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New distributional records and natural history notes on the Whiskered Pitta *Pitta kochi* of the Philippines

O. F. JAKOBSEN and C. YDING ANDERSEN

The few observations of the Whiskered Pitta *Pitta kochi* have made information about this endemic bird of the Philippines very limited. During a general avifaunal survey in the Sierra Madre Mountains and in the Mount Pulog National Park sightings were made of this species. A total of 43 birds was recorded, which outnumbered all previous observations. The pitta was recorded from several new habitats at 500 to 2,200 m. Four birds were captured, including one juvenile, and released after measurements and blood samples for DNA analysis had been taken. For the first time, the song has been tape-recorded and translated into a sonogram. It is compared to species with similar vocalizations. Details of a possible breeding season, food and feeding habitats are also reported. The northern part of the Sierra Madre Mountains still contains habitat to sustain a viable population and the mountains currently represent a stronghold of this species.

The Whiskered Pitta *Pitta kochi* is endemic to the island of Luzon, and was first described by Brüggemann (1876). J. Whitehead, who discovered a number of endemic species to the Philippines during the end of the last century, stated that 'the rediscovery of this fine pitta was one of the most interesting results of my journey to the highlands of Luzon' (Whitehead 1899). As indicated by Whitehead, the Whiskered Pitta is a rare, local and seldom seen bird, and information about its distribution, habitat and biology is still very limited. Apart from a few observations almost a century ago, there are only scattered reports on the Whiskered Pitta (Dickinson *et al.* 1991). The first observations were confined to the montane and mossy forest of the Cordillera Central, near or on Mount Dana in Benguet Province. Later, in 1959, observations were made in the Cordillera Central at Mount Sablan, Mountain Province (Rabor's collection, University of the Philippines, Los Banos) and south-west of Mount Adams Peak, Ilocos Norte in 1993 (D. Allen *in litt.*). The Whiskered Pitta is also found in the Sierra Madre Mountains, where single birds have been recorded at Balian, Laguna Province in 1964 (McClure and Leclavit 1972), at Mount Cagua, Cagayan Province (Dickinson *et al.* 1991) and in Dalton Pass, Nueva Vizcaya in 1967 (McClure and Leclavit 1972). The two most recent observations are from Isabela Province on Mount Halmut at the base of Los Dos Cuernos (Anon. 1994) and at Minuma Creek in 1994 (C. Robson *in litt.*). In addition, it has been observed at Mount Isarog in Camarines Sur Province (Goodman and Gonzales 1990).

Two expeditions by the Danish Ornithological Society, the Department of Environment and Natural Resources, the Philippines and ICBP conducted

general avifaunal surveys on Luzon from December 1990 to June 1991 and from February 1992 to May 1992. We report new information on plumage characteristics, voice, breeding season, food and feeding habitats.

METHODS AND STUDY AREAS

Field surveys were undertaken to produce avian inventories for the Sierra Madre Mountains and the Mount Pulog National Park. The Sierra Madre Mountains extend almost 500 km from the north-eastern tip of Luzon southward on the east side of the island forming the backbone of Luzon island. The highest mountain peaks reach from 1,200 to 1,800 m. Surveys were made in the northern part of the Sierra Madre Mountains in Isabel and Cagayan Provinces. The Mount Pulog National Park is situated in Benguet Province in the Cordillera Central, which is 300 km long with the highest peaks from 2,000 to 2,900 m. The park surrounds the highest mountain on Luzon, Mount Pulog (2,930 m) and covers an area of 11,500 ha.

Methods were adopted for surveying the general avian fauna. A combination of line transect surveys, systematic mist-netting, bio-acoustical surveys and general observations were used to compile data.

Line transect survey routes were 2.0-2.5 km long and usually followed existing narrow trails. Easily recognizable markers were placed every 250 m along the route. Three to four researchers compiled data along the transect



Figure 1. The habitat of the Whiskered Pitta.

route, each person walking alone with a speed of 250 m per 15 min. For each transect route at least 40 h of observations were performed. For each observation the following data were monitored: species name, number of birds, perpendicular distance from the bird to the trail, habitat and whether the bird was seen, heard or only observed flying. In addition, it was noted if the species participated in a mixed species feeding party.

Mist-netting stations were composed of 15 to 20 nets (150-200 net-metres). The nets were opened at 05h00 and closed at sunset. Each station was usually in operation for three to four consecutive days. Each bird caught was ringed and the following measurements were taken: length of bill, wing, tarsus and tail. A tiny blood-sample was taken, puncturing the wing-vein, before the birds were released. The blood samples are now included in the DNA collections of the Zoological Museum of Copenhagen.

Close to the transect routes bio-acoustics were performed by regular 12-15 min tape recordings at sunrise, when the vocalization was at its maximum.

LOCATIONS AND OBSERVATIONS

The Whiskered Pitta was observed at five different locations, four of which were in the Sierra Madre Mountains and one in the Mount Pulog National Park.

Mount Dipalayag (16°58'N 122°15'E) One newly fledged juvenile was mist-netted at 950 m and one adult plus one juvenile was observed at 1,000 m between the 18-19 April 1991. In addition, at 650 m one or two adult birds were observed several times on both days collecting food and seen flying away, a behaviour suggesting that breeding took place.

Los Dos Cuernos (17°33'N 121°59'E) All together 15 individuals were recorded between 28 April and 4 May 1991. Two adult birds were mist-netted at 1,150 m. One adult was observed singing at 950 m. The song was tape-recorded. Furthermore, 12 pittas were heard or identified from tape recordings made at 800-1,250 m. In just one day, seven of these individuals were seen, heard or the song tape-recorded.

Minuma Creek (17°09'N 122°06'E) The area was visited 12-21 March 1992. One adult was observed three times at 500 m.

Mount Cataceo (17°42'N 122°02'E) At least 22 individuals were recorded 7-19 May 1992. Between 1,200 and 1,500 m 13 Pittas were recorded in just one day, including 11 individuals at a single transect count (10 adults and 1 juvenile). At a transect count between 1,400 and 1,650 m four individuals were recorded.

The Mount Pulog National Park (16°35'N 120°56'E) During a visit to the village of Akiki within the national park an adult Whiskered Pitta was shown

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Plate 2. Juvenile Whiskered Pitta *Pitta kochi*.

to us on 17 December 1990 by a local boy. The bird had been captured in a ground based bird-trap at 2,200 m. The bird was purchased and released at the area of capture.

HABITAT

Whiskered Pitta was found in a number of different habitats as indicated by our records in the altitudinal range of 500-2,000 m.

At Mount Dipalayag the pitta was observed in two different habitats. At 650 m the habitat included primary, evergreen, lowland forest with steep slopes and large areas with no understory and little herbaceous vegetation, a soft forest floor, with leaf-litter and some boulders. The area was also used by foraging wild pigs *Sus barbatus*, which turned over the soil. The observations at 950-1,000 m were made on a wide mountain ridge with steep slopes, in primary montane forest dominated by oak *Quercus*. This area was also used by wild pigs.

The habitat at Los Dos Cuernos was mostly found on very steep slopes covered by degraded montane forest with a canopy cover of less than 70%. Young trees, ferns and tall (2-3 m) grasses formed a dense understory, leaving only small areas of soft, open forest floor with leaf-litter. This area was also used by wild pigs.

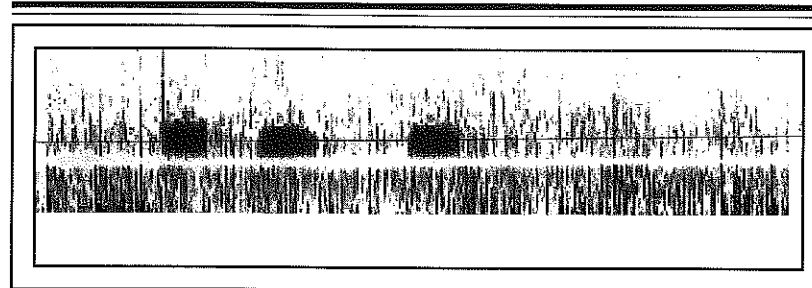


Figure 1. Sonogram of the song of the Whiskered Pitta *Pitta kochi*.

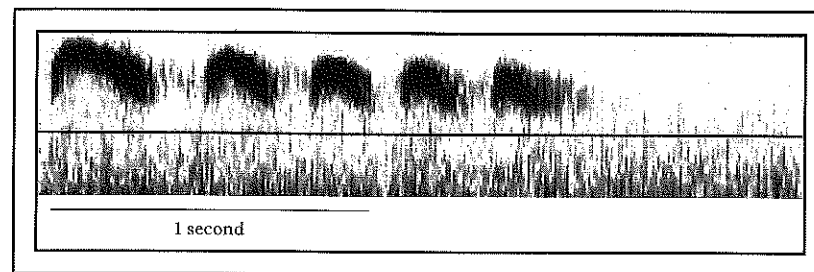


Figure 2. Sonogram of the song of the Amethyst Brown Dove *Phapireron amethystina*.

At Minuma Creek the bird was seen in selectively logged lowland evergreen forest with a canopy cover of 70% and a general canopy height of less than 20 m.

Mount Cetaceo held two habitats in which the pitta was recorded: 1) along the slopes of a ridge at an altitude of 1,400-1,650 m in primary mossy forest with 10-12 m high canopy, and 2) in primary montane forest dominated by oak at 800-1,400 m with a canopy cover of 75%. Wild pigs were found in both areas.

The bird at Mount Pulog came from a habitat of typical mossy forest. The average height of trees was 8 m (range 5-12 m) and the canopy cover 75%. Nearly all trees were broadleaved with a dominance of oak. In the understory ferns and rhododendron were common. However, the understory was open and the soil was disturbed by the activity of pigs.

BEHAVIOUR

The Whiskered Pitta is a terrestrial skulking species. It was always observed near the ground, singly and hopping around turning aside dry leaves with a sideways movement of the head. It was seen digging into the wet soil with the bill in search of food. The pitta was also observed jumping down from a trunk

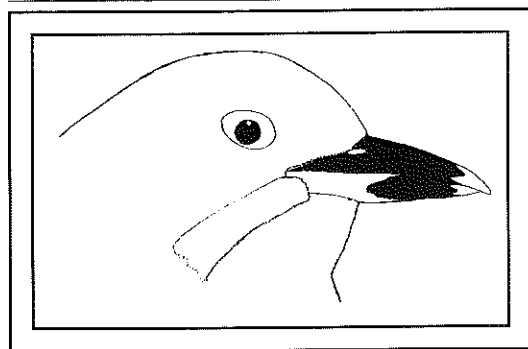


Figure 3. The Whiskered Pitta from the Mount Pulog National Park of the Cordillera Central.

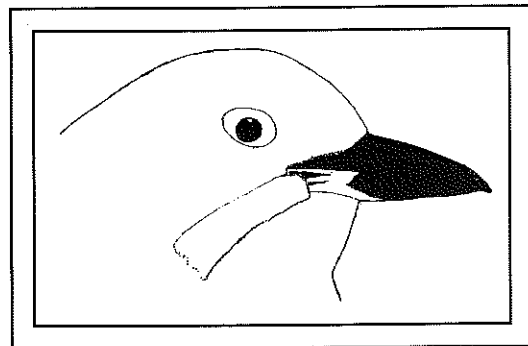


Figure 4. The Whiskered Pitta from the Mount Dipalayag of the Sierra Madre Mountains.

or a rock 30-50 cm above the ground and snatching food items. Now and then, it cocked its head to one side to listen or look. When disturbed, it moved away very fast with long hops, or flew near the ground into cover of dense vegetation. It was never seen more than 1.5 m above the ground.

One bird was examined for stomach contents, from which small beetles were the only items identified. The skin of this bird was given to the Philippine National Museum, Manila. Beetle remains were also observed in faeces from other individuals.

In north-western Sierra Madre the breeding season apparently starts as early as the end of February, although the song activity was highest from the end of April to the middle of May, a period coinciding with the beginning of the rainy season.

In four areas on the Los Dos Cuernos, two or more individuals within hearing distance were calling persistently from dawn to 10h00. In one area at 900 m altitude along 200 m of logging road in degraded montane forest, six individuals were calling persistently until 10h00.

SONG

On 2 May 1991 at 08h00 at Los Dos Cuernos (900 m) the voice of the Whiskered Pitta was tape-recorded for the first time. One individual was observed singing at a distance of 8 m on a logging road in a degraded forest. It used stones from the fireplace of our previous camp as a song post. The voice was a rather monotonous series of single clear elements: 'goow-goow-goow-goow-goow'. Each song bout usually consisted of five descending elements, but varied from two to six. The duration of each song was from 1 to almost 3 seconds. The interval between each song was 20 sec on average (range 5-30 sec) (sonogram, Fig. 1).

The songs of at least 10 individuals were tape-recorded. The extension of each element was related to the number of elements included in each song. Few elements indicated an extended duration of each element. The dominant frequency in the first element of a five element song was 871 Hz. In the field, the song of the Whiskered Pitta may be confused with the Amethyst Brown-Dove *Phapitreron amethystina*, although the song of the dove is deeper - 461 Hz (see sonogram, Fig. 2), and usually consists of 3-4 elements each with a duration of approximately 2 sec.

PLUMAGES

The Whiskered Pitta is a large pitta. We were unable to establish any external sex differences.

The two individuals mist-netted at Los Dos Cuernos were similar and were described as follows: forehead, lores and ear-coverts carob brown (name of colours according to Ridgway, 1912). The crown becomes gradually mars orange towards the nape, which was mars orange. The sub-moustachial stripe was wide and ivory yellow, extending from the lower mandible to below the ear-coverts and to the side of the neck. The narrow malar stripe was carob brown. The sides of the neck, the chin and the throat were vinaceous-brown. The breast was olympic blue. The rest of the underparts including the undertail-coverts were scarlet red. The mantle was brownish-olive. The back and the rump were olive. Uppertail-coverts and both sides of the tail were olympic blue. The wings were olive, except for the scapulars and the median wing-coverts, which were olive with a bluish wash. The greater wing-coverts were olympic blue. A small white patch was present on the inner web of the third primary (one third from the tip) and on the inner and outer webs of the fourth primary. The bill was all black, the iris brick red, the eyering and the eyelid russian blue, the legs and the feet parula blue, and the claws whitish.

The single individual from the Mount Pulog National Park differed from the birds of Los Dos Cuernos by having a more whitish sub-moustachial

stripe and orange-rufous ear-coverts and sides of neck. Starting from the base of the lower mandible approximately 40% was ivory yellow, while the rest of the bill was blackish (Fig. 3).

At Mount Dipalayag one juvenile pitta was mist-netted. The feathers of the forehead were chestnut brown with light ochraceous-buff centres. Loes and ear-coverts were chestnut brown. The crown, the nape and the sides of the neck were mars brown with light ochraceous-buff centres to the feathers. The sub-moustachial stripes were ivory yellow with a chestnut brown line below. The chin was ivory yellow. The throat was covered with cinnamon-brown feathers showing ivory yellow centres. The breast was cinnamon-brown with ivory yellow centres to the feathers and with a few colombia blue feathers. The rest of the underparts were cinnamon-brown with ivory yellow centres to the feathers and a few feathers with deep mouse grey concealed bases with narrow ivory yellow centres and scarlet-red or salmon-orange tips. The mantle, back, rump, uppertail-coverts, scapulars and wing-coverts were olive-brown. The primaries and secondaries were dark greyish olive. As in the adults, there was a small white patch near the tip of the wing. Both sides of the tail were columbia blue. The bill was black with an ivory yellow tip (although not clear from Fig. 4) and starting from the base approximately 40% of the lower mandible was ivory yellow (Fig. 4). The beak flanges were ivory yellow. The iris was dark hessian brown. The legs, the feet and the eyering were parula blue. The claws were whitish.

Location	Wing	Bill	Tarsus	Tail
Mount Pulog (1 ad.)	120	25	49	47
Los Dos Cuernos (1 ad.)	118	30	49	49
Los Dos Cuernos (1 ad.)	122	30	50.5	54
Mount Dipalayag (1 juv.)	126	28	50.5	54

Table 1. Biometrics (mm) of Whiskered Pittas from three locations.

DISCUSSION

The number of Whiskered Pittas described in this paper outnumbers all previous observations together. This is largely due to the novel recording and description of the characteristic song of the Whiskered Pitta. The knowledge of the song has already proved to be a valuable tool in detection of this shy and difficult to observe bird. In addition, this paper describes new habitats used by this pitta, reflected in observations of this species in an altitudinal range of 500-2,200 m. The breeding-grounds in the north-western Sierra Madre are the higher parts of the lowland forest to the higher parts of the mossy forest - apparently from 500 m to at least 1,600 m. In addition, the Whiskered Pitta has recently been recorded at an altitude as low as 360 m in

one of our survey areas (Anon. 1994). Indeed, together with the new knowledge of the breeding season, food and feeding habitats, the present observations extend the previous knowledge of this species.

We found differences in the plumage of birds from the Sierra Madre Mountains and the Cordillera Central. In addition, the previously described plumage of this species differs from our observations: the sub-moustachial stripe has been described as pale-reddish grey and the throat as reddish-grey or reddish (Brüggemann 1876, Gould 1880), whereas we found that the sub-moustachial stripe was ivory yellow and the throat was vinaceous-brown. In addition, the sides of the body and the centre of the abdomen were described as olive-brown (Brüggemann 1876, Gould 1880), whereas we found that the sides of the breast were olympic blue and that the flanks were scarlet red. Brüggemann (1876) and Gould (1880) also described a white spot on the inner web of the second primary, whereas we only found a white spot on the third and fourth primaries. Taken together, the differences in coloration may indicate the presence of isolated populations, which, however, needs further investigation for confirmation.

The four observation sites from the Sierra Madre Mountains are all on the western slopes. On the eastern side of the mountains, however, no surveys were performed above an altitude of 675 m, which may explain the lack of observations. The highest number of birds was found in montane forest between 900-1,500 m.

In conclusion, the northern part of the Sierra Madre Mountains still contains enough habitat to sustain a viable population of the Whiskered Pitta. Hopefully, the conservation measures which have now been implemented in the Sierra Madre Mountains will enable the long term survival of this 'magnificent bird of unrivalled beauty' as Ogilvie-Grant (1895) described the Whiskered Pitta at the end of the last century.

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An annotated check-list of the forest birds of Rajah Sikatuna National Park, Bohol, Philippines

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Rajah Sikatuna National Park preserves most of the natural forest remaining on the island of Bohol, in the central Philippines. The park holds many species of forest birds, including at least 48 species endemic to the Philippines, and all four of Bohol's endemic subspecies. An annotated list of the forest bird species known from the national park is given, including 10 species not previously known from Bohol. The national park is well-protected by the Department of the Environment and Natural Resources (DENR), who have an active reforestation programme in the adjacent cleared areas.

INTRODUCTION

Bohol, an island of 4,117 km² (Dickinson *et al.* 1991), lies between Cebu and Leyte in the central Philippines. It is low-lying with its highest point at only 878 m (Heaney 1986). The island has no pronounced dry season but is rainy from July to September due to typhoons, and from October to December due to north-eastern monsoons (DENR 1992). The driest month is April (DENR 1992). Much of the island consists of coralline limestone of geologically recent origin. During the lower sea levels of the mid- and late-Pleistocene (until 18,000 years ago), Bohol was joined to Leyte and Samar, and from there to Mindanao (Heaney 1986).

As a result of this recent connection, Bohol is faunistically very similar to Samar and Leyte, with most bird species and subspecies shared between the three islands. This group, the Eastern Visayas, has two endemic bird species, Samar Hornbill *Penelopides samarensis* and Yellow-breasted Tailorbird *Orthotomus samarensis*, both of which are allospecies of forms found elsewhere in the Philippines. Bohol itself has four recognized endemic subspecies (Streaked Ground-Babbler *Ptilocichla mindanensis fortichi*, Black-crowned Babbler *Stachyris nigrocapitata boholensis*, Rufous-tailed Jungle-Flycatcher *Rhinomyias ruficauda boholensis*, and Metallic-winged Sunbird *Aethopyga pulcherrima decorosa*), due to its historically isolated position, at the end of a peninsula with only a narrow connection to Leyte (Rand and Rabor 1960). This location, however, may have also left Bohol depauperate in comparison to Leyte and Samar, for several species such as Elegant Tit *Parus elegans* and Sulphur-billed Nuthatch *Sitta oenochlamys* are noticeably absent from the island.

Bohol has received surprisingly little attention from ornithologists. A. H.