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Avian survey in tourist sites near Putao in northern Myanmar

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Abstract: We present the results of short ornithological observations conducted in November–December 2014 and December 2015 in the territory near Putao in northern Myanmar at elevations below 1,500m. We recorded 105 species, which were mostly resident birds, and evaluated the species abundance with a relative scale along tourist walking routes in the area. The bird species richness in the Mali Hka River Valley was observed to be less than in the adjacent virgin mountain forests. Our results could be used for future bird monitoring fieldworks.

Keywords: Birdwatching, eastern Himalaya, ecotourism, Himalayan avifauna, Mali Hka River Valley, ornithologic survey, subtropical ecosystems.

In recent decades, birdwatching is extremely popular and is now one of the most attractive forms of ecotourism. Many birdwatchers are especially interested in the regions where the bird lists are not complete and where there is a space for exciting discoveries. The magnificent landscapes and diverse wildlife of Myanmar with their numerous bird species provide such wonderful opportunities. Although extensive research on birds of Myanmar was done more than half a century ago (e.g., Oates 1883; Baker 1922, 1930; Smythies 1953), most recent review publications are rare (e.g., Lwin & Thwin 2003; Twin et al. 2011; Renner et al. 2015) compared to bird distribution data from other countries of southeastern Asia.

Northern Myanmar forms a part of the eastern Himalayan mountain range. It represents an important bird area populated by many representatives of the Palearctic and Oriental faunal regions, including several sub- and endemic species (e.g., *Jabouilleia naungmungensis*, *Alcippe cinereiceps hkakaboraziensis*, and *Malacocincla abbotti kachinensis*; Rappole et al. 2005; Renner et al. 2015). This region is also known for its important bird migration routes, though the migration patterns are poorly investigated (Rappole 2013). Several general works on the avifauna of northern Myanmar with long checklists (Smythies 1949; King et al. 2001; Rappole et al. 2005, 2011; Renner et al. 2015; Zhang et al. 2017) as well as the published field notes of naturalists (e.g., Cornet & Alibert 2005) attract many ecotourists to this region.

The high diversity and endemism of the avifauna of northern Myanmar with the possibility of Himalayan origin (Rappole et al. 2011) was mentioned in the 19th Century (Oates 1883a,b; Renner & Rappole 2011; Twin et al. 2011; Renner et al. 2015). Between 1998 and 1999, 314 bird species were recorded across the entire elevation range of the mountains around Putao and 87% of this number occurred at altitudes of up to 1,500m

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(King et al. 2001). The number of reported species reached around 413 ten years later (Rappole et al. 2011) and was estimated to be 441 species according to the results of field surveys from 1997 to 2006 (Renner et al. 2015). The 2015–2017 bird diversity inventory detected 319 species (Zhang et al. 2017), which is significantly less than in previous publications. It is possible that the avifauna composition in this region varies due to ecologic factors and it is extremely important to understand the reasons for these changes.

The real chances to observe and photograph the checklist species in the wild during a certain season is hard to establish with confidence. Indeed, although such knowledge is crucial before planning any ecotours or trips, the relevant information is sometimes difficult to find. Therefore, we believe that, in addition to recording the occurrence of certain species, the field naturalists should also aim to evaluate the fauna of the study area from the quantitative perspective and, more importantly, to publish their observations. Furthermore, the evaluation of the avifauna is beneficial for the environment as it is necessary for bird monitoring in sparsely populated areas with unique natural ecosystems. Consequently, the principal goal of our work was to assess the bird occurrences in the territories with walking tracks that become popular during the tourist season.

Materials and Methods

Study Area

The field observations were carried out in the Putao District of Kachin State from late November to mid-December of 2014 and again in December 2015. The Putao Plain is surrounded by mountains covered by evergreen subtropical forests. As compared to river valleys with numerous villages, paddy fields, and gardens, the steep mountain slopes in the region are less affected by human activities that at most include localized hunting, selective logging of trees, harvesting of plants, and using wildlife products (Rappole et al. 2011; Renner et al. 2015).

Birdwatching surveys were conducted along permanent hiking paths and in different habitats near villages (Fig. 1). Due to poor roads that are limited to a few rather difficult mountain routes, the access to the study area is relatively limited for tourists. For our survey, we chose two old pathways with similar ecologic characteristics, used by many people daily. The starting sections of these mountain routes between 800m and 1,400m are rather easily accessible from Putao. On average, it took us one day to cover the distance one way (i.e., the round trip required two days). The first path runs towards the Hkakaborazi National Park near the eastern border of China and passes through the villages of Nansabun (27.391^{0}N & 97.516^{0}E) and Namthi (27.410^{0}N & 97.66^{0}E). The route is about 17km-long with elevations ranging between 600m and 900m. The second track runs towards Hponkanrazi Wildlife Sanctuary near the western Indian border with the villages of Shangaung (27.423^{0}N & 97.297^{0}E) and Wasandum (27.489^{0}N & 97.190^{0}E) along its course. This 15km-long route is located between 450m and 1400m with the prevailing altitudes of 600–800 m. The two tracks are divided by the vast Putao Valley located at a lower elevation (below 500m). We devoted several days to perform separate observations along the floodplain of the Mali Hka River and its tributaries (altitude of 400m) near Manu Village (27.436^{0}N & 97.474^{0}E). Birdwatching in different habitats near villages was carried out to assess the frequency of bird occurrence under the forest canopy, which was otherwise difficult to accomplish on the walking tracks, as well as to investigate synanthropic bird species.

Methods

The bird registration was performed by simple visual identification during daylight hours. We stood and recorded all the individuals flying by for at least one hour each in the morning after sunrise and in the evening before sunset to quantify the birds near the villages. Overall, we spent 120h observing the birds on the Nansabun-Namthi route, 100h on the Shangaung-Wasandum route, and 40h near Manu Village.

We passed along hiking paths at an average speed of about 2–3 km/h and tried to identify the birds that were seen. We recorded only those bird species that could be identified with a high degree of certainty in the field conditions. We stopped for 10–15 min to carry out bird identification. Also, we moved up to 50m into the forest from the footpath whenever possible. We worked in groups of two (one group went into the forest just to the left of the path, the other just to the right — in this way different bird individuals were taken into account). The data were then summarized. Birds that could be simultaneously taken into account by different observers as well as the time spent on their registration were excluded from the checklist. The total accounting time included only the time taken to hike along the path. The time spent on bird identification was not taken into account. We used Bresser waterproof binoculars (x7) and photographic equipment (Nikkon D3200, Canon EOS 1D X et al).

We documented the frequency of occurrence of bird

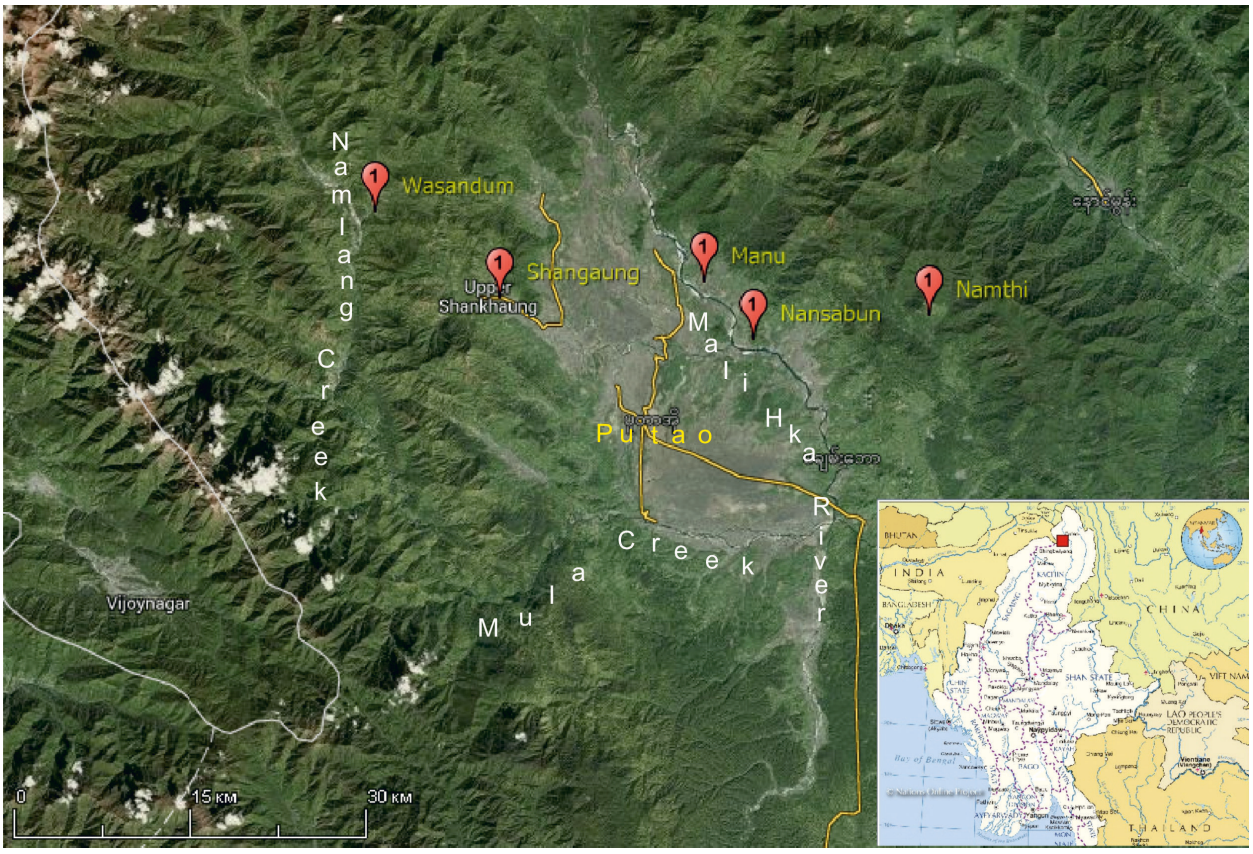

Figure 1. The birdwatching area in Putao District in Kachin State, Myanmar

species by adopting a four-point relative scale (King et al. 2001) and attributing each bird species to specific categories according to their total number: 'a' - abundant (more than 100 individuals of a certain species), 'c' - common (10–100 individuals), 'unc' - uncommon (2–10 individuals), and 's' - single (one individual). It should be noted that we did not aim to clarify the systematic position of birds, i.e., the systematic order shown in Table 1 is given in accordance with the accepted guidelines (del Hoyo & Collar 2014, 2016). Despite that, these publications have some limitations and the status of several species can be contested (Renner et al. 2018). These studies nevertheless forms a basis in the International Union for Conservation of Nature (IUCN) and are used by many birdwatchers.

We prepared the basemap in SAS Planet software using data from https://www.nationsonline.org/oneworld/map/myanmar_map2.htm (Fig. 1).

Results and Discussion

We recorded 105 species during the short hiking surveys across the low-mountain terrain of which only 12 were migratory and the rest were resident birds. In addition, we noted a large variability in the species encountered even over insignificant distances. For instance, only 19 bird species (18% of the total number of species encountered) were common for both the tracks (separated by the 27km-wide Putao Valley) and about 50 species were unique for one or the other route (Table 1). It should be noted that the percentage of species within particular categories was approximately the same for the routes in the mountain forest, i.e., about 70%–80% of identified species belong to the categories 'common' and 'uncommon', about 15%–20% species to 'single', and about 5% to 'abundant'.

In the Mali Hka River floodplain, which is surrounded by agriculture lands and is heavily affected by other human activities, the biodiversity is lower and the distribution of species between the four categories is different. Namely, the percentage of species in category 'abundant' is reduced to 2% and that in category 'common' to 20%, which is half as many as in the undisturbed forest. Likewise, there are half as many species with a single occurrence, largely due to the absence of indigenous avifauna of forest habitats in the region. Most species (about 70%) are assigned to the

category 'uncommon'. In the Mali Hka River Valley, many individuals encountered belong to the species typical of wetland habitats (e.g., White-throated Kingfisher *Halcyon smyrnensis*, Red-wattled Lapwing *Vanellus indicus* (Image 2), Great Cormorant *Phalacrocorax carbo*, Striated Heron *Butorides striata*, Ruddy Shelduck *Tadorna ferruginea* (Image 1), and Crested Kingfisher *Megaceryle lugubris*).

The synanthropic bird species begin to occur in agriculture landscapes and human settlements. This is observed on the background of the bird population decline in the vicinity of human-inhabited areas. The Common Myna *Acridotheres tristis* was found only in Putao Valley. We did not encounter this species in the virgin forest area despite the fact that the species can penetrate into the forest. The presence of Large-billed Crow *Corvus macrorhynchos* was noted only near human-related habitat territories (Manu, Shangaung, and Wasandum villages). The Oriental Turtle Dove *Streptopelia orientalis*, Spotted Dove *S. chinensis*, and White-rumped Munia *Lonchura striata* were also observed only in the cultivation area.

The interesting fact is that the presence of the Chinese Rubythroat *Calliope tschebaiewi*, a rare winter visitor in northern Myanmar, was not mentioned in the latest report by Rappole et al. (2011), although individual encounters with the species are known from the Chinese and Indian border regions (Cheng 1976; Ghosh et al. 2010). The presence of this species in Myanmar was only reported from rhododendron ecosystems (Kinnear 1934) above tree lines at altitudes above 3,500m.

Likewise, the record of Solitary Snipe *Gallinago solitaria*, previously indicated as winter visitor in northern Myanmar (Robson 2008; Ekstrom & Butchart 2016) and several individuals of which were registered at Mali Hka River tributaries during our fieldwork near Manu Village (Image 3), was absent from the checklist of Rappole et al. (2011).

Currently, there are not enough publications available to compare the relative abundance of bird species in northern Myanmar and in India (Singh 1991; King et al. 2001; Renner et al. 2015; Zhang et al. 2017). The 'abundant' category and observation time reported by these authors are often different, which makes it extremely difficult to make reliable comparisons. Nevertheless, we want to emphasize the abundance of certain species. In particular, the study shows that Common Sandpiper *Actitis hypoleucos*, Rufous-chinned Laughingthrush *Garrulax rufogularis*, Blue-winged Laughingthrush *Trochalopteron squamatum*, Spot-throated Babbler *Pellorneum albiventre*, Buff-breasted

Image 1. Ruddy Shelduck *Tadorna ferruginea* near Mali Hka River.

Image 2. Red-wattled Lapwing *Vanellus indicus* on the paddy fields of Putao Valley.

Babbler *Trichastoma tickelli*, White-gorgeted Flycatcher *Anthipes monileger*, and Black Drongo *Dicrurus macrocercus* are not be considered as rare species, despite being previously attributed to this category by King et al. (2001). Similarly, although Zhang et al. (2017) recorded quite a small number of Wreathed Hornbill *Rhyticeros undulates*, we observed several flocks of this species with 8–14 individuals in each suggesting that it is not rare in the Mali Hka River Valley and along the river's main tributaries. Moreover, according to local villagers, the flocks of this hornbill can reach several dozen individuals during the breeding season (April–May). Such anecdotal information is further supported by earlier official publications (Stanford & Ticehurst 1939; Renner et al. 2015) that reported several cases of large gatherings of the species. In contrast, Sultan Tit *Melanochlora sultanea* is indicated as a common species in these ecosystems by King et al. (2001) and Singh (1991) but appears as a rare species according to

Table 1. Bird species recorded along hiking paths near Putao in Kachin State, northern Myanmar

		Nansabun-Namthi route	Manu Village	Shangaung-Wasandum route
	Order: Galliformes			
	Family: Phasianidae			
1	*Arborophila rufogularis* Rufous-throated Partridge	unc		
	Order: Anseriformes			
	Family: Anatidae			
2	*Mergus merganser* Goosander		c	c
3	*Tadorna ferruginea* Ruddy Shelduck		unc	
	Order: Columbiformes			
	Family: Columbidae			
4	*Streptopelia orientalis* Oriental Turtle-dove		unc	
5	*Spilopelia chinensis* Eastern Spotted Dove		unc	
6	*Chalcophaps indica* Grey-capped Emerald Dove	unc		
	Order: Caprimulgiformes			
	Family: Apodidae			
7	*Aerodramus brevirostris* Himalayan Swiftlet	c		
	Order: Cuculiformes			
	Family: Cuculidae			
8	*Centropus sinensis* Greater Coucal		unc	
	Order: Ciconiiformes			
	Family: Ciconiidae			
9	*Ciconia nigra* Black Stork			unc
	Order: Pelecaniformes			
	Family: Ardeidae			
10	*Butorides striata* Green-backed Heron		unc	
	Order: Suliformes			
	Family: Phalacrocoracidae			
11	*Phalacrocorax carbo* Great Cormorant		unc	
	Order: Charadriiformes			
	Family: Ibidorhynchidae			
12	*Ibidorhyncha struthersii* Ibisbill			c
	Family: Charadriidae			
13	*Vanellus duvaucelii* River Lapwing		unc	unc
14	*V. indicus* Red-wattled Lapwing		unc	
	Family: Scolopacidae			
15	*Gallinago solitaria* Solitary Snipe		unc	
16	*Actitis hypoleucos* Common Sandpiper			c

		Nansabun-Namthi route	Manu Village	Shangaung-Wasandum route
	Order: Strigiformes			
	Family: Strigidae			
17	*Otus spilocephalus* Mountain Scops-owl			s
18	*O. lettia* Collared Scops-owl			s
19	*Glaucidium cuculoides* Asian Barred Owlet			unc
	Order: Accipitriformes			
	Family: Pandionidae			
20	*Pandion haliaetus* Osprey			unc
	Family: Accipitridae			
21	*Pernis ptilorhynchus* Oriental Honey-buzzard	s		
22	*Spilornis cheela* Crested Serpent-eagle		s	
23	*Circus cyaneus* Hen Harrier		s	
	Order: Trogoniformes			
	Family: Trogonidae			
24	*Harpactes erythrocephalus* Red-headed Trogon	unc		
	Order: Coraciiformes			
	Family: Meropidae			
25	*Nyctyornis athertoni* Blue-bearded Bee-eater	s	s	
	Family: Alcedinidae			
26	*Alcedo hercules* Blyth`s Kingfisher	unc		
27	*A. atthis* Common Kingfisher		unc	
28	*Megaceryle lugubris* Crested Kingfisher	c	unc	
29	*Halcyon smyrnensis* White-breasted Kingfisher		unc	
	Order: Bucerotiformes			
	Family: Bucerotidae			
30	*Rhyticeros undulatus* Wreathed Hornbill	unc	c	
31	*Aceros nipalensis* Rufous-necked Hornbill	unc	unc	
	Order: Piciformes			
	Family: Megalaimidae			
32	*Psilopogon asiaticus* Blue-throated Barbet	unc	unc	
	Family: Picidae			
33	*Sasia ochracea* White-browed Piculet	c		c
34	*Blythipicus pyrrhotis* Bay Woodpecker			s
35	*Gecinulus grantia* Pale-headed Woodpecker			s

		Nansabun-Namthi route	Manu Village	Shangaung-Wasandum route
	Order: Passeriformes			
	Family: Eurylaimidae			
36	*Psarisomus dalhousiae* Long-tailed Broadbill			c
	Family: Campephagidae			
37	*Pericrocotus sp.* Minivet	c	c	c
	Family: Rhipiduridae			
38	*Rhipidura albicollis* White-throated Fantail	unc	unc	
	Family: Dicruridae			
39	*Dicrurus macrocercus* Black Drongo	c		c
40	*D. aeneus* Bronzed Drongo	unc	unc	
41	*D. remifer* Lesser Racquet-tailed Drongo	unc	unc	
	Family: Laniidae			
42	*Lanius collurioides* Burmese Shrike	unc		
43	*L. schach* Long-tailed Shrike	c	c	c
44	*L. tephronotus* Grey-backed Shrike	unc	unc	
	Family: Corvidae			
45	*Dendrocitta frontalis* Collared Treepie	unc	unc	unc
46	*Urocissa flavirostris* Yellow-billed Blue Magpie	c		
47	*Cissa chinensis* Common Green Magpie	unc		
48	*Corvus macrorhynchos* Large-billed Crow		unc	c
	Family: Stenostiridae			
49	*Chelidorhynx hypoxanthus* Yellow-bellied Fairy-fantail			s
	Family: Stenostiridae			
50	*Culicicapa ceylonensis* Grey-headed Canary-flycatcher	c		
	Family: Paridae			
51	*Melanochlora sultanea* Sultan Tit	s		
52	*Parus monticolus* Green-backed Tit		s	
	Family: Hirundinidae			
53	*Riparia diluta* Pale Sand Martin			unc
	Family: Pycnonotidae			
54	*Alophoixus flaveolus* White-throated Bulbul	unc	unc	
55	*Hemixos flavala* Ashy Bulbul		unc	
56	*Hypsipetes leucocephalus* Black Bulbul	unc	c	
57	*Pycnonotus striatus* Striated Bulbul			unc
58	*P. flaviventris* Black-crested Bulbul	unc	unc	
59	*P. jocosus* Red-whiskered Bulbul	a	a	a
60	*Pycnonotus cafer* Red-vented Bulbul	c		c
	Family: Scotocercidae			
61	*Cettia castaneocoronata* Chestnut-headed Tesia			s
62	*Abroscopus superciliaris* Yellow-bellied Warbler			unc
63	*A. albogularis* Rufous-faced Warbler	c		
64	*Phyllergates cucullatus* Mountain Tailorbird			s
	Family: Sylviidae			
65	*Psittiparus bakeri* Rufous-headed Parrotbill			c
	Family: Zosteropidae			
66	*Yuhina flavicollis* Whiskered Yuhina	s		
	Family: Timaliidae			
67	*Stachyris nigriceps* Grey-throated Babbler	a		
	Family: Pellorneidae			
68	*Schoeniparus rufogularis* Rufous-throated Fulvetta	unc		
	Family: Pellorneidae			
69	*Pellorneum albiventre* Spot-throated Babbler			a
70	*Trichastoma tickelli* Buff-breasted Babbler	c		c
	Family: Leiotrichidae			
71	*Alcippe nipalensis* Nepal Fulvetta	a		
72	*Garrulax leucolophus* White-crested Laughingthrush	c		c
73	*G. rufogularis* Rufous-chinned Laughingthrush	unc		
74	*Trochalopteron squamatum* Blue-winged Laughingthrush			unc
75	*Leiothrix argentauris* Silver-eared Mesia	c		
76	*Leioptila annectens* Rufous-backed Sibia	unc		
77	*Minla ignotincta* Red-tailed Minla	unc		
78	*Liocichla phoenicea* Red-faced Liocichla	c		c
79	*Siva cyanouroptera* Blue-winged Minla	unc		
	Family: Cinclidae			
80	*Cinclus pallasii* Brown Dipper	c		c
	Family: Sturnidae			
81	*Acridotheres tristis* Common Myna		c	
82	*A. albocinctus* Collared Myna	c	c	c

		Nansabun-Namthi route	Manu Village	Shangaung-Wasandum route
	Family: Muscicapidae			
83	*Copsychus saularus* Oriental Magpie-robin		unc	unc
84	*Niltava sundara* Rufous-bellied Niltava	unc		unc
85	*N. macgrigoriae* Small Niltava	unc	unc	
86	*N. grandis* Large Niltava	unc	unc	
87	*Anthipes monileger* White-gorgeted Flycatcher			c
88	*Brachypteryx leucophrys* Lesser Shortwing	s		
89	*B. cruralis* Himalayan Shortwing	s		
90	*Calliope tschebaiewi* Chinese Rubythroat			s
91	*Myiomela leucura* White-tailed Blue Robin	s		
92	*Enicurus scouleri* Little Forktail	c		c
93	*E. schistaceus* Slaty-backed Forktail	c	unc	c
94	*Myophonus caeruleus* Blue Whistling-thrush	c	unc	c
95	*Ficedula tricolor* Slaty-blue Flycatcher			s
96	*F. hyperythra* Snowy-browed Flycatcher	c		
97	*F. strophiata* Rufous-gorgeted Flycatcher	s		
98	*Phoenicurus leucocephalus* White-capped Water-redstart	unc	unc	unc
99	*P. fuliginosus* Plumbeous Water-redstart	c	unc	c
100	*Saxicola ferreus* Grey Bushchat		unc	c
	Family: Irenidae			
101	*Irena puella* Asian Fairy-bluebird	s		
	Family: Chloropseidae			
102	*Chloropsis hardwickii* Orange-bellied Leafbird	unc		
	Family: Estrildidae			
103	*Lonchura striata* White-rumped Munia		c	
	Family: Motacillidae			
104	*Motacilla alba* White Wagtail		c	c
105	*M. cinerea* Grey Wagtail	c		c
	Total species	61	45	47
	Key			
	a - abundant	3	1	2
	c - common	22	9	24
	unc - uncommon	27	31	12
	s - single	9	4	9

Image 3. Solitary Snipe *Gallinago solitaria* on the bank of Mali Hka River.

Image 4. Sultan Tit *Melanochlora sultanea* in the rainforest upperstory.

our results and more recent surveys (Zhang et al. 2017; Image 4).

In summary, even brief birdwatching can give a general representation of the avifauna of a territory that was previously surveyed insufficiently. The results obtained allowed us to estimate the relative frequency of bird species occurrence on the permanent hiking routes in the region and to evaluate the potential of this territory for promoting birdwatching tourism.

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