably extended to the north in 1993 (NGUYEN QUOC THAN, pers. comm.) in order to include the area of recent rhino sightings (SCHALLER et al., 1990). The western half of the park consists of forested hills of about 150-300 m in elevation, the centre and eastern half are of lower elevation (about 50-200 m) (EAMES & ROBSON, 1993; ROBSON, 1990).

The vegetation types within the park have been described as tropical semi-evergreen forest and freshwater swamp (MACKINNON & MACKINNON, 1986). The park has a tropical monsoon climate with a rainy season from May to October, and a dry season from

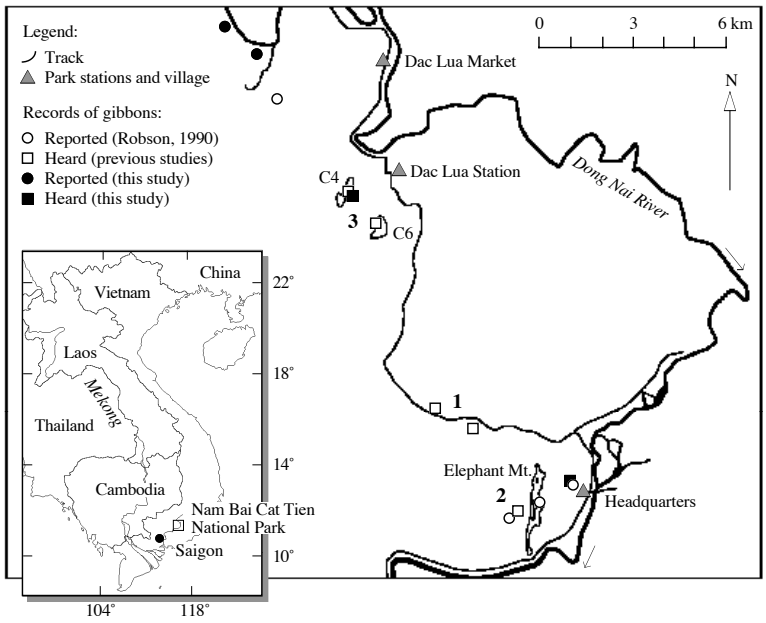

Fig. 1. Map of the northeastern part of the Nam Bai Cat Tien National Park (after ROBSON, 1990). The areas surveyed during this study are numbered (1–3). Areas surveyed during previous studies (ADLER, 1990, 1991, 1993; ROBSON, 1990) are also indicated.

November to April. Mean annual rainfall is 2,678 mm, annual mean temperature is about 26°C (TRUONG QUANG TAM, 1991).

The author spent 4 days in the park (September 26 – 29, 1993), i.e. within the rainy season. Heavy rainfall occurred every night and a few times during the day as well. During the morning hours, however, weather was bright and sunny. Temperatures measured at the park headquarters ranged from 24°C (minimum at night) to 29°C (maximum during the day), and humidity ranged from 76% to 91%. During the rainy season, large areas of the park are flooded (Fig. 2).

Fig. 2. Large areas of the Nam Bai Cat Tien National Park are flooded during the rainy season. One of the many human settlements within the park can be seen in this Figure (near Dac Lua Station, November 27, 1993).

During the brief stay at the Nam Bai Cat Tien National Park, the author visited all three areas where gibbons had been heard during the previous surveys of ADLER (1990, 1991, 1993) and ROBSON (1990). These areas are shown in Figure 1. Camp was situated in the headquarters of the park during three days, and at Dac Lua Station on one day. The author spent one morning listening for gibbon songs in each area. On each morning, the camp was left at about 04:00–05:00, in order to be at the required locality at about 06:00, where the author listened for gibbon songs until about 09:00–11:00. One additional morning was spent listening for gibbons in two areas: near the headquarters from 05:00–07:00, and in Area 1 during the second half of the morning.

In all areas visited, notes were made on vegetation, and photographs were taken. In some areas, vegetation was also documented on video film.

One gibbon song was tape-recorded with a SONY TC-DM5 tape recorder equipped with a Sennheiser ME80 (+ K3U) directional microphone.

RESULTS

Area 1

This area is situated on the road from the headquarters to the Dac Lua Station and can easily be reached because the walking distance is less than 2 hr from the headquarters. Two mornings were spent in this area (September 26 & 28, 1993), although on the first

morning the author arrived there only at 08:00. No gibbons were heard, either in the area itself or during the walks between the area and the headquarters. The vegetation includes wetland habitat, logged forest and secondary forest. No primary forest was seen, and no forest with a closed canopy.

Area 2

In order to reach this area, the author first travelled about 4 km downstream on the Dong Nai River by boat. From there, Area 2 can be reached by walking for about 1 hr. There is no path during the wet season, but the area is easily reached by wading along the Nui Tuong (elephant mountain) first through rice fields, then through treeless marshland, up to the periphery of a relatively dense bush land area. No gibbons were heard in the area. The slopes of the elephant mountain are covered with heavily logged secondary forest with very dense undergrowth. No primary forest and no forest with a closed canopy was observed in the area.emerging

Area 3

During the wet season, this area can only be reached by boat. Starting from Dac Lua Station, it took about 40 min of rowing in order to get to a series of hills as islands from the open water. Only one of them had any substantial forest cover (Fig. 3). The park rangers reported having heard gibbons on this hill in 1992. To judge from the published maps, the hill appears to be identical with ROBSON'S (1990) "C4" and ADLER's (1991, 1993) "C5". The island hill has an ovoid base area with its greatest length in a north-south alignment and its highest point in the northern half of the hill. The northern slope and a part of the eastern slope are deforested. The southern third of the hill and its western slope are heavily logged, and only the northeastern third of the hill exhibits what appears to be primary forest, especially in the more elevated parts.

It was from a spot near the top of the hill that the author heard the solo song of a yellow-cheeked gibbon. The song started at 06:22 and ended at 06:31. It consisted of a total of

Fig. 3. Gibbon habitat on the northern half of island hill "C4", as seen from the east (Area 3, November 27, 1993).

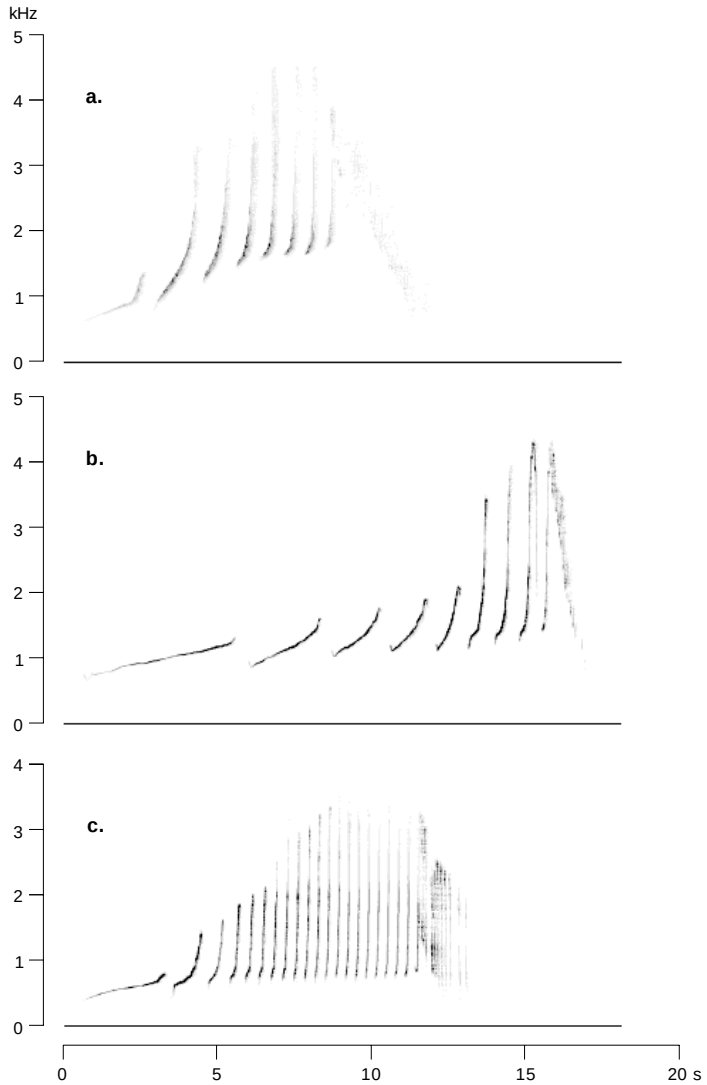

Fig. 4. Sonagrams of great call phrases: a) *Hylobates gabriellae* recorded on island hill "C4" (Area 3, Nam Bai Cat Tien National Park, Vietnam, November 27, 1993); b) adult female *H. gabriellae* at the Clères Zoo, France (June 29, 1993); c) adult female *H. leucogenys leucogenys* at the Eberswalde Zoo, Germany (July 11, 1988).

eight great call phrases, uttered with intervals of about 1 min (Fig. 4a). The singing gibbon was not seen from the boat. No song contributions other than great calls, and no other songs were heard.

Although the tape-recording of the wild animal is inferior in quality to the tape-recordings made of captive animals, the great calls recorded in Nam Bai Cat Tien resemble those of captive *H. gabriellae* tape-recorded by the author in various zoos and other captive settings (Fig. 4b). They differ from those of northern white-cheeked crested gibbons, *H. leucogenys leucogenys* (Fig. 4c), in several respects, such as the lower number of notes, a slower speed of delivery, and a higher starting frequency of notes of the second half of the great call. Great calls of southern white-cheeked crested gibbons, *H. leucogenys siki* (not shown), are intermediate between the latter two forms in some of these characteristics.

Fig. 5. Adult female *H. gabriellae*, kept as a pet gibbon at Dac Lua Market (near Area 3, November 27, 1993).

One early morning was spent listening for gibbons near the headquarters. At 06:15, fragments of a gibbon song were very faintly heard from afar (direction NW) for a few seconds. No tape-recording was possible because of the low intensity of the sound.

A pet crested gibbon, a female *H. gabriellae*, was held at Dac Lua Market. This animal has been mentioned in previous reports (ADLER, 1990, 1991, 1993, EAMES & ROBSON, 1993; ROBSON, 1990), which also included photographs of the animal with its juvenile black coat (ADLER, 1993) and during the change from juvenile to adult colouration (EAMES & ROBSON, 1993). When visited during this study (September 27, 1993), the animal was fully adult (yellow fur colouration and completely erupted canines) (Fig. 5). The owner, Mr. PHAN THANH TONG, had caught the animal personally in the northern part of the Nam Bai Cat Tien National Park in 1983 or 1984 (see also ROBSON, 1990).

During this study, no evidence for the presence of non-human primates other than gibbons was found.

DISCUSSION

Only two gibbon songs were heard during the four days of this study. During 5 monitored days at Xujiaba in the Ailao Mountain Reserve (Yunnan Province, southwestern China, August 1990), the author heard 4.6 song bouts of crested gibbons per day, and during 16 monitored days in the Bawangling Reserve (Hainan Island, October 1993), he heard 2.1 song bouts of crested gibbons per day (GEISSMANN, unpublished). These data samples are too limited for statistical comparison. They suggest, however, that (1) gibbon density is much lower at Nam Bai Cat Tien than at the two other localities visited, or (2) gibbon groups in Nam Bai Cat Tien produce fewer song bouts than those at the other localities, or (3) their songs are less audible over long distances compared to other localities.

Although this four-day-survey was much too short to assess gibbon density in the park, it provides some indication that the number of gibbon groups has been reduced since

previous surveys (ADLER, 1990, 1991, 1993; ROBSON, 1990). The authors concerned heard two gibbon groups calling from two forest-topped hills near Dac Lua Station (i.e. Area 3 in the present paper), and each group produced duet songs typical of mated pairs (ADLER, pers. comm.; ROBSON, pers. comm.). In contrast, only one individual gibbon was heard singing in the area during the present study. This gibbon sang from what was apparently the only remaining hill carrying any forest cover (see Fig. 3). Apparently, the two groups heard there before by ADLER and ROBSON have been greatly reduced, with possibly only one gibbon surviving, although it is not known what reduced the groups.

If gibbon densities in Nam Bai Cat Tien are, in fact, lower than in the other areas of the crested gibbons' distribution range visited by the author, the two following reasons could at least partially account for it:

(1) *Poaching*: Park guides reported that no poaching occurred in the park, but EAMES and ROBSON (1992, p. 48; 1993, p. 149) expressed the opposite view. During the present study, no gun shots were heard in the park.

(2) *Suboptimal habitat quality*: Some of the forest was subject to chemical defoliant spraying during the Vietnam war, and the area was logged before being declared as a national park in 1978 (EAMES & ROBSON, 1992, 1993). Several villages are situated in the park. Rice cultivation, fishing and bamboo collecting were observed during this study. The vegetation of the northwestern part of the Nam Bai Cat Tien National Park looked very much different from the crested gibbon habitat the author saw in the Ailao Mountains and on Hainan, and also differed from the habitat of lar gibbons (*Hylobates lar*) visited briefly in Johore (Malaysia). In contrast to these latter areas, the complete lack of a closed forest canopy at Nam Bai Cat Tien was particularly conspicuous. There is no reliable information available at present on the appearance of optimal habitat for yellow-cheeked gibbons. It appears possible, however, that the area surveyed during this study does not represent the ideal habitat for this gibbon species.

In gibbons of the *concolor* group, great calls are typically produced by adult females and immature gibbons of either sex, whereas the song repertoire characteristic of adult males is very different (e.g. DEPUTTE, 1982, GEISSMANN, 1993, 1994b; GOUSTARD, 1984; SCHILLING, 1984). Because the solo song heard during this study consisted of great calls only, it could, consequently, have been produced by an adult female or an immature gibbon. An adult female may, however, be more prone than an immature gibbon to show vocal defence of a territory.

In any case, this report describes the first case of a great call solo song in wild gibbons of the *concolor* group. Great calls of the yellow-cheeked gibbon, *H. gabriellae*, have apparently not been described or documented in sonagrams previously. The great calls recorded in Nam Bai Cat Tien resemble those of captive *H. gabriellae* and differ from those of northern white-cheeked crested gibbons, *H. leucogenys*. A detailed comparison of singing behaviour of the various taxa of the *concolor* group will be reserved for a future publication.

CONCLUSIONS

(1) Far fewer songs were heard at Nam Bai Cat Tien National Park than at other crested gibbon sites visited by the author.

(2) At least two gibbon groups appear to have been greatly reduced in number since previous surveys in the park.

(3) There is some evidence that both the gibbon population and the gibbon habitat in Nam Bai Cat Tien are disturbed. Contrary to earlier reports (ADLER, 1991, 1993), Nam Bai Cat Tien may not be an ideal place to carry out an ecological study on *H. gabriellae*. Potentially better sites may exist in southern Laos (J. W. DUCKWORTH, pers. comm.).
(4) The first case of a great call solo song in wild gibbons of the *concolor* group is reported. Great calls of *H. gabriellae* have not been described or documented with sonagrams previously. Those recorded in Nam Bai Cat Tien resemble great calls of captive *H. gabriellae* and differ from those previously described for captive *H. leucogenys*.

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