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On the arrow-tailed flying squirrel (*Hylopetes sagitta*) from Mt. Ungaran, Java

Two species of *Hylopetes*, a genus of small flying squirrels native to Southeast Asia, found in the island of Java, Indonesia (Jackson & Thorington 2012): (1) narrow-tailed flying squirrel (*Hylopetes sagitta*) and Bartel's flying squirrel (*Hylopetes bartelsi*). The arrow-tailed flying squirrel (*Hylopetes sagitta*) (Sciuridae, Rodentia) is endemic to the islands of Java (*H. s. sagitta* Linnaeus, 1766) and Bangka (*H. s. aurantiacus* Wagner, 1841). The original specimen described by Linnaeus (1766) was named *Sciurus sagitta* and placed in Hylopetes by Chasen (1940), including *Pteromys lepidus* (Horsfield, 1824) and *H. sagitta aurantiacus* as a subspecies. Ellerman & Morrison-Scott (1955) recognized these species as *Hylopetes lepidus* which included subspecies *H.l. aurantiacus* and *H.l. platyurus*. Medway (1977) separated *Hylopetes lepidus* and *Hylopetes sagitta* into different species. Then Rasmussen & Thorington (2008) considered these species to be *Hylopetes lepidus*, placed *H. sagitta* as a synonym, and included *H.l. aurantiacus* and but not *H.l. platyurus*. Recent taxonomy following Jackson & Thorington (2012) considered *Hylopetes sagitta* to be a valid name, placed *H. lepidus* as a synonym, and *H. s. sagitta* and *H. s. aurantiacus* as a subspecies. This consists of two observations reported from Ujung Kulon National Park, Banten (iNaturalist 2025); two specimens from Cirebon, West Java preserved in Zoologisches Forschungsmuseum Alexander Koenig, Germany; one specimen from Bogor, West Java, preserved in Amsterdam Zoological Museum, Netherlands on GBIF; <www.gbif.org>; one observation in Cibodas, West Java (Maharadatunkamsi *et al*. 2020); one specimen from Banyumas, Central Java preserved in Museum Zoologicum Bogoriense (MZB), Indonesia, and one specimen from Kulon Progo, Yogyakarta preserved in MZB.

This species is categorized as DD (Data Deficient) by the IUCN (Gerrie *et al.* 2019), because the current population trends remain unknown. On Mount Ungaran, Central Java, there has been no previous research or monitoring of this species. Residents and mountain climbers have previously reported unverified occurrences of *Hylopetes sagitta*. Although due to its elusive behavior, its identity remained uncertain until it was photographed. The record of *Hylopetes sagitta* from Mount Ungaran (Fig. 1), Central Java, provides a new insight into the species' known distribution.

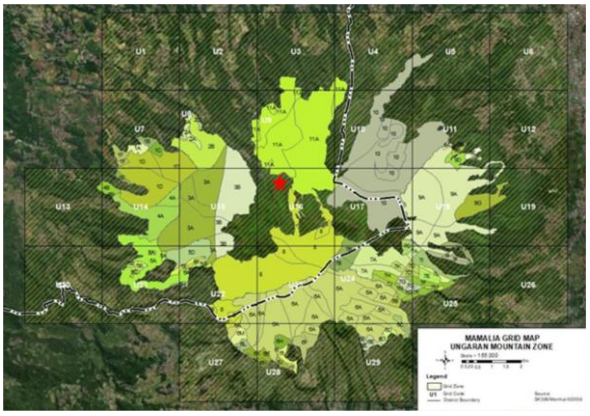

Figure 1. The location of *Hylopetes sagitta* was recorded from Mt. Ungaran, Java, Indonesia

We recorded this species during a biodiversity monitoring project on this mountain. Three individuals of *Hylopetes sagitta* were recorded by direct observation on the 5th and 6th October 2024 as being active at 10.00 pm and mainly in a tree. Only one individual could be photographed with a digital camera (Canon DSLR EOS 80D) when it was on the forest floor (Fig. 2), and could only be identified from one photo. This

record was in a lower montane forest at around 1,030 m asl in secondary forest bordering a tea plantation (-7.162434, 110.334089). The forest was dominated by *Ficus* spp. and the family Lauraceae (Utami *et al*. 2019).

Figure 2. Photo of *Hylopetes sagitta* from Mount Ungaran, Central Java, Indonesia

The recorded individuals have a brown dorsum coloration with gray hair on the flanks. The outer edges of the gliding membrane are covered in black hair, the hind legs are grey, and the tail looks flat and is a darker color. To confirm the finding, we examined the specimens from MZB and also compared them to the specimen of *Hylopetes bartelsi* from Naturalis Biodiversity Center, Netherlands, on GBIF (Fig. 3). The preserved specimen of *H. sagitta* (Fig. 3A) has lighter brown back hair like our recorded individual, compared to *H. bartelsi* (Fig. 3B), which has dark reddish-brown back hair. Another feature is that the hind legs of *H. sagitta* have grey hair, as in both our recorded species and the preserved specimen, while *H. bartelsi* has darker brown. The tip of the ears of *H. sagitta* is gray, which also distinguishes it from *H. bartelsi*. Based on the literature (Maharadatunkamsi *et al.* 2020), *Hylopetes sagitta* has greenish-brown back hair. The hair color at the base of the tail is the same as the back color, with a darker gradation to dark brown towards the tip of the tail. Meanwhile, *Hylopetes bartelsi* has yellowish-brown hair on the top of the head to the back. The dorsal part of the tail is blackish. The hind legs are blackish brown. On our examination in MZB, we found two different forms of *H. sagitta* (Fig. 3C). The first one (above) is a lighter color and is identified as *H. sagitta*. The second one (bottom) is darker and is identified as *H. lepidus*. However, to better understand the taxonomy of *H. sagitta,* further research needs to be done on morphometrics, coloration, and genetics. Additional surveys and basic research on its distribution, population status, natural history, and ecology are needed to better understand the threats to and conservation status of this species.

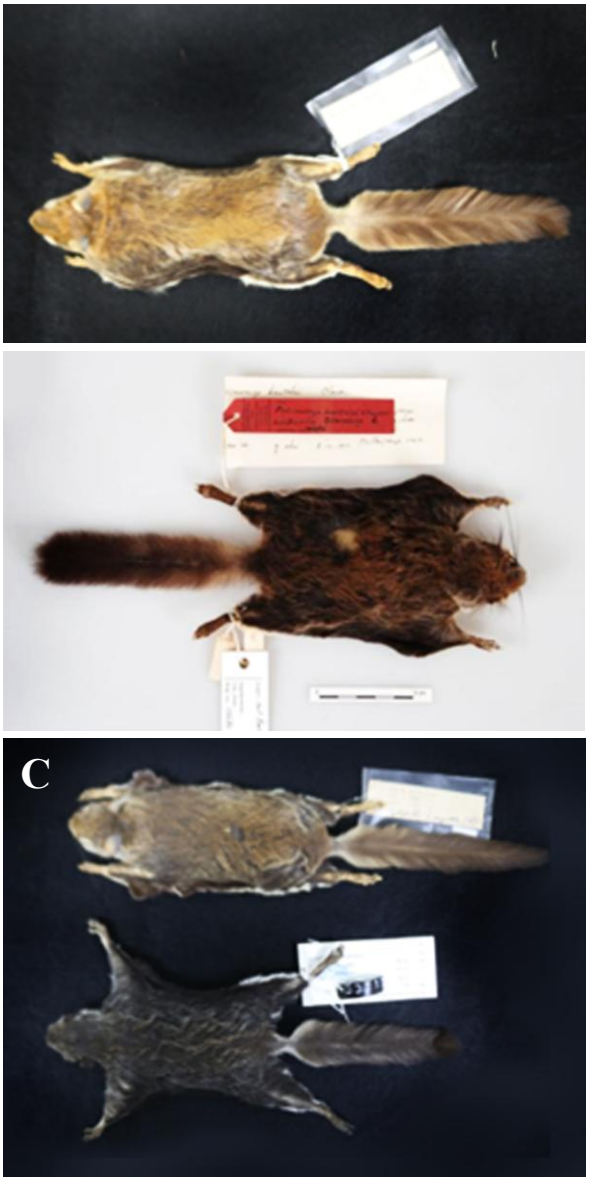

Figure 3. Preserved specimens of **(A)** *Hylopetes sagitta* in MZB; **(B)** *H. bartelsi* in Naturalis Biodiversity Center, Netherlands (from GBIF); and **(C)** *H. sagitta* in MZB

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