

Subspecies Range of Little Known North Sumatran Prevost's Squirrel *Callosciurus prevostii piceus* (Rodentia: Sciuridae)

NUR RACHMAN^{1*}, MUHAMMAD SAYIDINA ALI¹, ASEP BADRU TAMAM², TEDI WAHYUDI³, SURIANTO EFFENDI¹, SAHAT ARITONANG¹ & MUHAMMAD IQBAL^{1,4}

¹Daemeter Consulting, Jalan Tangkuban Perahu No. 1, Bogor, West Java 16128, Indonesia

*Corresponding Author. E-mail: n.rachman@daemeter.org; <https://orcid.org/0000-0002-9482-1103>

E-mail: sayidina.ali@daemeter.org; <https://orcid.org/0009-0004-1093-5456>

E-mail: surianto.effendi@daemeter.org; <https://orcid.org/0000-0001-6577-4654>

E-mail: sahat.aritonang@daemeter.org

²Astra Agro Lestari, Jl. Pulo Ayang Raya Blok OR-1 Kawasan Industri Pulogadung, Jakarta 13930, Indonesia

E-mail: abtamam@astra-agro.co.id

³LetsBirdingSumatera, Jl. Banda Aceh Meulaboh No. 89, Desa Padang Datar, Aceh Jaya, 23658, Indonesia

E-mail: letsbirding@gmail.com; <https://orcid.org/0009-0008-3134-5075>

⁴Department of Biology, Universitas Indo Global Mandiri, Jalan Jend. Sudirman No. 629, Palembang 30129, Sumatera Selatan, Indonesia.

E-mail: miqbal@uigm.ac.id; <https://orcid.org/0000-0002-6657-0183>

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Abstract

North Sumatran Prevost's Squirrel *Callosciurus prevostii piceus* (Peters, 1866) is an endemic subspecies of terrestrial squirrel that only found in northern Sumatra, Indonesia. On 11 December 2022, we observed and documented *C. prevostii piceus* in Mugo Rayeuk Village (04°25'N, 96°10'E), Pantou Reu Subdistrict, Aceh Barat District, Aceh Province, Sumatra. To review subspecies range, we compile published and unpublished records of *C. prevostii piceus*. Our study suggests *C. prevostii piceus* range from Aceh Barat of Aceh Province to Labuhan Batu of North Sumatra Province.

Keywords: *Callosciurus prevostii*, distribution, endemic, northern Sumatra, Prevost's Squirrel.

Introduction

Rodents (order Rodentia) with over 2.000 species are the group of at least 40% mammal species in the world (Kay & Hoekstra 2008). They are the most abundant and diverse terrestrial taxa, and the total number of species could represent over half the species of recent mammals (Li *et al.* 2022). Indonesia is household to several taxa of rodents and mammals that are present across the Sumatra, Kalimantan (Indonesian Borneo), Java, Sulawesi, Lesser Sundas, Moluccas and Papua (Maryanto *et al.* 2019; Setiawan *et al.* 2019, 2023; Iqbal *et al.* 2024).

Taxonomically, squirrels or family Sciuridae are taxa membering to the rodents that can be commonly defined into tree squirrels, ground squirrels, chipmunks, marmot and groundhogs, flying squirrels, and prairie dogs (Thorington *et al.* 2012; Steiner & Huettmann 2023). Squirrels are found in diverse habitats worldwide and capable of exploited environments with complex topography (Kaprowski *et al.* 2016). They create important biological roles like pollination, seed dispersal and regulating vegetation growth (Lacher *et al.* 2019; Swati *et al.* 2023). They are also very suitable taxa for the human diet, and are commonly known as protein sources (Fiedler 1990).

Prevost's Squirrel or Asian Tri-coloured Squirrel *Callosciurus prevostii* (Desmarest, 1822) is one of the most variable species of squirrel with 47 named associated taxa (Thorington *et al.* 2012). North Sumatran Prevost's Squirrel *Callosciurus prevostii piceus* (Peters, 1866) is an enigmatic endemic subspecies that limited found in North Sumatra, but its historical records remain unclear (Thorington *et*

al. 2012; Koprowski *et al.* 2016; Lurz *et al.* 2017). In this paper, we report our observation of *C. prevostii piceus* and discuss its range.

Methods

We collected all unpublished and published data on *C. prevostii piceus*. The sites where *C. prevostii piceus* documented are put on the map (Fig. 1). The citizen science platform of iNaturalist is a major source for providing unpublished data of *C. prevostii piceus* (iNaturalist 2024). Prevost's Squirrel *C. prevostii* is one of the most colourful species with a striking black, white and red pattern, other are pale grey above and the Bornean subspecies *pluto* lack or absent the white (Francis 2013). As described by Miller (1903), *C. prevostii piceus* is very similar to the Bornean subspecies *C. prevostii pluto*, but larger, white lateral stripe wiped out, and a red patch on the legs more extended. North Sumatran Prevost's Squirrel *C. prevostii piceus* has black on the dorsum and a red belly, with completely no lateral stripe (Koprowski *et al.* 2016, Fig. 2 and 3). Miler (1903) summarized external measurements of *C. prevostii piceus* from 12 specimens of adults collected from Tapanuli Bay, North Sumatra Province: total length, 473 mm (430-498 mm); head and body, 247 mm (230-263 mm); and hind foot, 58.1 mm (57-59 mm).

On 11 December 2022, we visited the grave of Teuku Umar, one of the Indonesian national heroes from Aceh Province. The grave of Teuku Umar is located in Mugo Rayeuk Village (04°25'N, 96°10'E), Panton Reu Subdistrict, Aceh Barat District, Aceh Province, Sumatra. In this area, we observed and documented *C. prevostii piceus* (Fig. 3). We also completed our data with information from unpublished observations, internet information and social media sources. Summarize the historical records of *C. prevostii piceus* presented in Table 1.

Results and Discussion

The *C. prevostii piceus* was recorded in two provinces in northern Sumatra, Aceh Province and North Sumatra Province. There are 18 certain areas where *C. prevostii piceus* was reported (Table 1, Fig. 1).

Table 1. Historical records of North Sumatran Prevost's Squirrel *Callosciurus prevostii piceus*. Note for abbreviation: NR = Nur Rachman, MSA = Muhammad Sayidina Ali, ABT = Asep Badru Tamam, TW = Tedi Wahyudi, SE = Suriyanto Effendi, MI = Muhammad Iqbal. The number on the table refers to the map (Figure 1).

Location	Date	Number on the Map	Sources/Observers
Aceh Utara, Aceh	22 Jul 2023	1	TW <i>pers.obs</i>
Nagan Raya	15 Jul 2024	2	TW <i>pers.obs</i>
Aceh Barat, Aceh	11 Dec 2022	3	NR, MSA, ABT, SE, MI <i>pers.obs</i>
Aceh Tenggara, Aceh	20 Sep 2023	4	iNaturalist 2024
Ketambe, Aceh Tenggara	27 Dec 2023	5	TW <i>pers.obs</i>
Gayo Lues, Aceh	22 Apr 2023	6	GBIF 2023
Aceh Selatan, Aceh	18 Aug 2018	7	iNaturalist 2024
Teluk Ara, North Sumatra	21 Nov 1905	8	GBIF 2023
Sikundur, North Sumatra	Undated	9	MK <i>pers.com</i>
Bahorok/Langkat, North Sumatra	13 Feb 2024	10	iNaturalist 2024
Bahorok/Langkat, North Sumatra	4 Sep 2012	11	iNaturalist 2024
Bahorok/Langkat, North Sumatra	4 Apr 2024	12	iNaturalist 2024
Bahorok/Langkat, North Sumatra	21 May 2024	13	iNaturalist 2024
Bahorok/Langkat, North Sumatra	15 Oct 2018	14	iNaturalist 2024
Bahorok/Langkat, North Sumatra	1 Sep 2023	15	iNaturalist 2024
Humbang Hasundutan, N. Sumatra	22 Mar 2021	16	iNaturalist 2024
Tapanuli Bay, North Sumatra	17 Mar 1902	17	Miller 1903, Robinson & Kloss 1918
Tapanuli Selatan, North Sumatra	27 Dec 2023	18	iNaturalist 2024
Tapanuli Selatan, North Sumatra	8 Jan 2024	19	iNaturalist 2024
Batang Toru, North Sumatra	22 Feb 2015	20	MK <i>pers.com</i>
Torgamba/Labuhan Batu, N. Sumatra	26 Jan 2017	21	iNaturalist 2024

This taxa recorded from Aceh Barat in the north to Labuhan Batu in the south. The Labuhan Batu

is the border area between North Sumatra and Riau Province. No information available if this taxa is reported in Riau Province. Based on available information and distribution patterns, we presumed that the Rokan River and Batang Gadis River are barriers for *C. prevostii piceus* to across further to the south. In middle Sumatra, large rivers such as the Indragiri River and Batanghari River have been presumed as species barrier for the Black-and-white langur *Presbytis bicolor* range (Iqbal *et al.* 2023).

The *C. prevostii* is a diurnal and terrestrial squirrel, rarely venturing to the ground to forage or to cross gaps in the forest. Shepherd & Shepherd (2012) reported *C. prevostii* found in lowland secondary and primary forests, but can tolerate oil palm and coconut plantations that are adjacent to forests. Our observation of *C. prevostii piceus* in Aceh Besar suggest that this taxa inhabit hilly forests with remaining native tall trees and adjacent degraded vegetation, including oil palm and rubber plantations. The location of Aceh Besar is about 100 m above sea level (asl), and the habitats of *C. prevostii piceus* in its range are approximately range from 0 to 500 m asl.

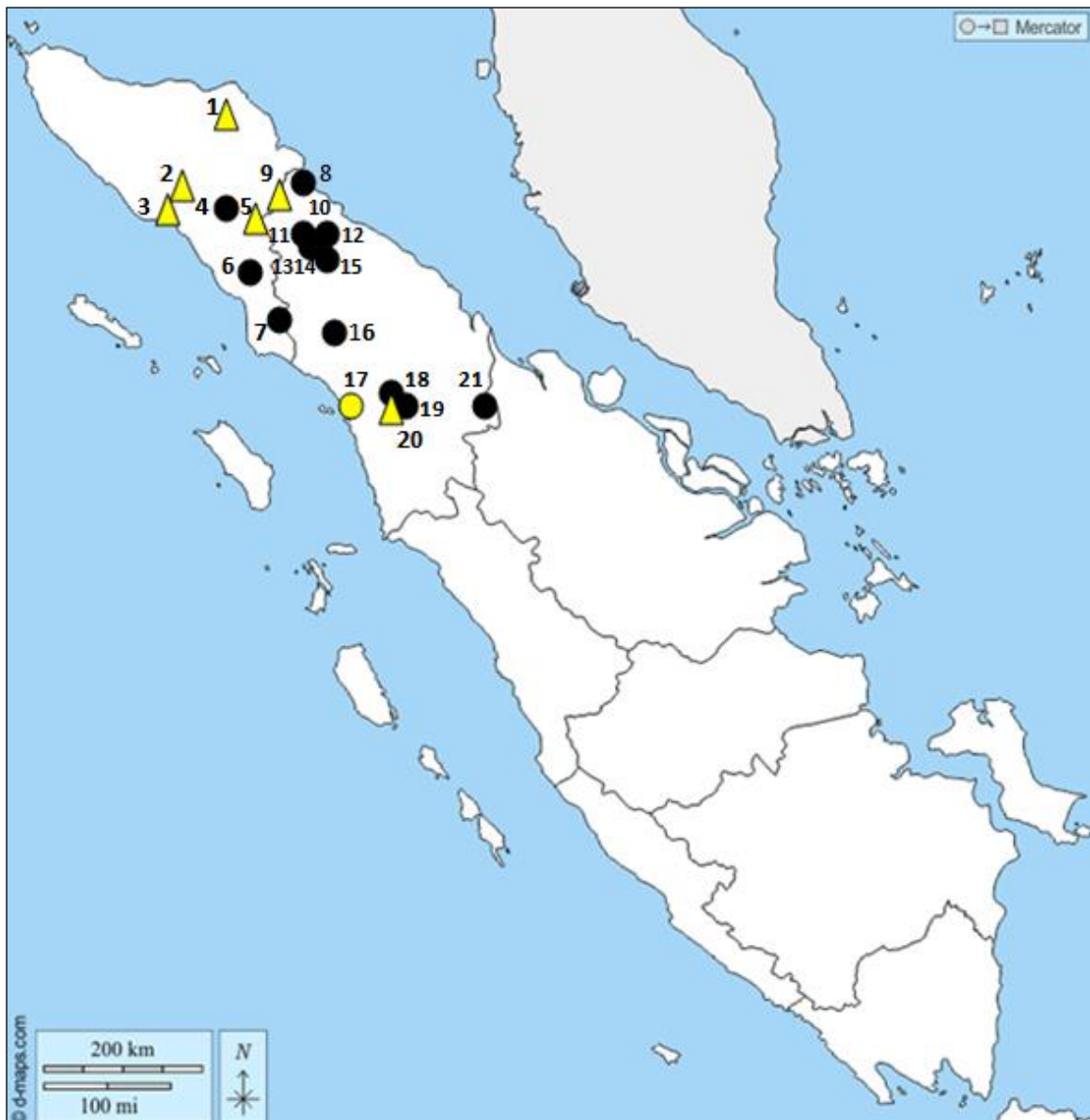


Figure 1. Map of Sumatra and historical records of *C. prevostii piceus* in Aceh and North Sumatra Province. Yellow circle is earlier records (Miller 1903, Robinson & Kloss 1918), black circles are records from iNaturalist (2024), and yellow triangles are our and private observation.



Figure 2. The North Sumatran Prevost's Squirrel *C. prevostii piceus* on 22 February 2015 in Batang Toru, North Sumatra Province, Sumatra (Photograph: Mistar Kamsi).



Figure 3. The North Sumatran Prevost's Squirrel *C. prevostii piceus* on 11 December 2022 in Aceh Besar District, Aceh Province, Sumatra (Photograph: Nur Rachman).

The *C. prevostii* is classified as Least Concern because of it is widespread and common, appearing in several conservation areas, it is tolerant to various habitat degradation, and it is unlikely to be decreasing at nearly the rate needed to qualify for listing in an imperiled category (Cassola 2016). In Aceh Besar, the *C. prevostii piceus* population is look like secure from hunting or other threats. Cassola (2016) stated that the remaining habitat of lowland taxa is very fragmented and become a essential part of its native range has been converted by plantations. In some parts of *C. prevostii piceus*, particularly in North Sumatra Province, this subspecies is possibly threatened by hunting to be used as pets and for consumption. Further study on the impact of these threats is required.

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