

Habitat and calls of the Endangered White-rumped Woodpecker *Meiglyptes tristis* in Meru Betiri National Park, East Java

AGUNG SIH KURNIANTO^{1*}, WASKITO KUKUH WIBOWO², NILASARI DEWI¹, PUJI FIRMANSYAH³, BAS VAN BALEN⁴ AND RICHARD NOSKE⁵

¹Agrotechnology Study Program, Agriculture Faculty, Jember University. Kalimantan street no. 37, Jember, East Java, Indonesia, Email: agung.sih.kurnianto@unej.ac.id. ZIP. 68121. ²Birdpacker Indonesia. Dewi Mumainah street no. 2, Banaran, Bumiaji Sub-District, Bumiaji, Batu City, East Java, Indonesia. ZIP. 65331. ³Meru Betiri National Park, Sriwijaya street no. 53, Jember, East Java, Indonesia. ZIP. 68124. ⁴Basilornis Consults, Muntendam pad 6835 BE Arnhem, The Netherlands. ⁵Centre for Biodiversity and Conservation Science, University of Queensland, St Lucia, Qld, 4072.

Summary. Endemic to Java, the White-rumped Woodpecker *Meiglyptes tristis* is considered Endangered by IUCN, but records and ecological information on the species are scant. Meru Betiri National Park in East Java has the largest cluster of recent observations of the species. In this report we compile records of White-rumped Woodpeckers in the park, and describe its habitat and vocalisations. Of seven confirmed records from six sites, all but one was in Bandalit in the west of the park. Habitats included coconut, *Albizia* and rubber plantations, secondary forest bordering villages, mangroves, and polyculture. The Woodpeckers foraged at heights between 5 and 14 m in these habitats, which had a canopy height between 6 and 18 m. Two vocalisations are described, the first consisting of five notes and the second consisting of 2-3 incomplete notes. Although the global population of this taxon appears to be very small, and its range restricted, its use of disturbed habitats indicates that habitat loss may be not be the only threatening process, as previously thought.

Ringkasan. Endemik di Jawa, Caladi Batu *Meiglyptes tristis* dianggap Terancam Punah oleh IUCN, tetapi catatan dan informasi ekologi tentang spesies tersebut masih sedikit. Taman Nasional Meru Betiri di Jawa Timur memiliki gugusan terbesar dari pengamatan terkini terhadap spesies ini. Dalam laporan ini kami mengumpulkan catatan Caladi Batu di taman nasional, dan menjelaskan habitat serta vokalisasinya. Tujuh catatan terkonfirmasi dari enam lokasi. Semuanya, kecuali satu, dicatat di Bandalit pada bagian barat. Habitatnya meliputi perkebunan kelapa, sengon laut dan karet, hutan sekunder yang berbatasan dengan desa, mangrove, dan polikultur. Caladi mencari makan pada ketinggian antara 5 hingga 14 m di habitat ini, yang memiliki ketinggian kanopi antara 6 hingga 18 m. Dua vokalisasi dideskripsikan, yang pertama terdiri dari lima nada dan yang kedua terdiri dari 2-3 nada yang tidak lengkap. Meskipun populasi global taksa ini tampaknya sangat kecil, dan jangkauannya yang terbatas, penggunaan habitat yang terganggu menunjukkan bahwa hilangnya habitat mungkin bukan satu-satunya proses yang mengancam, seperti yang diperkirakan sebelumnya.

Introduction

The White-rumped Woodpecker *Meiglyptes tristis* is an Endangered Javan-endemic bird. Although treated as a species by BirdLife International (2020a), IOC (Gill *et al.* 2020) and eBird (2021) treat this taxon as the nominate subspecies *M. t. tristis* of the more widespread Buff-rumped Woodpecker, with populations outside Java belonging to the subspecies *M. t. grammithorax*. Historically, when *tristis* was considered conspecific with the Buff-rumped Woodpecker, very few records originated from Java (van Balen 1999; MacKinnon *et al.* 2010; Gorman 2014). After being recognised as a full species, the White-rumped Woodpecker was found to be rare with a very restricted distribution (del Hoyo *et al.* 2020). Its declining status is thought to be due to habitat destruction on Java, where most forest below 1,000 m has been cleared, as well as habitat degradation due to agricultural expansion, mining activities, logging and uncontrolled fire, even in protected areas (Lammertink 2014; del Hoyo *et al.* 2020).

Since the 1990s, the species has been recorded from four localities in Java, including three records from Meru Betiri National Park (MBNP) in 2014, 2015 and 2017 (Kurnianto *et al.* 2016; eBird 2021). This is in sharp contrast with historical records from 12 localities ranging from the far west (Mt Karang) to the far east (Mt Ijen) (van Balen in prep). It is estimated that the global population is less than 2,500 adults (del Hoyo *et al.* 2020; Birdlife International 2020a). This paper provides details of new records of the species from MBNP, including information on habitat selection and vocalisations.

Study area

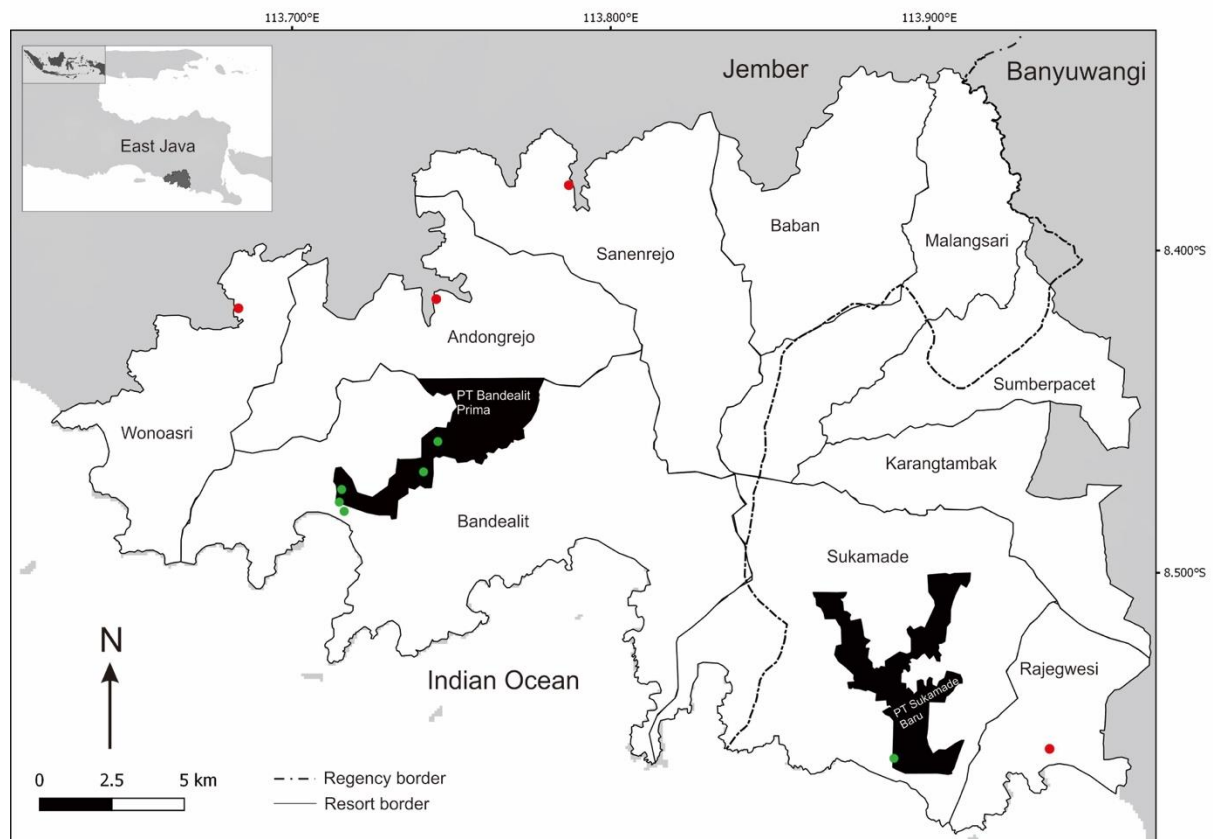


Figure 1. Map of Meru Betiri National Park showing locations of records of White-rumped Woodpecker. Green dots, confirmed records; red dots, survey sites with no confirmed records. Black areas show privately-owned plantations.

MBNP (8°20'–33'S, 113°38'–58'E) is located on the south coast of East Java and covers 58,000 ha. Annual rainfall ranges from 2,544 to 3,478 mm. The Bandalit, Andongrejo, Sanenrejo and Wonoasri sections are heavily influenced by human activities. Some areas in the south around the Meru coast consist of swamp and nipa palm *Nypa fruticans* forests. Eastern areas, such as the Rajegwesi and Sukamade sections consist of dense dipterocarp forests, plantations, farmland, settlements, and tourist areas. Areas in the north, southwest and northwest are elevated (900–1,000 m asl), the highest mountain being Mount Betiri (1,223 m asl). Malangsari, Sumberpacet and Baban sections are mostly core zones and consisting of low mountains, steep cliffs and very dense forests.

Prior to our surveys, we collated location records and information relating to the ecology and behaviour of White-rumped Woodpeckers in MBNP from birdwatchers and guides who had visited MBNP. We also contacted rangers to confirm the existence of the species at each section. As the species was previously found in areas with mixed crops or plantations near the MBNP boundary, we visited similar habitat in Wonoasri, Andongrejo, Sanenrejo and Rajegwesi sections, in October, November and December 2019, and January 2020, respectively (Fig. 1).

We surveyed birds in the morning (07:00–08:00 hrs) and evening (15:00–16:00 hrs) over three or four days, using the point count method with a radius of 20 m. In each section we surveyed three points at 1 km intervals, spending 10 min at each point. Vegetation analysis in January–February 2020 was conducted to measure and describe in forest structure plots the habitats used by White-rumped Woodpecker (details are available from the authors on request). We complement and compare our observations and habitat descriptions from MBNP with an overview of records from elsewhere in Java, primarily from eBird (2020).

As good quality tape-recordings of the White-rumped Woodpecker were not available at the time of our surveys, we played recordings of the Buff-rumped Woodpecker *M. t. grammithorax* (downloaded from <http://xeno-canto.com>) to attract birds in MBNP. A recording of White-rumped Woodpecker was obtained from video taken by one of us (PF) on 19 December 2019 in Block 90, Sukamade Section. The sound track was converted to a MP3 audio file using Format Factory Multimedia Converter and an oscillogram and spectrogram were generated using the acoustic analysis program Raven Lite 2.0.1. We also analysed recordings made by B. Sloan on 8 September 2017 in MBNP (Macaulay Library recordings ML83138151 and Xeno Canto recordings XC388238), and compared them with a recording (XC243384) of a Buff-rumped Woodpecker in Sabah, Malaysia, made by Stijn de Wijn.

Results

There are seven confirmed records from MBNP (Table 1; Fig. 1): six in Bandalit and one in Sukamade, located in the western and eastern sections of the park, respectively. Though situated in different regencies, these sections are connected by primary forest. All records were during the months from September to December, and all were in agricultural areas or close to villages. The 2014 and 2015 records were described by Kurnianto *et al.* (2016). The records include one which in hindsight was the first record of White-rumped Woodpecker in MBNP, observed and documented by ASK on 18 October 2013. This record occurred on the road between the Bandalit rangers' office and the Pringtali savanna. Initially, this bird was identified as the more common Red-crested woodpecker *Hemicircus concretus* (*sensu* BirdLife International 2020b). However, subsequent examination of the photo and comparison with other sources showed this bird to be a White-rumped Woodpecker. The two species can be distinguished by the pattern of white scales covering the back and wings, those of the White-rumped Woodpecker being irregular and horizontal, while those of the Red-crested Woodpecker are more curved and regular (Plate 1).



Plate 1. White-rumped Woodpeckers in MBNP: October 2013 (1); female, September 2017 (2); male, September 2018 (3); female, September 2018 (4); female, December 2019 (5), and male, December 2019 (6). A1, back pattern of Red-crested Woodpecker which also occurs in MBNP, showing white scale pattern.

The 2017 record concerns a pair observed on the edge of the Lodadi rubber plantation (~2 km northeast of the Bandalit ranger's office) (Heru Cahyono, pers. comm.). Additional photos and sound recordings from this observation were made by B. Sloan (<https://ebird.org/checklist/S42186341>). In September 2018, WKW visited the latter site, and eventually found a pair in an agricultural area in Lodadi (~1 km southeast of the rangers' office). The pair responded to a recording of the Buff-rumped Woodpecker, then remained in view for about 2 h. Five weeks later, the same (presumably) pair was seen after playing of the same recording.

Several searches were conducted by PF focusing on White-rumped Woodpecker in January, February and June 2019 in previously-known locations in MBNP, without success. Similarly, the species was not found during non-targeted surveys by PF in several other areas with primary forest vegetation, such as Meru Coast, Sumberlangsep, Summersari, and Summersalak. In addition, it was not found during targeted surveys conducted by ASK in Wonoasri, Sanenrejo, Andongrejo, Bandalit, and Rajegwesi (Fig. 1) between November 2019 and January 2020. However, on 19 December 2019, PF located a pair in rubber plantations at

Block 90, Sukamade Section, and made a video recording of the birds. This constitutes the most easterly record of its distribution within MBNP.

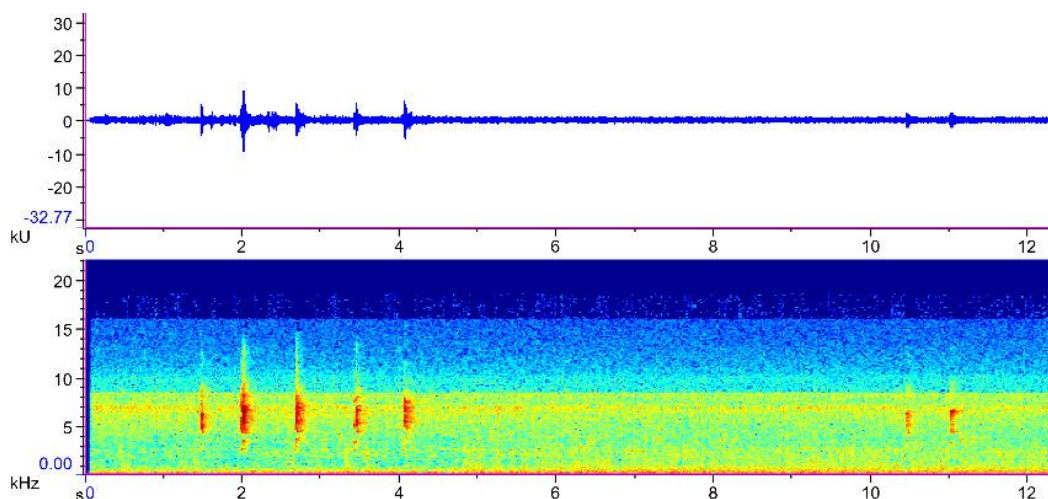
White-rumped Woodpeckers were recorded in plantations of various trees, as well as the disturbed edge of mangroves (Table 1). They were observed foraging or perching at heights ranging from 5.0 to 14.0 m, averaging 7.9 (± 2.43 , SD) m, in trees ranging in height from 6.0 to 18.0 m, averaging 11.3 (± 3.42 , SD) m, with a DBH ranging from 30 to 70 cm (Table 1).

Table 1. Records of White-rumped Woodpeckers from Meru Betiri National Park, East Java. All records were from Bandalit except in 2019, and all were of a pair except in 2014 and 2015, when a male and female, respectively, were seen only. Behaviour: F, foraging; P, perching.

Date	Habitat	Tree species	Scientific name	Behaviour	DBH (cm)	Tree height (m)	Foraging height (m)	
							Min	Max
18 Oct 2013	Coconut plantation	Coconut	<i>Cocos nucifera</i>	F	60	18.0	10.0	14.0
27 Oct 2014	Mango plantation	Mango	<i>Mangifera indica</i>	P	60	10.0	3.0	5.0
28 Oct 2015	Mangroves, edge	Mangrove	<i>Bruguiera</i> sp	F	30	6.0	3.5	4.5
8 Sep 2017	Rubber plantation	Rubber	<i>Hevea brasiliensis</i>	F	50	11.0	4.5	6.5
22 Sep 2018	Albizia plantation, edge	Albizia	<i>Albizia chinensis</i>	F	60	12.0	5.5	8.5
28 Oct 2018	Albizia plantation, edge	Jackfruit	<i>Artocarpus heterophyllus</i>	F	70	12.0	7.5	9.5
19 Dec 2019	Rubber plantation	Rubber	as above	P	60	11.0	5.0	7.3

The audio analysis of the 2019 recording showed two calls, with the first call consisting of five notes lasting 0.07 s, and a second call consisting of two incomplete notes (Fig. 2A). Sloan's 2017 recording was similar, consisting of five notes lasting 0.11 s in the first call, and three incomplete notes in the second call (Table 2). The pause between calls was 6.3 s and 5.5s for the 2019 and 2017 recordings, respectively. The period between notes was 0.47 s in the 2019 recording, but 2.70 s in the 2017 recording. The minimum call frequency of the 2019 and 2017 recordings was similar (1890 Hz and 1843 Hz, respectively), whereas maximum frequency peaked at 11130 Hz (bandwidth 9240 Hz) and 17573 Hz (bandwidth 15,730 Hz), respectively (Table 2).

A.



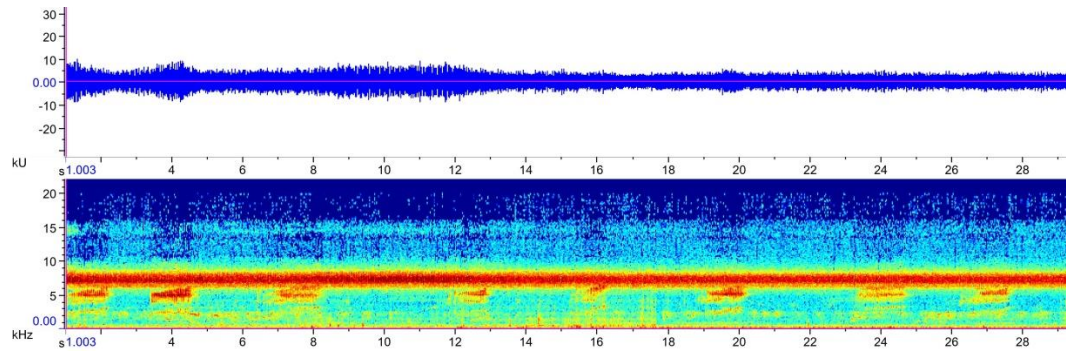
B.

Figure 2. Oscillogram (above) and spectrogram (below) of vocalisations of (A) White-rumped Woodpecker from Sukamade section, MBNP, on 19 December 2019 (PF), and (B) Buff-rumped Woodpecker from Klias Forest Reserve, Sabah, on 10 September 2014, catalog number XC243384 (Stijn de Win).

Discussion

Although the White-rumped Woodpecker was thought to occur in primary and secondary forests (del Hoyo *et al.* 2020), all confirmed records to date are from anthropogenic habitats (open areas, rubber plantations, and a village) and mangroves in MBNP. The lack of records in MBNP outside August-January may indicate that breeding takes place in forested sections that have not yet been surveyed. The lack of recent confirmed records of the taxon indicates that is very rare and restricted in range, yet its habitat suggest that habitat loss, at least of primary forest, is not the main threatening process (Lammertink 2014; del Hoyo *et al.* 2020).

Vocally the White-rumped Woodpecker appears to differ from the Buff-rumped Woodpecker (Fig. 3A, B) with five rapid notes per call, rather than the eight slowly, evenly delivered, and lower pitched notes of the latter. On Borneo, Short (1973) made detailed observations of Buff-rumped Woodpecker and described four types of calls. His ‘pit’ call was described as a soft single or double note, and perhaps is comparable to the bouts containing single notes by White-rumped Woodpecker, however, further sound recordings are needed, as calls and call types vary considerably (Short 1973).

Table 2. Characteristics of vocalisations of White-rumped Woodpecker in MBNP, recorded by PF (A) and Brendon Sloan (B). Value in parentheses, Coefficient of Variation.

Variable	Source	A	B
	No. notes	7	8
Duration (s)	Average	0.072 (0.51)	0.109 (0.25)
	Shortest	0.003	0.074
	Longest	0.116	0.172
Period (s)	Average	0.468 (0.12)	2.702 (0.51)
	Shortest	0.463	1.161
	Longest	0.647	3.023
Frequency (Hz)	Minimum	1890 (0.44)	1843 (0.61)
	Maximum	11130 (0.21)	17573 (0.07)
	Low mode	1837.5	1544.9
	High mode	13597.5	18819.7
Bandwidth (Hz)		9240 (0.32)	15730 (0.12)

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