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THE SECOND RECORD OF A FIRETHROAT *CALLIOPE PECTARDENS* IN THAILAND

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ABSTRACT

The second record of an apparently over-wintering Firethroat *Calliope pectardens* (Muscicapidae) in northern Thailand, a female, caught and ringed following its discovery, is documented. Reference is made to a previous Thai record of the Firethroat's sister species, the Blackthroat *C. obscura*. Since the females of both species are very similar, the identity of the present individual was confirmed both by examination in the hand and by DNA assay. The importance of maintaining marginal lowland habitats, such as scrub and reeds along the banks of lowland watercourses and around field margins, so as to maintain biodiversity in intensively agricultural lowland landscapes, is discussed.

Keywords: Muscicapidae, faunistics, identification, lowland habitat conservation, threatened birds, wetland

INTRODUCTION

A female-plumaged Firethroat *Calliope pectardens* at Ban Tha Ton, Mae Ai District, Chiang Mai Province (N 20°03′07″, E 99°22′42″), first found and photographed by PWS on 6 March 2024 (https://ebird.org/checklist/S163973062), was only the second individual of this species recorded in Thailand. The bird made a prolonged stay at the site, and though still present on 14 April 2024 (https://ebird.org/checklist/S168539150), was not seen on the following day (Natthaphat Chotjuckdikul, pers. comm. to AJ), suggesting it had departed that night. During its stay, it was seen and photographed by AJ and by many other observers (Figs. 1, 2). We provide detailed documentation of this second country record of the species, still one of very few for Southeast Asia.

At the time of discovery, the identification of this female muscicapid robin was uncertain and it was thought plausibly to be the sister species, the Blackthroat *C. obscura*. There are previous single records of both Firethroat and Blackthroat from lowlands in the neighbouring province, Chiang Rai. Thailand's only Blackthroat specimen, a female (USNM518898), was collected near Chiang Saen Lake on 3 February 1965 (RIPLEY & KING, 1966), while the only previous Firethroat individual was a first-winter male, which, following its discovery on 26 December 2014, over-wintered and moulted into full breeding plumage before departing on northwards migration back to breeding areas after 22 April 2015 (BUNKHWAMDI *ET AL.*, 2015).

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This latter individual, caught and ringed earlier that same season, returned to over-winter at the same site in two more successive years, and was last noted on 15 April 2016 and 18 April 2017 (data held on file, Thai Bird Records Committee, Bird Conservation Society of Thailand).

Thailand's single Blackthroat specimen, referred to above, remains the only undoubted record of the species outside China. The Blackthroat breeds in southeastern Gansu, southern Shaanxi and northern Sichuan, and has been recorded in migration in Yunnan. The Firethroat breeds from southeastern Xizang to extreme southern Gansu, Sichuan and northern Yunnan (BIRDLIFE INTERNATIONAL, 2024). Its winter range is also imperfectly known, with most winter records from Bangladesh and elsewhere in the north-east Indian subcontinent (RASMUSSEN & ANDERTON, 2005; ROUND *ET AL.*, 2014), and two records from northern Myanmar (TORDOFF *ET AL.*, 2007; CLEMENT & ROSE, 2015). The relatively minor plumage differences between the females of the two species are not well known, and published descriptions of these are unclear and sometimes contradictory. Blackthroat may be shorter-tailed than Firethroat, but few individuals have been measured (ROUND & CLEMENT, 2015).

Populations of both species are believed to be decreasing and are at risk. The Firethroat is listed as Globally Near-threatened, while the Blackthroat is listed as Globally Vulnerable (BIRDLIFE INTERNATIONAL, 2024).

METHODS

Circumstances of Capture

It was important to determine which of these two *Calliope* spp. was present, and an attempt was mounted by PDR, assisted by Mayoh De Vleeschauwer, to catch, measure and sample blood from the Tha Ton individual, on 18 March 2024. The site frequented by the *Calliope* sp. was the narrow reedy margin of the Khok River, ca. 2 km ESE of the town of Tha Ton, at the edge of cultivated fields, ca. 446 m elevation. In preceding days, the bird had been baited with mealworms by visiting birders and bird photographers, and its precise location was marked by a small log placed at the landward edge of some flattened reeds. Our first views of the bird were obtained within ten minutes of our arrival, at 11:25 h. It emerged into view only briefly, reappearing after a further 25 min., allowing further observation. We then left the site, to formulate our plans and take refreshment, returning shortly before 16:00 h.

A spring-trap, baited with a mealworm, which may be triggered by a bird that attempts to take this prey item, was placed on the ground close to the log. Within 2 min., the bait had been taken by a skink (Fam. Scincidae) without triggering the trap mechanism. The trap was immediately reset and at 16:10 h the *Calliope* entered the trap but also was able to consume the mealworm without triggering the capture mechanism. One further bait was then taken by a Baikal Bush Warbler *Locustella davidi* which was successfully captured. After the *Locustella* had been processed (ringed, measured and released), the trap was again set (at 16:50 h). The *Calliope* again soon entered the trap to take the mealworm bait, was safely caught, placed in a cotton holding bag, and taken for processing to a site ca. 50 m from the place of capture.

After being ringed (ring number 2A64078), measured, weighed, and photographed in the hand, a drop of blood was collected on a small wedge of filter paper by pricking the inter-tarsal vein. The filter paper with absorbed blood was then placed in a small plastic vial which, after

Figure 1. Female Firethroat *Calliope pectardens*, Ban Tha Ton, Chiang Mai, 14 March 2024. Photograph by Ayuwat Jearwattanakanok.

Figure 2. Female Firethroat *C. pectardens*, Ban Tha Ton, Chiang Mai, 14 March 2024, showing the slightly paler throat and slight underparts mottling, visible at some angles. Photograph by Ayuwat Jearwattanakanok.

transport back to Bangkok on the following day, was placed in a freezer before processing. The *Calliope* was transported back to the site of capture and released at 17:36 h. It was again observed in the field at the same site, bearing its metal ring, the following morning, 19 March 2024, at 08:12 h, apparently behaving normally, before our departure.

Laboratory Protocols

After removal from the freezer on 28 March, a small piece of the filter paper with the blood sample of the female *Calliope* was excised, and digested with proteinase-K and digestion buffer for 3 hours. The genomic DNA in the digested solution was extracted using a commercial DNA extraction kit (NucleoSpin® Tissue Kit, Macherey-Nagel AG). A partial fragment of cytochrome *b* gene was amplified using primers L14841 (5´–AAA AAG CTT CCA TCC AAC ATC TCA GCA TGA TGA AA–3´) and H15547 (5´–AAT AGG AAG TAT CAT TCG GGT TTG ATG –3´). A polymerase chain reaction (PCR) was conducted on our sample, comprising 0.5 µL (100 pmole) of each primer, 40 ng of DNA template, 6 µL of Supermix® containing Taq DNA polymerase, dNTP, PCR buffer, adjusted to a volume of 12.5 µL using molecular grade water. The PCR was carried out with an initial denaturation of 3 min. at 94°C, 35 cycles at 94°C for 30 sec., 50°C for 30 sec., 72°C for 60 sec. followed by an extension of 2 min. at 72°C and then held at 10°C. The PCR product was visualized using 1.5% agarose gel. Purified PCR product using NucleoSpin® Gel and PCR Clean-up kit was then sent for sequencing using the Sanger method in an ABI 3730 automated sequencer.

Genetic Analysis

The sequence was edited using MEGA11 (TAMURA *ET AL.*, 2021) and a fragment of 733 base pairs obtained. It was then blasted to find the closest match with related species in the NCBI database (Table 1). The genetic distance between the sample and other sequences was determined using the Kimura-2-Parameter (K2P) method (KIMURA, 1980). A phylogenetic tree using Maximum Likelihood with HKY+G model and 1000 bootstraps was performed to examine the clustering of the sample in relation among conspecifics. The sequence was deposited in GenBank (PP713067).

RESULTS

Genetic Comparisons

The cyt *b* sequence, 733 base-pairs, of the Tha Ton bird was a very close match with other *C. pectardens* in the NCBI database. Its K2P pairwise cyt *b* distance from the only previous Thailand-sampled individual (KT452629) was 0.0055, and from five other *C. pectardens* sampled from wintering areas in Bangladesh (three) and Sichuan, China (two) was 0.000–0.0041. The K2P pairwise cyt *b* distance of the Tha Ton bird from a single *Calliope obscura* was an order of magnitude greater, 0.059 (Table 1).

The phylogenetic tree revealed the nestedness of the sampled individual within *C. pectardens* with a strong posterior probability (Fig. 3).

Table 1. Pairwise genetic distance among *Calliope* samples based on 733 bp fragments of cytochrome *b* using K2P methods.

List of samples used in this study	[Tha Ton] PP713067	KT452629	KT452628	KT452627	HM633320	KT452626	KU973778	KC967092	LT718705
Calliope pectardens PP713067 (Tha Ton, Thailand)									
C. pectardens KT452629 (Chiang Saen, Thailand)	0.0055								
C. pectardens KT452628 (Bangladesh)	0.0027	0.0027							
C. pectardens KT452627 (Bangladesh)	0.0000	0.0055	0.0027						
C. pectardens HM633320 (Sichuan, China)	0.0014	0.0069	0.0041	0.0014					
C. pectardens KT452626 (Bangladesh)	0.0041	0.0041	0.0014	0.0041	0.0055				
C. pectardens KU973778 (Sichuan, China)	0.0014	0.0042	0.0014	0.0014	0.0028	0.0028			
C. obscura KC967092 (Shaanxi, China)	0.0589	0.0590	0.0589	0.0589	0.0605	0.0559	0.0567		
C. calliope LT18705 (Mongolia)	0.1363	0.1347	0.1363	0.1363	0.1374	0.1349	0.1341	0.1273	
C. calliope LT18703 (Russia: Amur Oblast)	0.1380	0.1364	0.1380	0.1380	0.1391	0.1366	0.1359	0.1290	0.0014

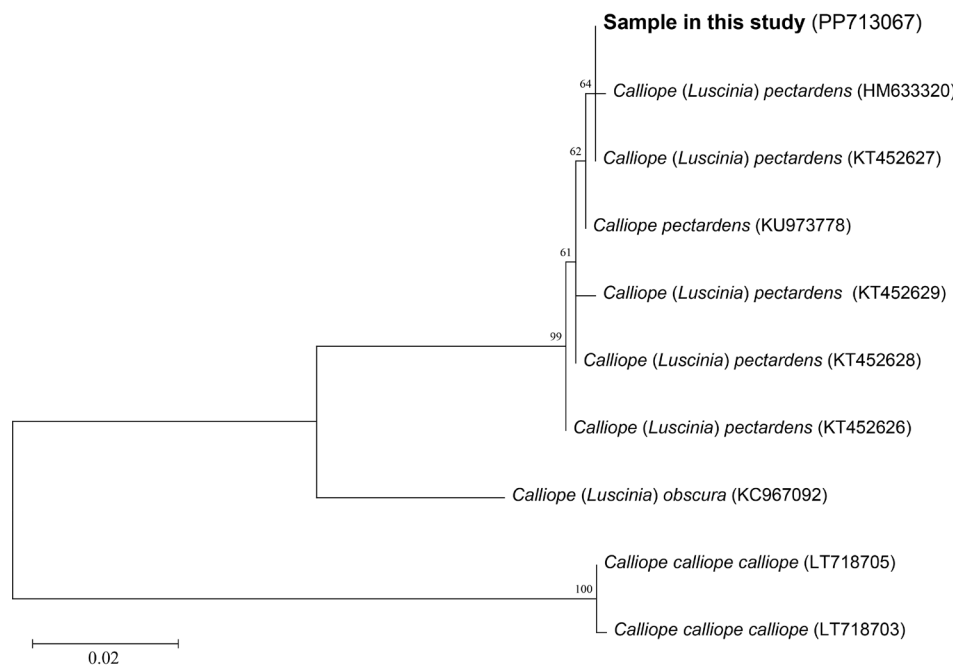

Figure 3. Phylogenetic tree using Maximum Likelihood method based on 733 bp fragments of cytochrome *b* showing clustering among *Calliope* spp. Numbers at each node are branch support probabilities.

Description

A dark-billed, dark-legged robin, with a shortish to moderate length tail, more or less uniformly cold brown upperparts, and light buff-brownish-washed underparts (breast, belly and flanks) that lacked any strong contrasts in the plumage. Sides of head paler than crown with a complete whitish-brown eye-ring encircling the eye. There did not appear to be any rufous tone in the plumage of the upperparts, rump and tail, though slightly warmer brown-edges to the upper tail-coverts were evident, as were slightly paler rufous-brown outer webs to the primaries on the folded wing (Fig. 1). The throat appeared paler than the breast and belly, although this was difficult to judge and depended on lighting. When seen front-on, in ventral view, the throat could appear whitish, though was indistinctly demarcated from the sides of the neck and breast. The feathers of the breast had slightly paler tips which imparted an indistinctly mottled, scaly appearance to the underparts (Fig 2). In the hand, the under-tail coverts appeared slightly paler, more whitish-brown than the flanks. Legs and feet appeared grey in the field and dark pinkish-brown in the hand. Both upper and lower mandibles were solidly blackish, though graded into greyish-flesh basally on the lower mandible and on the gape flange of both upper and lower mandibles (Figs. 1 and 2). In the hand the palate could be seen to be dark slate (fleshy basally).

The age of our bird was uncertain. Male Firethroats in the early part of their second calendar-year (2cy) can easily be aged since, apart from showing mainly bluish upperparts, they show contrast between blue adult-type inner greater (secondary) coverts and brown juvenile outers (Round *et al.*, 2014). Females are difficult to age since they are all-brownish above and therefore lack obvious colour contrast in the all-brown greater covert array. Moreover, in this species, juvenile greater coverts appear to lack pale tips, unlike some congeners (e.g., Siberian Rubythroat *C. calliope*). As a general rule primary coverts are more pointed and looser-structured in 2cy birds than in adults (Svensson, 2023), but this is hard to judge. Overall, the body plumage and flight feathers of the wings appeared fresh, with only slight wear in the tips of the rectrices, and apparently even-aged greater coverts, possibly suggesting it was older than 2cy. The wing point was p5 (numbered ascendently), p4 was subequal; p6 was 1.2 mm shorter, and p3 was 2.8 mm shorter than the wing-point. P2 fell 9.9 mm short of the wing-point, between the tips of primaries p9 and p10. P1 (the outermost primary) was 11.5 mm longer than longest primary covert and Kipps Distance was 12.1 mm. The outer webs of pp 3, 4, 5 and 6 were emarginated.

The wing (measured maximum chord) was 68 mm and the tail 52 mm (Table 2). This accords closely with wing/tail measurements for two other female Firethroats previously handled by PDR, respectively 67/49 mm and 69/51 mm (data held on file). So far as known, Blackthroat is slightly shorter-tailed than Firethroat. Clement & Rose (2015) give the range of tail measurements as 46–51.5 mm for male Blackthroats compared with 50–56 for male Firethroats. Females are usually slightly smaller than males but the only published measurements for a female Blackthroat were 68 mm wing and 49.5 mm tail (Ripley & King, 1966). Soft deep chucking notes recorded by AJ on 14 April, the last day of observation of the present individual (https://ebird.org/checklist/S164582000), were the only vocalisations noted.

Table 2. Measurements of a female Firethroat *Calliope pectardens*, ring no. 2A64078, Ban Tha Ton, 18 March 2024. Wing maximum chord; bill measured to skull. Depth and width of bill measured at distal edge of nostril and (in parentheses) proximal edge of nostril. All measurements in mm.

wing	tail	total head	bill length	bill depth	bill width	tarsus	mass (g)
68	52	33.7	16.3	3.3 (3.5)	3.3 (4.4)	27.0	16.3

DISCUSSION

The occurrence of a Firethroat in reedy, wetland habitat accords with the limited information we have concerning the winter habitat preference of this species based on observations in Bangladesh and of the previous Thai wintering individual (Bunkhwamdi *et al.*, 2015; Round & Clement, 2015). Although the single Thai specimen of Blackthroat occurred at a similar lowland elevation, the habitat where it was taken was described as "bamboo mixed with stands of grass, a few shrubs and scattered trees" (Ripley & King, 1966). Our supposition, therefore, is that, in winter quarters, Blackthroat may perhaps favour drier, more wooded habitat than Firethroat.

The significance of this Globally Near-threatened species utilizing a narrow belt of reedy growth along a lowland waterway, in an otherwise intensively cultivated area, should not be underestimated. Angkaew *et al.* (2023) identified reed-beds along watercourses and areas of other natural and semi-natural vegetation around field margins as being correlated with the diversity and density of focal bird species, both resident and migrant, of national and global conservation concern. Populations of many such species are absent from Thailand's mainly upland, forested, protected areas network. The farming-induced destruction of reedbeds along riverbanks, combined with the intensification of agriculture in other marginal habitats during recent decades, has led to significant loss of critical habitat for numerous breeding and migratory bird species. One such, the resident Jerdon's Bushchat *Saxicola jerdoni,* considered nationally near-threatened (TBRC, 2022), is still present in riparian reedy growth along the Khok River at Tha Ton, but in perilously small numbers. Our discovery emphasizes the need for targeted conservation efforts to counter these anthropogenic threats and uphold the ecological balance of lowland riverine and grassland habitats and ecosystems.

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