

## Results of a rapid gibbon survey in the Lung Ri area (Trung Khanh district, Cao Bang province) in northeastern Vietnam

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The cao-vit crested gibbon (*Nomascus nasutus*) is one of the world's most endangered primate species, with one single protected forest patch supporting the last known population. In response to a report of a possible gibbon call having been heard in April 2009 about 5 km to the southwest of the protected gibbon habitat, we carried out a brief survey of the area in question. The habitat consisted of steep karst hills covered with secondary forest and shrubs, and valleys used for agriculture. However, some small strips of karst forest contained enough trees that they might support a gibbon group. During two days of field survey, no gibbons were seen, or heard calling, and the interview data we collected did not provide any recent evidence for the occurrence of gibbons in the area around Lung Ri. Although we found no evidence that gibbons occur in the Lung Ri area, the occurrence of gibbons there cannot be excluded due to the short duration of this study.

### Introduction

The cao-vit crested gibbon (*Nomascus nasutus*) is a Critically Endangered ape originally distributed over large areas on northeastern Vietnam and southern China east of the Red River (Geissmann *et al.*, 2000). Today, the only confirmed population occurs in a single patch of forest that covers parts of the Phong Nam, Ngoc Khe and Ngoc Con communes in Trung Khanh district of Cao Bang province (NE Vietnam) and a bordering area of Jingxi county in Guangxi province of southwestern China. The total population is estimated at about 18 groups (Fan and Yan, 2007; Le Trong Dat and Le Huu Oanh, 2007). In April 2007, the habitat of the cao-vit crested gibbon in Trung Khanh district was formally designated the Cao-Vit Crested Gibbon Conservation Area.

During a brief bird survey in eastern Ngoc Chung commune that borders the Phong Nam commune to the west, an animal that sounded like a gibbon was heard calling in Lung Quang on 25 April 2009 at around 09:00 hrs in the morning (John D. Pilgrim and Andrew W. Tordoff, personal communication). This area was located only about 5 km to the southwest of the Cao-Vit Crested Gibbon Conservation Area, the last known refuge of the cao-vit crested gibbon (*Nomascus nasutus*) in Vietnam.

To follow-up on this report, Fauna & Flora International staff (Nguyen The Cuong and Paul Insua-Cao) visited the same area soon afterwards, in the area close to Coc Chia on the afternoon of 20 May and walking from Lang Nam Sum to Lung Vao Lang during the morning of 21 May (see Fig. 1). Interviewed local people recalled gibbons in the past, although not recently. On the other hand, Francois's leaf monkeys (*Trachypithecus francoisi*) were reported to have been observed more recently. The landscape visited was comprised of cultivated valley bottoms and degraded forest on hillsides. However, based upon the experience of the FFI team, some habitat quality might have enabled gibbons to persist, when comparing the habitat to forest in the Cao-Vit Crested Gibbon Conservation Area (Paul Insua-Cao, personal communication).

The population size of this gibbon species is critically small, so any further records, especially close-by, would be very significant. The brief survey described in this report was carried out by the lead author to take advantage of the opportunity of his being in Vietnam at the time and thus able to visit the site.

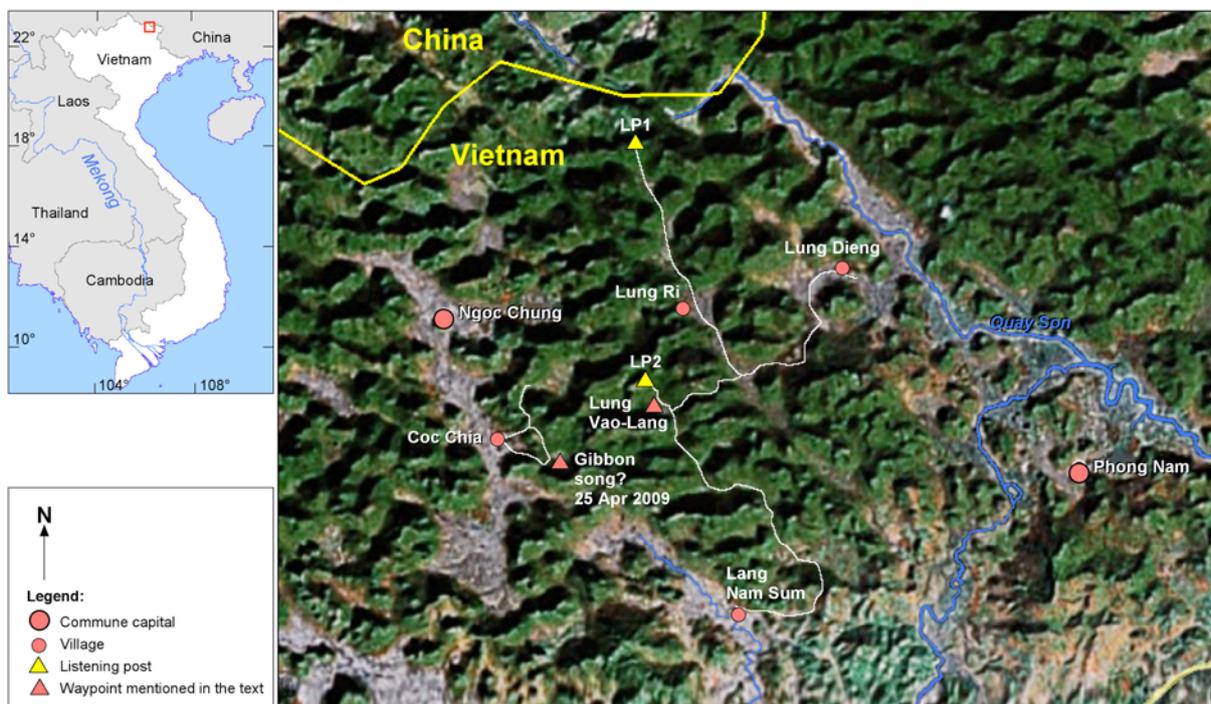
### Study site and methodology

An itinerary of the survey is presented in Table 1.

Our study covered a triangular area where three communes meet: Ngoc Chung in the west, Phong Nam in the east and Kham Thanh in the south. Lung Ri village was selected as our camp site (Fig. 1). It was located in western Phong Nam commune (UTM Coordinates: 0653660, 2531682, elevation: 548 m).

**Table 1.** Itinerary of the survey.

Date	Topic	Days
17 June	Travel by one of us (TG) from Hanoi to Cao Bang town (Cao Bang province) to meet with NTC. Visit Forest Protection Department (FPD) to obtain permissions to work in border area, then travel to Trung Khanh town.	1
18 June	Buy food and material for survey, travel from Trung Khanh to border police station of Phong Nam commune to obtain permissions to work in border area, drive to Lung Dieng (end of road, UTM coordinates 0655149, 2532028, elevation 513 m), hire local porters and assistants, and walk to Lung Ri village. Afternoon: Walk to forest and establish two listening posts.	1
19 June	Field survey work.	1
20 June	Field survey work. Afternoon: Walk to Lung Dieng, drive to Phong Nam commune to report to border police station, and travel back to Trung Khanh town.	1
21 June	Return from Trung Khanh to Cao Bang town (Cao Bang province), and from there to Hanoi.	1
22 June	Analyse results and write report	1
Total		6



**Fig. 1.** Location of the study site within Vietnam (left) and map of the study area around Lung Ri village (right). LP1 and LP2 are the listening posts used during this survey. The Cao-Vit Crested Gibbon Conservation Area is located between the north-east and south-west arms of the Quay Son river. The river's south-west arm is visible in the upper right corner of this map. Source of right map: Project data projected in Google Earth.

Interviews were conducted in Lung Ri village. The village consists of 14 households. Most families keep cattle, some own horses and goats. Corn cultivation is the pre-dominant farming system.

Participants in the field survey included, in addition to the authors: Ly Minh U – Trung Khanh district ranger, La Van Luong and Trieu Van Ung – CPG (Community Patrol Group) members, Dam Van Giao and Dam Van Sang – local guides.

Field survey techniques most suitable to locate gibbons and estimate densities of gibbon populations are variants of the fixed point method, whereby the loud morning songs of the gibbons are monitored from fixed listening posts (Brockelman and Ali, 1987; Brockelman and Srikosamatara, 1993).

Two listening posts were selected from which gibbon calls were monitored synchronously during two consecutive mornings. The coordinates of the listening posts and the survey hours spent at each of them are listed in Table 2. Listening posts were 1.96 km apart and located on hilltops in order to enable the survey participants to hear gibbons from as many directions as possible. Each LP was elevated by more than 200 m above the surrounding landscape and offered an unobstructed view and audibility in all directions. Assuming an audibility radius of 1 km, the area monitored from our listening posts included parts of the Ngoc Chung, Phong Nam and Kham Thanh communes.

**Table 2.** Listening post coordinates and survey time.

Listening post	Listening post UTM coordinates and altitude [m]	Survey dates	Total hours spent at listening post
LP1	0653106, 2533252, 784 m	19-20 June 2009	12 h (6+6 h)
LP2	0653172, 2530892, 843 m	19-20 June 2009	10 h (5+5 h)
Total			22 h

Crested gibbon song bouts are typically given by mated pairs (Geissmann *et al.*, 2000) and typically carry for up to 2 km (Brockelman and Ali, 1987). Therefore, from one listening post it is theoretically possible to sample a circular area of up to roughly 12.6 square kilometres for gibbon presence, although density estimates are usually calculated using a shorter radius (e.g. 0.6 km), as the probability of detecting calls decreases with distance. Furthermore, the audibility of gibbon calls rapidly diminishes soon after dawn when other animals such as cicadas also begin to call.

As crested gibbons tend to start the majority of their songs at dawn (Geissmann, 2007; Geissmann *et al.*, 2007), we made sure to be ready on the listening posts by that time. During this survey, dawn occurred around 05:00 h. Listening for gibbon songs was carried out from 05:00 to 11:00 h at LP1 and from 05:00 to 10:00 h at LP2.

Gibbons typically call during periods of “good weather,” which are characterized by cloud cover of less than 50%, no rain, and little or no wind (Brockelman and Ali, 1987). Monitoring was conducted in June 2009, just prior of the Cao Bang rainy season, July–August. Although it was raining on the way to Cao Bang (17 June) and in the night of 20 June, when we were back in Trung Khanh town, good weather conditions were prevalent during the survey.

In addition to gibbon song data, surveyors also recorded direct observations of birds and mammals, other wildlife signs and evidence for hunting (hunters, gunshots, traps, snares), both at the listening posts and on the way to and from the posts each morning. For identification of birds, we followed Robson (2008), and for mammals Francis (2007).

## Results

The habitat consisted of steep karst hills covered with low secondary forest and shrubs, and valleys used for agriculture, most of which consists of corn plantation (Fig. 2). Forest on the mountain slopes has all been logged at some time, and we were able to find sawn-off tree trunks up to the very top of one hill we climbed.



**Fig. 2.** Landscape between Lung Ri village and listening post LP1, showing corn plantation on the ground of the valley and steep karst mountains covered with secondary forest and shrubs. Photo: Thomas Geissmann.

The habitat around LP1 is shown in Figs. 3-4, that around LP2 is shown in Figs. 5-6.

Deforestation was nearly complete when looking to the north, in the direction of the Chinese border, from LP1 (Fig. 3). However, a few small strips of steep karst forest still occur on some other slopes (Fig. 4), some of which appear to contain enough larger trees that they might support a gibbon group, but this is our speculation. We saw no forest that looked like typical gibbon habitat.



**Fig. 3.** View from listening post LP1 to the north, in the direction of the Chinese border. A white border marker can be seen on the valley ground just below the center of the photograph. Mountain slopes are mostly devoid of trees in this direction. Photo: Thomas Geissmann.



**Fig. 4.** View from listening post LP1 to the southwest. Secondary forest covers some of the mountain slopes. Photo: Thomas Geissmann.

The habitat conditions around LP2 looked similar to those at LP1, with very little or no forest on most slopes (Fig. 5) and only very few strips of forest that might support gibbons (Fig. 6).

During two days of field survey, no gibbons were seen or heard calling. As our two listening points were both located over 100 m above the surrounding landscape and offered unobstructed visibility and listening possibilities in all directions, we can assume that we would have heard any gibbon calls for a distance of at least 1 km.

Interviews were conducted with six people from Lung Ri. None of the interviewees was familiar with gibbons, but some confirmed the occurrence of one male Francois's leaf monkey (*Trachypithecus francoisi*) in and with black giant squirrels (*Ratufa bicolor*) in the area. Upon playback of a gibbon tape-recording from the Cao-Vit Crested Gibbon Conservation Area, one interviewee reported having heard such calls two years ago between 05:00 and 06:00 in one of the valleys monitored from LP1.



Fig. 5. View from listening post LP2 to the north (left) and the east (right). Photos: La Van Luong.



Fig. 6. View from listening post LP2 to the west. A little bit of forest can be seen in the bottom of the valley and on the slope on the right margin of the picture. Photo: La Van Luong.

At present, Lung Ri cannot be accessed by vehicles, as the road coming from Phong Nam commune ends at Lung Dieng village. A road is currently under construction to link Lung Dieng with Lung Ri. The road will be extended to reach Ngoc Chung commune east of Lung Ri. Once finished, it will pass between our two listening posts and may represent a serious problem at protecting the habitat, should gibbons be found in the area during future surveys.

A group of nine stump-tailed macaques (*Macaca arctoides*) was heard calling and observed on LP1 on 19 June. No other non-human primates were heard or spotted during this survey.

Squirrel calls were heard on both days near LP1. One Pallas's squirrel (*Callosciurus erythraeus*) – dark reddish-brown from with a slightly paler tail – was observed 50 m below LP1. Calls of the black giant squirrel (*Ratufa bicolor*) were heard repeatedly near LP1 on 20 June. A track of what may have been a Southern serow (*Capricornis milneedwardsi*) was observed near LP1 on 18 June.

At the foot of the hill that served as LP1, we observed what appeared to be a Trung Khanh pit-viper (*Protobothrops trungkhanhensis*), a species first discovered in Trung Khanh in 2008 (Orlov *et al.*, 2009). The snake was in the middle of our trail and was observed for about three minutes before it disappeared in the

vegetation (Fig. 7). One of us (NTC) carefully observed all characteristics of snake (head, size, colour, movement) and found the animal to be most similar to *Protobothrops trungkhanhensis*.



**Fig. 7.** Pit-viper crossing the path between Lung Ri village and listening post LP1, 20 June 2009. Photo: Thomas Geissmann.

Although birds were not systematically observed, a few species were identified and photographed –most of them near LP1 – during this survey (Table 3). A few of the birds are shown in Fig. 8.

**Table 3.** List of birds observed during the survey.

Species		Location and comments
Silver Pheasant	<i>Lophura nycthemera</i>	Vao Lang valley. A group of 4-5 individuals.
Spotted Dove	<i>Streptopelia chinensis</i>	On way to Lung Ri
Long-tailed Broadbill	<i>Psarisomus dalhousiae</i>	Near LP1
Ashy Drongo	<i>Dicrurus leucophaeus</i>	Near LP1
Long-tailed Shrike	<i>Lanius schach</i>	Near Lung Ri
Blue-winged Siva	<i>Siva cyanouroptera</i>	Near LP1
Blyth's Leaf-Warbler (probably)	<i>Phylloscopus reguloides</i>	Near LP1
Limestone Warbler or Sulphur-breasted Warbler	<i>Phylloscopus</i> sp. or <i>P. ricketti</i>	Near LP1. The two species are separable only on call.
Mrs Gould's Sunbird	<i>Aethopyga gouldiae</i>	Near LP1
Eurasian Tree-Sparrow	<i>Passer montanus</i>	Near Lung Ri
Velvet-fronted Nuthatch	<i>Sitta frontalis</i>	Near LP1
Gray-headed Canary-Flycatcher	<i>Culicicapa ceylonensis</i>	Near LP1
Yellow-cheeked Tit	<i>Parus spilonotus</i>	Near LP1
Chestnut Bulbul	<i>Hemixos castanonotus</i>	Near LP1
Chestnut-collared Yuhina	<i>Staphida torqueola</i>	Near LP1
Streak-breasted Scimitar-Babbler	<i>Pomatorhinus ruficollis</i>	Near LP1



Long-tailed Broadbill  
(*Psarisomus dalhousiae*)



Ashy Drongo  
(*Dicrurus leucophaeus*)



Mrs Gould's Sunbird  
(*Aethopyga gouldiae*)



Gray-headed Canary-Flycatcher  
(*Culicicapa ceylonensis*)



Yellow-cheeked Tit  
(*Parus sibilans*)



Blue-winged Siva  
(*Siva cyanouroptera*)

**Fig. 8.** Some of the birds observed near listening post LP1. Photos: Thomas Geissmann.



Chestnut-collared Yuhina  
(*Staphida torqueola*)



Chestnut Bulbul  
(*Hemixos castanonotus*)



Limestone Warbler (*P. sp.*), or  
Sulphur-breasted Warbler (*Phylloscopus ricketti*),  
separable only on call



probably Blyth's Leaf-Warbler  
(*Phylloscopus reguloides*)

Fig. 8. (ctd.)

### Discussion and Recommendations

In our opinion, the likelihood of finding gibbons in the survey area is low, to judge by the degraded state of the habitat we saw. However, this report provides no conclusive evidence for either the presence or the absence of gibbons in the Lung Ri area. In order to resolve the issue reliably, a further survey should be conducted for which we make the following recommendations:

- (1) The survey should be carried out during the winter or dry season (Oct.–Feb.), as most hunters in Indochina confirm that crested gibbons call more often during this season (Geissmann, unpublished interview data).
- (2) As gibbons may not sing every morning and gibbons living in low density populations tend to sing less often, monitoring for gibbons should be carried out during at least consecutive mornings.
- (3) As the access to the listening posts from Lung Ri took about 1.5 hours of walking and climbing, a future survey may be less exhausting if camps were established directly at the foot of the hills that serve as listening posts.
- (4) In order to cover the survey area more reliably, the distance between listening should be smaller. This could be achieved by adding a third post between the two established during this study.

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