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The rediscovery of Gurney's Pitta *Pitta gurneyi*

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By following up information about birds in trade, a four-year search to trace Gurney's Pitta *Pitta gurneyi* culminated in June 1986 with the discovery of a nesting pair in a 1.6 km^2 forest fragment in southern Thailand. The nest was 94 cm up in the main fork of a palm, only 50 m from a logging road in one of the lowest-lying parts of the area. The clutch of three hatched and both adults fed the young, the male more often than the female, and both more often in the afternoon; earthworms were the most frequent food. A 'skyeew' was given in alarm and as contact. The nest was empty on 2 July, the young having probably been predated or taken for trade (but possibly having fledged). Bird-trappers maintained that the species still occurs in secondary growth and even old plantations, but searches in such habitat and at other localities were unsuccessful, although the birds are evidently unobtrusive at this season. Protection of the site of discovery is urgently needed, as are further searches for and studies of the species.

Gurney's Pitta *Pitta gurneyi* is endemic to the semi-evergreen rainforest zone of peninsular Thailand, where it breeds, and extreme south Tenasserim in Burma, where it may only be a non-breeding, dry season migrant. Past records, together with such facts as were known concerning its biology, are summarised in Collar *et al.* (1986). Until 1986, apart from occasional live birds and specimens in trade, the species had not been recorded since 1952; it was surmised that this lack of recent records could be accounted for by the near total destruction of its lowland forest habitat and that the species might be nearing extinction.

This paper reports the discovery of a nesting pair of Gurney's Pittas in June 1986 and makes recommendations for the species's conservation. In order to avoid drawing undue attention to the site, and thus possibly further jeopardising the birds' precarious prospects for survival, the exact location of the find is not revealed.

BACKGROUND

In early May 1986, N. J. Collar alerted one of us, P.D.R., to a report he had received from B. W. Miller in the United States that two Gurney's Pittas had been seen in the secret backroom of an unidentified Bangkok animal dealer. Since trade in all species of pitta, together with most other native wild birds, is illegal in Thailand, dealers are understandably reticent about parting with information and, of the three major animal trading companies in Bangkok contacted by P.D.R., only one admitted to familiarity with Gurney's Pitta. The managing director maintained that his company still received five or six Gurney's Pittas per year and, speaking further with an unidentified contact over the telephone, claimed that as many as 50 birds per year were still

entering the trade.

Other contacts in Bangkok identified a small town in southern Thailand as a major entrepôt for locally caught wildlife. P.D.R. visited the largest of the three illicit dealers resident there in order to make enquiries concerning the source of Gurney's Pittas said to be entering trade. The dealer confirmed that he received 'small numbers' of Gurney's Pitta; and while he did not know the precise origins of the birds he sold, he promised to ask the village subdealer who usually brought him birds. The site subsequently mentioned proved to be one which had already been identified by Round (in press) as probably still supporting lowland forest. The subdealer himself was unable to give exact details concerning the whereabouts of the birds but, although he referred to the site by the name of a mountain, he was nevertheless able to confirm that Gurney's Pittas originated from lowland forest (*paa tam*). He was unwilling to take outside observers in to meet his local contacts, claiming that the area was not safe.

THE SEARCH

On 10 June, we decided to approach the general area mentioned by the subdealer via a different route. A village headman was contacted and he was able to confirm that the district, which had previously been a stronghold of insurgents, was now secure. Some of the villagers contacted were apparently able to recognise Gurney's Pitta when shown a photograph of a captive male, although it was evident that others were confusing the species with the much commoner Blue-winged Pitta *P. moluccensis* or with Banded Pitta *P. guajana*. The consensus seemed to be, nevertheless, that Gurney's Pitta was still present.

On 11 June, the authors accompanied by two villagers as guides, hiked into a 1.6 km^2 plot of lowland forest at 80–100 m elevation. This was still connected to forest on the hill slopes rising to approximately 650 m elevation. All remaining lowlands were intensively cultivated, fields of hill rice and tapioca alternating with rubber plantations and with small patches of secondary scrub jungle and selectively logged forest. Camp was established at two sites in the forest, separated by about 1 km, during 11–14 June at 100 m elevation and during 14–17 June at 80–90 m elevation.

While those parts of the forest nearest the foothills appeared to be little disturbed, the lower-lying parts of the area supported few trees taller than 15–20 m, among which only one species, *Dipterocarpus* sp., predominated. This indicated that the forest had formerly been logged over, probably within the previous twenty years. There was much bamboo *Dendrocalamus* sp. while palms (chiefly *Licuala peltata* Roxb. with some *L. spinosa* Wurmb. and *Salacca rumphii* Wall.) predominated in the understorey (Plate 1). The lowest-lying parts of the area were swampy.

The entire area was subject to a high level of human use and was criss-crossed with a network of trails ramifying among the dipterocarp trees,

which were being tapped for resin. Gunshots were heard daily while bird-trappers, chiefly those seeking White-rumped Shamas *Copsychus malabaricus*, were occasionally encountered.

Although most larger birds, such as pheasants Phasianidae and some hornbills Bucerotidae had been hunted out, the area still supported a great diversity of forest birds. These included many of the extreme lowland specialists listed in Wells (1985), such as Red-crowned Barbet *Megalaima rafflesii*, Large Wren-Babbler *Napothera macrodactyla*, together with many other species which are scarce or absent from existing nature reserves in Thailand.

Soon after first light each day, we set out independently to search for birds, with most effort being concentrated within a 0.5 km radius of the camp. Searches usually continued until dusk. All bird species seen or heard were recorded and particular attention was paid to listening for pitta-like calls (usually short, monosyllabic or disyllabic, fluty or whirring notes). We were already familiar with the calls of eight of the 12 species of pitta thought to occur in Thailand (Lekagul and Cronin 1974; and also with the 'lilip' ('tarup') call of the captive male Gurney's Pitta tape-recorded by P.D.R. (Collar *et al.* 1986). We both carried this call on tape and played it at frequent intervals in an attempt to generate a response. Any unfamiliar bird calls were either taped and played back or otherwise followed up.

On occasion, one of us was accompanied by the elder of our two guides, who claimed to have seen Gurney's Pitta and to be able to recognise it by call. However, both Gurney's and Banded Pittas are known in southern Thailand by the same name (*nok ten*) and it appeared that our guide was confusing the

Plate 1. Forest in vicinity of Gurney's Pitta nest, 29 June 1986. Note the preponderance of bamboos (*Dendrocalamus* sp.) and palms *Licuala peltata*. (U. Treesucon)

two as he constantly drew our attention to the distinctive 'kirrr' alarm calls of Banded Pittas. (Under forest conditions, when no more than fleeting views are usually obtained, it is probably difficult to distinguish between these two species on the ground without the aid of binoculars.)

After the first three days, we had encountered small numbers of both Hooded Pitta *P. sordida* and Banded Pitta without getting any indication that Gurney's might be present. On 14 June we decided to move our camp at midday to the second, slightly lower site, even though we had been warned by our guides beforehand that this area was more disturbed, with rather fewer forest birds, owing in part to its proximity to a logging road.

In the late afternoon, following a brief but heavy rain shower, we had gone out to examine the forest edge along the logging road. P.D.R. returned to the forest interior first and at 17h40 was rounding a bend in the trail less than 100m from the forest edge when a male Gurney's Pitta flew up off the ground, about 10 m ahead on the trail. The bird was easily recognised by its plump shape and uniformly brown back and wings which contrasted with the blue crown and tail. No further sightings were obtained in the next five minutes, although a single yelping 'skyeew' note was heard, similar to the contact or alarm call given by both Hooded and Blue-winged Pittas, but differing in its distinctly wavering, tremulous quality. When the prepared playback tape with the 'lilip' call was used, after only three notes a sudden movement on the trail revealed the presence of a male Gurney's Pitta. The bird was at first breast on, but it turned and bounded off up the trail, stopping at intervals to forage briefly. The bird allowed itself to be followed for about 30m before it moved off into the dense ground vegetation at the side of the trail.

After a further 20 minutes, U.T. joined P.D.R. and the prepared tape was played briefly. There was no immediate response, but after we had waited approximately five minutes, first one and then a second bird started calling with 'skyeew' notes, which were taped. Without any need for further playbacks, the male bird then emerged once again onto the path, granting further views before moving off in the same direction as previously. There was no positive indication as to the sex of the second bird, which was assumed to be the female of the pair.

The site was revisited early on the morning of 15 June, but an hour's wait produced no further sightings. P.D.R. moved to search for further birds closer to the foothills where a guide had reported past sightings of Gurney's Pitta, while U.T. remained in the vicinity. At 08h20 U.T. obtained a response to the taped playback of the calls heard on the previous day and was moving towards the source when, brushing against some vegetation, he flushed an unidentified pitta off its nest in spiny understorey vegetation. The nest contained three eggs. U.T. took up a concealed vantage point about 20m away and was able to watch a male Gurney's Pitta return to the nest and commence brooding some 30 minutes later. The male remained on the nest throughout the day.

At 16h44, the brooding male called from the nest, giving one sequence of four 'lilip' calls followed by two more sequences of two such calls each. The male flew off the nest at 17h05 and U.T. left some minutes later. The male was subsequently encountered by P.D.R. on the same length of trail where it had been seen the previous day.

THE NEST

The nest was a flattened dome, 18cm deep with an external horizontal diameter of 19cm and an internal diameter of 16cm. The side entrance was approximately 14cm wide by 11cm high. It was constructed of bamboo leaves and the leaves of unidentified broadleaved plants. The floor was a shallow cup, lined with fine black rootlets. The nest was situated 94cm off the ground in the base of spiny *Salacca rumphii* palm, at the point where the fronds diverged (Plate 2). The nest tree was situated at the side of a shallow gully.

Such a nest, situated in a low tree, resembles the nest of Banded Pitta (Robinson 1915; pers. obs.) and conflicts with E.G. Herbert's statement, reported in Baker (1934), that his one nest of Gurney's Pitta was placed on the ground. However, this may be open to some slight doubt since Herbert never saw the nest *in situ* but received it from his collector. Moreover, his

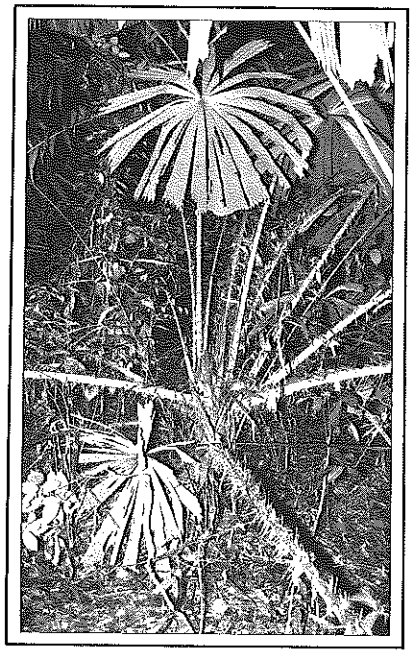


Plate 2. The nest tree, *Salacca rumphii*. Note nest a little right of centre. Fan-shaped leaves are those of *Licuala peltata*. 28 June 1986. (U. Treesucon)

earlier account (Herbert 1924) does not mention the situation of the nest, remarking only that it was 'similar to the one in my collection', meaning the nest of a Blue Pitta *P. cyanea* which itself was said to have been taken on the ground, at the foot of a bamboo clump. Interestingly, however, the only nests of Blue Pitta we have seen have been placed on epiphytic ferns in low trees rather than on the ground (Round and Treesucon 1983), so perhaps there is considerable variation in nest site among pairs of the same species.

The nest was situated only about 50m from a logging road, which skirted the southern fringe of the forest block, in one of the lowest-lying parts of the area, close to 80m elevation. Most other areas at similar elevation were thought to be unsuitable for pittas as they were dominated by a swamp forest formation, with up to 5cm of standing water in parts and with a deep tangle of tree roots and litter which might impede foraging for a ground bird. The area in which the Gurney's Pitta territory was situated was on moist, light, sandy soil. Bamboo leaves predominated in the litter.

BEHAVIOUR AT THE NEST

It was possible to approach and to watch the nest while concealed in foliage, without disturbing the birds. Observations were made subsequently at intervals on 16 and 17 June. The heads of two tiny young were first seen at midday on 17 June and were presumed to have hatched sometime between the nights of 15–16 and 16–17 June. From the afternoon of 24 June, when a blind was set up near the nest, the birds were watched almost continuously throughout the daylight hours until the morning of 29 June when, having been joined by F. R. Lambert, we had arranged to depart in order to search additional areas for Gurney's Pitta territories. When the site was revisited on the morning of 2 July neither young nor adults could be found although the nest structure was intact. The young would have been 13–14 days old when last seen on 29 June, at which time their feathers were only just beginning to emerge from pin. It was assumed at the time that either the nest had been predated, most likely by a snake, or the young had been stolen by a villager in order to be sold. However, unexpectedly early fledging appears to be a frequent phenomenon among tropical forest birds and may be an adaptation to avoid the high levels of nest predation to which tropical forest birds are supposedly prone. It is therefore conceivable that, following up to three further days of extremely rapid development, the birds might have left the nest of their own accord. While the fledging period appears not to be recorded for any species of pitta, the collection of Dr Boonsong Lekagul, Bangkok, contains three skins of juvenile Blue-winged Pittas which, though apparently fledged, are only about two-thirds the overall head- and body-length of an adult, suggesting that young pittas might leave the nest while still only part grown.

The female brooded the eggs and the eggs or young overnight on the nights of 15–16 and 16–17 June respectively. On the morning of 16 June,

the male visited the nest seven times during 06h50 to 09h30 and was thought to be feeding the brooding female, as distinct feeding actions were seen on at least two occasions, while in a third instance the male inserted his head into the nest entrance. The female left the nest on the male's seventh visit, at 09h31; the male commenced brooding and was still on the nest when we departed at 10h23. When the nest was revisited at 16h50, the male had already left and was seen moving across the forest floor in the vicinity while the female was brooding.

On 17 June, the nest was watched, 07h15–11h40, and again, 13h13–14h05. On this occasion, the female left the nest at the male's first observed visit with food at 08h18. It was not determined, however, whether the male fed the female or (as now seems more likely) the young, as the latter were not discovered until 11h30 when the male stood up to shift position on the nest. When the nest was revisited at 13h13, the female was already brooding the young and the male came in with food on five occasions in the next 52 minutes of observation. From 24 June (8–9 days old) onwards, the young were not brooded overnight or at any time during the day.

A total of 355 visits by the adults to the nest were recorded from 08h40 on 25 June until 08h05 on 29 June. On only four occasions did the male, and on one occasion the female, visit the nest apparently without bringing food for the young. The male contributed 290 visits, compared with the female's 65 (Figure; see also Plates 3 and 4). Almost half of the female's visits were recorded on the last near-complete day of observations (33 visits on 28 June), and with hindsight it seems that this may have been because she was slow in becoming habituated to the presence of the blind. She gave no overt signs of alarm other than during a 30-minute period immediately after the blind was first entered on the morning of 25 June, when a series of 'skyeew' calls was heard. Although no alarm calls were given subsequently, she was noticeably

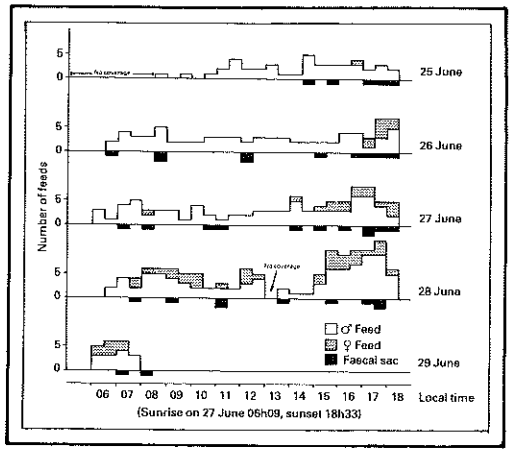


Figure. Frequency of feeding visits to young in nest.

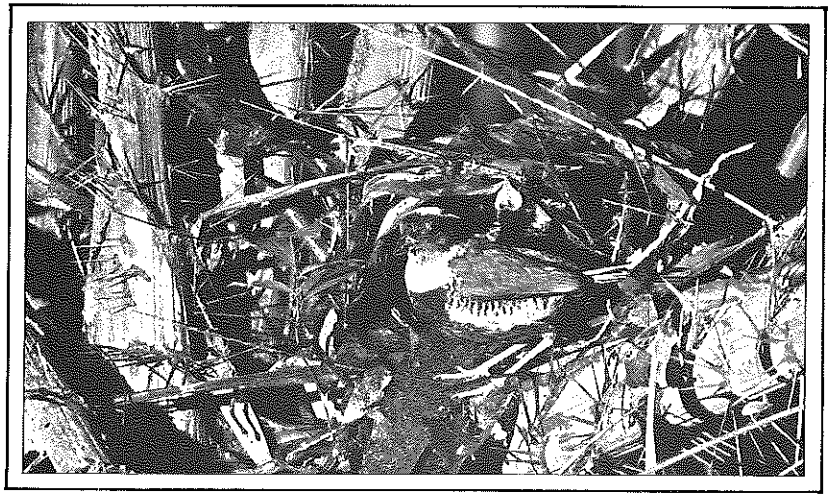
more hesitant in delivering food to the nest than was the male, usually looking around for a few seconds immediately after alighting and before feeding the young. In contrast, the male showed not the slightest agitation, feeding the young immediately on alighting at the nest entrance and sometimes even foraging within 2m of the occupied blind.

The earliest recorded nest visit was at 06h18 on 27 June, only nine minutes after sunrise, while the latest occurred at 18h28 on 26 June, four minutes before sunset. The female made the last visits of the day on both 27 and 28 June, and these took place at 18h25 and 18h20 respectively. The female consistently increased her feeding visits in the late afternoon and the frequency of feeds made by the male also increased during this time (Figure). The shortest interval between two consecutive feeds by the same parent (the male) was less than one minute and the longest 52 minutes, but most took place at intervals of 5–15 minutes. Even though there was intermittent, sometimes heavy, rain throughout the four days of observation, this did not appear to impede foraging and the adults continued to bring food to the nest throughout.

The only time when both parents were seen together on the nest was when the eggs or young were still being brooded, and on one other occasion when the male was still attempting to feed the young with a large (3–4cm long) leatherjacket-like insect grub which they were unable to swallow, when the female also appeared with a beakful of earthworms.

Eleven faecal sacs were extruded by the young during the full day's observations on 27 June and at least nine and ten on 26 and 28 June respectively. These were usually extruded after the male had probed into the nest cavity with the bill, though on occasions the young extruded them onto

Plate 3. ♂ *Pitta gurneyi* at nest, immediately after feeding young, 28 June 1986. (U. Treesucon)



the nest rim without prior external stimulus. Both sexes were seen to carry off faecal sacs. On two occasions when a faecal sac broke open, the male was seen to eat part of the contents.

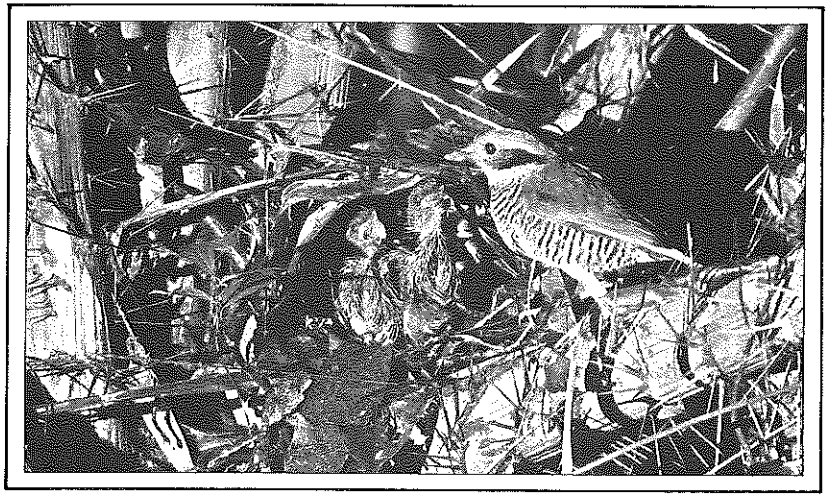
Earthworms were the most frequently observed prey item brought to the young and accounted for 46 of 63 observed feeds (Table). However, this may in part be due to the ease with which they could be seen, since they usually drooped from the bill. On only a small percentage of the male's feeding visits was it actually possible to detect food in the bill, since the blind occluded views of the birds' approach to the nest. In addition, the male flew up to the nest entrance from a point almost directly below and in front, feeding the young with its back turned to the observer. We both had the impression that the male was actually bringing in a higher proportion of small food items than could be determined with certainty. Because the female usually alighted to the side of the nest entrance and hesitated before feeding the young, the prey items which she brought were more often identified.

The birds were occasionally seen foraging, when they usually tossed the leaf litter aside with sideways flicks of the bill, sometimes giving short probes

Table. Food items brought to the nest, 17 June and 25–29 June 1986.

	No. of feeds observed	Annelid worms	large winged insect	large insect grub	large grub or slug	small insect grub	small, unident-ified
male	35	24	1	2		2	6
female	28	22	1	2	1	1	1

Plate 4. ♀ *Pitta gurneyi* at nest, immediately after feeding young, 28 June 1986. (U. Treesucon)



into the loose topsoil. Both adults were frequently observed with mud adhering to their bills.

After the birds had vanished from the nest, we attempted to search for possible pitta prey items, by searching beneath the leaf litter in those areas where the birds had been seen foraging. However, after approximately five minutes of searching, we had collected only one earthworm, a large spider, a millipede and two small cockroaches. Small cockroaches were very numerous in the leaf litter.

VOCALISATIONS

The 'skyeew' note described above was the most frequently heard call and this presumably corresponds with the 'peculiar kir-r-r' of Hume and Davison (1878). However, while their description serves to convey the impression of the slight tremolo, it incorrectly suggests similarity to the entirely distinct 'kirrr' ('whirr' in Medway and Wells 1976) of a Banded Pitta. In fact, the call is much more likely to be confused with the contact or alarm calls of Hooded and Blue-winged Pittas, as already mentioned. Both sexes gave this call: in alarm, such as in response to the presence of an observer; in response to taped playbacks of both this and the 'lilip' calls, and apparently also as a contact call. However, the overall rate of calling was very low: in 39 hours of observations at the nest during 26–29 June, only nine sequences of calls (eight sequences of 1–3 notes; one of six notes) were heard. Of these, three were given at dawn and two at dusk: two more, in the early afternoon, may have been given in response to distant 'skyew' calls from a Hooded Pitta.

The 'lilip' call was only heard on the one occasion already mentioned above when the male delivered it before leaving the nest and eggs unattended. This suggests that this note too may have a contact function, possibly serving to alert or attract the female.

No primary song was heard with certainty, although on 14 June, P.D.R. heard a sequence of mellow 'prew' notes spaced at roughly one second intervals, which had a somewhat pitta-like quality, coming from the area where, within seconds, the male was first flushed from the trail.

SEARCHES ELSEWHERE

During 29 June to 1 July, together with F. R. Lambert, we visited an adjacent area, on the opposite side of the same mountain range, where villagers were said to be actively engaged in trapping pittas (chiefly Banded Pittas) for illicit trade. The two most experienced trappers were extremely helpful and acted as our guides. They showed us how, by imitating the explosive 'kirrr' note of the Banded Pitta, they could entice the birds to respond, and they apparently use this method to lure them into mist-nets.

Both trappers were familiar with Gurney's Pitta and claimed that usually about two birds per month were trapped from around the area of their district. They reported that this species was much scarcer than Banded Pitta and, in addition, more difficult to catch because they were unable to imitate its call. When played our tape of Gurney's Pitta, they immediately recognised the 'skyeew' note as belonging to this species, but were unfamiliar with the 'lilip' call. Moreover, although their usual trapping areas comprised approximately 5 km^2 of level lowland forest, at approximately 150 m elevation, they maintained that they had never encountered Gurney's Pitta there but usually found it, together with the Giant Pitta *P. caerulea* and the much commoner Blue-winged and Hooded Pittas, in patches of secondary scrub jungle, even including old, overgrown rubber plantations, closer to their houses. Such areas were only slightly lower in elevation than the remaining forest, at around 110 m.

Although we spent two days searching, in both forest and in secondary growth and cultivation, no Gurney's Pittas were located. The trappers maintained that the birds were most easily detectable from November to January (i.e. outside the breeding season), when they were more inclined to call. They nevertheless maintained that the species was present all year, although they did not appear to be familiar with the nest.

A small area of forest and secondary growth at less than 50 m elevation at Ban Nai Chong, some 20 km north of the town of Krabi, was also searched, during 10–16 July, by R. Filby and S. Dalziel. Although a number of Banded Pittas were encountered, no Gurney's were found even though the prepared playback tape was used extensively. The apparent absence of Gurney's Pitta here is difficult to account for because the habitat appears very similar to that at the site of the recent discovery. However, the area differs in that it lacks any permanent watercourses and, in addition, has been isolated from the remaining forests of the submontane slopes.

DETECTABILITY AND NUMBERS

Although all or most pittas are shy and secretive, it appears that Gurney's may be especially difficult to locate, at least when nesting, because it calls so infrequently. During the period 11–25 June, while we were still actively searching for additional pitta territories, we estimated that there were about 10 Banded Pitta territories in and around the 1.6 km^2 forest block which held the Gurney's Pitta territory. This was based chiefly on birds heard, as there was a high incidence of calling and, on occasions, Banded Pittas even responded to playbacks of the taped 'skyeew' note of Gurney's Pitta. Nothing was known concerning the breeding status of the particular individuals concerned, but assuming that Banded Pitta breeds at the same time of year as does Gurney's (see Chasen 1939) our findings suggest that it may be more vocal than Gurney's Pitta at a comparable stage in the breeding cycle. This might, however, be a function of the differing population levels

in the two species. If there was only one pair of Gurney's in the forest block, as seemed to be the case, the birds might be less inclined to call than would Banded, since pairs of the latter might continually be encountering their neighbours.

STATUS UPDATE

The discovery of a single nesting pair of Gurney's Pittas in June 1986 appears to confirm the supposition, made in Collar *et al.* (1986), that the species is restricted to the extreme lowlands. The only positively claimed upland records, from Khao Phanom Bencha (Meyer de Schauensee 1946), must be open to doubt. While it is possible that, due to the species's former abundance in the once extensive forests of the lowlands, some individuals were able to disperse up the submontane slopes, it seems far more likely that a simple recording error may have led to specimens being attributed to the wrong altitudinal station.

There is virtually no forest below 100 m within the boundary of any protected area in peninsular Thailand. Furthermore, it is now doubtful whether even as much as 20 km^2 of extreme lowland forest in total remains throughout the entire Thai range of Gurney's Pitta as the speed of forest clearance has accelerated even further in the past two or three years, owing to the adoption of coffee as a cash crop.

The only ray of hope is that Gurney's Pitta may be able to survive in secondary forest and scrub jungle. Certainly the location of the 1986 nest, though situated in an ornithologically species-rich forest, was in a relatively disturbed part, with few large trees and a preponderance of bamboo. There are also the (probably reliable) reports of bird-trappers at one locality that they regularly find small numbers of Gurney's in patches of secondary growth, even including old, overgrown rubber plantations. At present, however, nothing can be inferred concerning the breeding status of these individuals since the trappers appeared never to have seen a Gurney's Pitta nest. Many tropical forest birds are relatively long-lived and it is possible that the trappers are merely encountering displaced birds that are moving around, searching unsuccessfully for suitable breeding habitat. In addition, it is doubtful whether Gurney's Pitta could ever utilise those secondary habitats that are remote from remaining forest. Indeed, such patches of lowland secondary growth themselves are undoubtedly at risk due to the continuing intensification of agriculture on already deforested areas.

RECOMMENDATIONS

If Gurney's Pitta is to be saved, the immediate establishment of a protected area around the site of the 1986 find will be necessary, and recommendations

for this have already been submitted to the Thai government by ICBP and IUCN. Such a reserve should aim to protect the largest possible area of lowland forest, selectively logged forest and secondary growth, as well as all contiguous areas of forest on hill slopes. If possible, agriculture should be discontinued (or at least not intensified) around the immediate margins of the site, so that the areas occupied by secondary forest may actually increase. Similar recommendations, involving the maintenance of intact forest blocks, with corridors radiating from them and linking surrounding secondary growth and plantations, have already been suggested for the conservation of forest birds in the Neotropics (Evans 1986). If such measures were applied around the site of the Gurney's Pitta find, many other lowland forest birds might also benefit.

There is also an urgent need for detailed research around the site of the find, in order to determine the numbers, ecology and breeding status of any such Gurney's Pittas as remain. Areas of secondary growth and scrub in the lowlands outside the margins of existing parks and sanctuaries should also be searched for Gurney's Pitta and other key lowland bird species, with a view to extending the boundaries of such sites.

These measures need to be implemented with the greatest urgency as, with the passage of each dry season (January to April), there is a successive reduction in the amount of forest remaining as farmers open up new areas for cultivation. With so little Gurney's Pitta habitat remaining, just one further dry season may be sufficient to ensure the species's destruction.

Many people directly assisted us in our long search. We thank the superintendents of those national parks and wildlife sanctuaries in peninsular Thailand where, during the past four years, we have searched fruitlessly for Gurney's Pitta. Mr. Pisit na Patalung gave us the names of some key contacts among the illicit animal traders; we must thank the traders themselves for (wittingly or unwittingly) aiding our search. We are grateful to the villagers, village headmen and the sub-district head around the site of the eventual find for their hospitality, forbearance and assistance. The bird-trappers, known as Lung Beung and Lung Chawp, proved to be good friends and field companions. Wherever else we may differ, they share with us a common interest in pittas and, like us, are concerned to see bird habitats protected. Many people have enthusiastically encouraged us in our search, especially Dr. N. J. Collar and Dr. D. R. Wells.

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Recent observations of birds in Xizang and Qinghai provinces, China

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Between 3 March 1986 and 19 April 1986 216 species of birds were recorded from 23 localities in Xizang and Qinghai provinces, China; 7–11 species were new for Xizang, three for Qinghai, and 17–20 for 'South-east Tibet'. Notable species seen include Black-necked Crane *Grus nigricollis*, Kozlov's Babax *Babax koslowi* and Kozlov's Bunting *Emberiza koslowi*.

Vaurie (1972) treated Tibet (Qinghai–Xizang Plateau) as a geographical region rather than a country with political boundaries, splitting it up into three plateau regions – Northern, Outer and South-eastern (cited as South-east Tibet in this paper) – according to vegetation, topography and climate, etc. Chinese scientists recognise different divisions for the region (Zhang 1978) and these together with Vaurie's can be found on Figure 2. Unfortunately the names of the Chinese divisions could not be translated and I have used those of Vaurie for convenience.

The history of ornithology in South-east Tibet is rather brief, and the region's avifauna is still poorly known. In southern South-east Tibet the most important work was done by F. Ludlow and Major G. Sherriff during their collecting expeditions of 1936, 1938 and 1946–1947. Previously only very small collections had been made by F. M. Bailey in 1911 and again accompanied by Captain Morshead, in 1913. G. Bonvalot and Prince H. d'Orléans were the first to make collections in northern South-east Tibet, in 1890, followed by P. K. Kozlov in 1900–1901 and the Brooke Dolan Expedition of 1934–1935, with E. Schäfer. There was also a small collection made by Captain Bower and Dr Thorold in 1891–1892. In recent times collecting has been carried out in South-east Tibet by Chinese ornithologists, and reported on by Cai Qikai *et al.* (1977), Li Dehao *et al.* (1978), Li Dehao and Wang Zuxiang (1979), Jiang Zhihua *et al.* (1979), Zheng Zuoxin *et al.* (1980) and Zheng Zuoxin (1983). Some of the birds they collected were outside Vaurie's (1972) division for the South-eastern Plateau Region, but all were within present-day Chinese limits, and Xizang province. In this paper I include the whole of this part of Xizang up to the border, and call it South-east Tibet, rather than the South-eastern Plateau.

North-eastern Tibet has been much more widely explored, and is probably the best known part of Tibet (Qinghai–Xizang Plateau). A great number of expeditions have criss-crossed the area, starting with the great Russian expeditions of the 1870s, led by N. M. Przhevalsky, V. I. Roborovsky and, later, P. K. Kozlov, who completed his last explorations there in 1907–1909, and ending with the work done by F. R. Wulsin, J. F. Rock and W. Beick between 1922 and 1930, and by Sien Yaohua and his co-workers in 1959–1962.