

# Field identification of Hodgson's and Bhutan Giant Flying Squirrel: which one is which?

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## Introduction

Giant flying squirrels reach the peak of their diversity in the Eastern Himalayas and Yunnan. Recently a lot of taxonomic work has been done, but still the situation remains complex. In this short paper I treat one particular complex of two species that have caused confusion since their original description. Luckily we, thanks to Pepijn and Steven of Naturalis, were able to clear up the situation for these two species: **Bhutan Giant Flying Squirrel** *Petaurista nobilis* and **Hodgson's Giant Flying Squirrel** *Petaurista magnificus*. There are still some question marks, but most specimens are identifiable when photographed well. First I will explain the confusion and afterward I will give a table that can be used as an identification tool.



Bhutan Giant Flying Squirrel *Petaurista nobilis*. Lennart Verheuver, Eagle's Nest, Arunachal Pradesh, India

## The *Petaurista magnificus/nobilis*-situation

The first description of this complex comes from Hodgson (1836) who describes *Petaurista magnificus* as *Sciuropterus Magnificus*. He describes it as follows: "Above, intense chestnut, (the fruit;) below and the shoulders, golden red; tail, paler than the body above, and tipped black : a black zone round the eyes, and another embracing the mustachios ; chin, pale, with a black triangular spot."

*Petaurista nobilis* is first described by Gray (1842) as *Sciuropterus nobilis* as follows: "Bright chestnut-brown, with yellow tips to some of the hairs, pale rufous beneath; the top of the head, the shoulders. and a narrow streak down the middle of the upper part of the back pale fulvous."

Hodgson (1844) after this describes also a *Sciuropterus Chrysotrix* based on a plate (see below), the colouring of which delayed the publication. That caused that Gray had already described this species as *P. nobilis* in 1842. The description of *S. Chrysotrix* indeed corresponds to Gray's description of *S. nobilis*, see Hodgson's following description: "General structure and size of *Magnificus*. Above intense ochreous chestnut, mixed with black and divided down the spine by a golden yellow line, and margined externally by the same hue, which also spreads over the shoulders and thighs. Below, and the flying membrane with the lower limbs and tail, intense orange red, deepening into ochreous on the margin of the membrane, and on the limbs ophthal-

mic and mystacial regions defined by black; chin dark, cheeks mixed, a pale golden spot on the nasal bridge. Two inches of end of tail black. Ears outside concolorous with lower surface.”

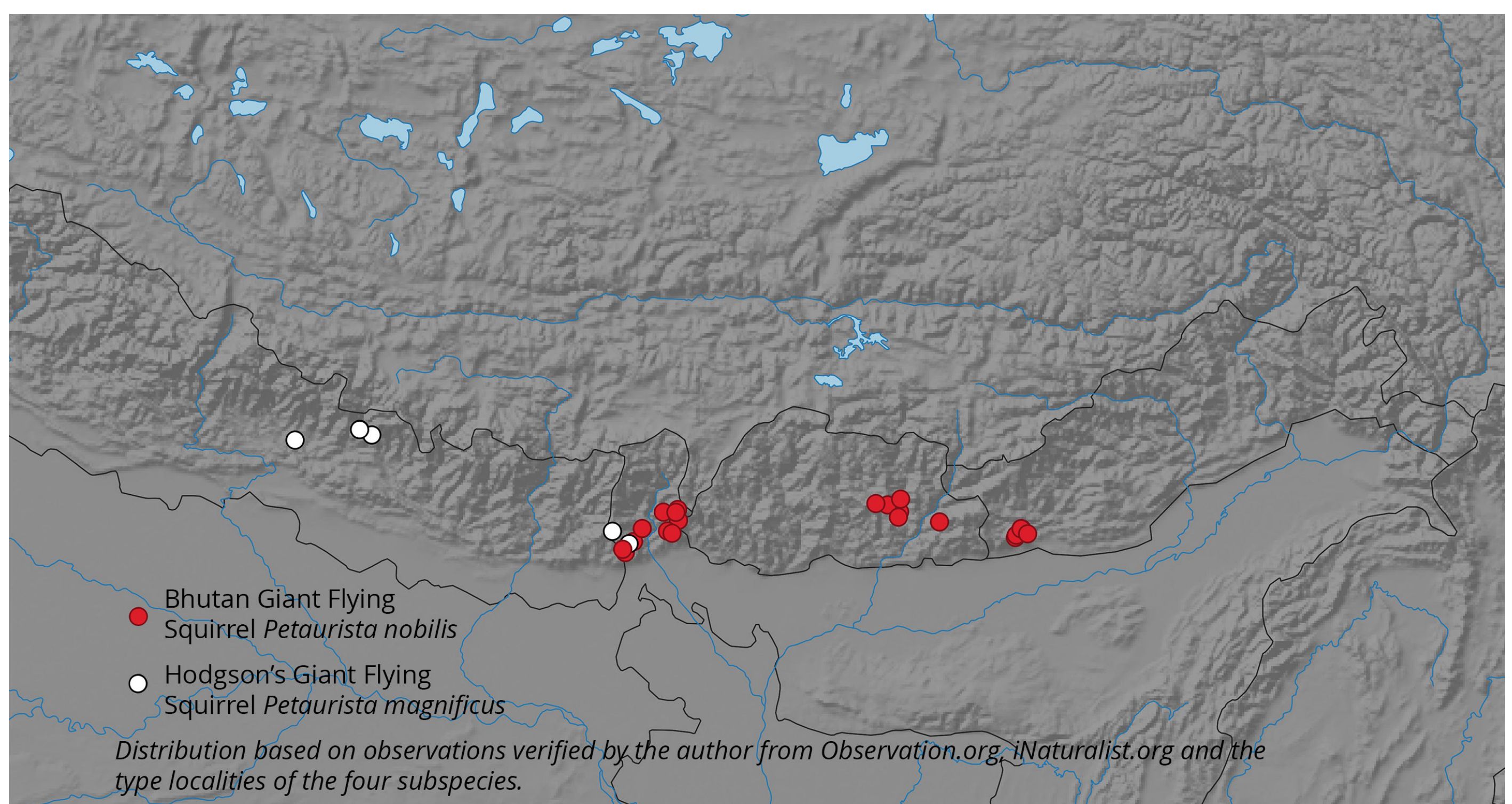
Since these descriptions, there has been much confusion in the published literature. Eventually, Ghose & Saha (1981) attempted to clear up the situation and produced drawings based on freshly collected material. They describe how most other authors mistakenly have synonymised *nobilis* and *magnificus* with either each other or with *Petaurista albiventer*. This synonymisation was the cause of a mislabeling of a type specimen in Naturalis. This has been cleared up thanks to the original descriptions and plate in combination with the writings on the mount piece, proving that it was actually a type of *P. chrysotrix/nobilis*. Some of the authors have claimed that *nobilis* and *magnificus* were merely seasonal forms of the same species, but they were able to disprove that by showing that the two forms were found in the same seasons. Furthermore they claim that there has been given too much importance to the presence of a middorsal pale line as key character. They suggest that within *nobilis* the middorsal line can be present, disconnected or even absent. They do not directly say that the middorsal line is always absent in *magnificus*, but they seem to imply it.

As the most important character, Ghose & Saha (1981) give the pale pectoral areas of *magnificus* to be restricted to the pectorals, while in *nobilis* they continue anteriorly and isolate a darker “saddle” on the back. That saddle may or may not be dissected by a pale middorsal line. If present, that middorsal line is connected to a “blob” on the head, which I presume to be the pale crown.

From the notes and drawings of Ghose & Saha (1981) combined with the descriptions of Hodgson (1836 and 1844) and Gray (1842), I infer the characteristics given in the comparison on the next page.

## Discussion

When seen well, these two species could easily be identified. However, some features may not be visible at night with weird torchlight reflections, so observers should keep that in mind. With this paper *P. magnificus* and *P. nobilis* can be identified, and it seems that they only overlap in Sikkim and West-Benghal in India. Good places to spot *P. nobilis* are the famous **Eagle’s Nest** in Arunachal Pradesh, in the national parks of Bhutan and perhaps in **Neora valley NP** in West-Benghal. In West-Benghal and Sikkim, also *P. magnificus* is present, although that species is more rarely seen. There is a recent observation from **Singalila NP** there. Your chances might be slightly higher in **Langtang NP** in Nepal, where there are several recent observations. Make sure to record your observations on [Observation.org](https://www.observations.org) or [iNaturalist.org](https://www.inaturalist.org)!



## Bhutan Giant Flying Squirrel *Petaurista nobilis*



Distinct dark saddle present on the dorsum. On the crown of the head, there is a pale yellowish spot, which is connected to the mid-dorsal line if that line is present. A dark saddle on the back continues around the blob on the head and forms a dark mask around the eyes and on the muzzle. On the dorsum, the saddle is sharply demarcated from the pale pagagium and pectorals.

Photos: Lennart Verheuvell, Eagle's Nest, Arunachal Pradesh, India

## Hodgson's Giant Flying Squirrel *Petaurista magnificus*



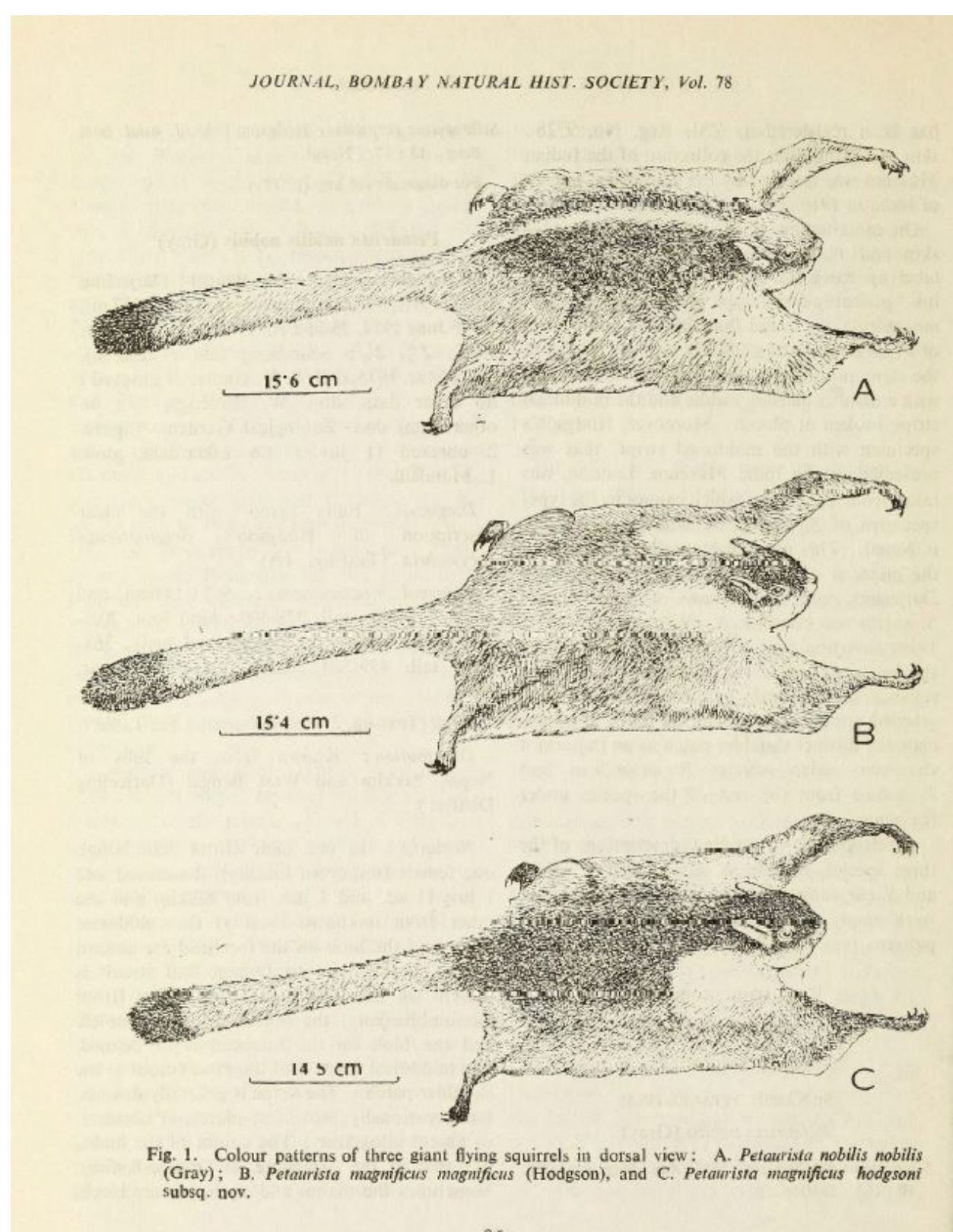
Upperside of the head entirely dark, without a blob. This fades gradually to chestnut on the dorsal side, and does not form a dark saddle, and never has a pale middorsal stripe.. Anteriorly, the pectorals are pale and contrast with the rest of the dorsal. The edges of the patagium are darker than the pectoral area.

Photo's above: Paul Carter, Langtang NP, Nepal. Below right: Jonathan Hakim, Singalila NP, West-Benghal, India ([cc-by-nc](#)), mirrored





**Above:** Type specimen of the species now known as **Bhutan Giant Flying Squirrel** *Petaurista nobilis*. The photos from the mounted individual come from the type series of *P. Chrysotrix*, but were later mislabeled as *magnificus* after it was wrongfully synonymised with that species, after which the specimen was sold to Naturalis, Leiden, where it still is today. To the **right**, the colour plate on which *Chrysotrix* was based. The colouring of this plate took so long, that Gray in the meantime had the chance of naming the specimen *P. nobilis*, which is now the official name.



**Left:** The plate by Ghose & Saha (1981) who reviewed the taxonomy of this complex and perfectly understood what was going on. If everyone had just used this paper afterward, there would not have been confusion at all. Apparently, that has not been the case, given the numerous misidentifications found in papers, field guides and on the internet.

A. **Bhutan Giant Flying Squirrel** *Petaurista nobilis*

B. **Hodgson's Giant Flying Squirrel** *Petaurista magnificus magnificus*. The form from Gorkha, Nepal.

C. **Hodgson's Giant Flying Squirrel** *Petaurista magnificus hodgsoni*. The form from Ghoom-bangjang, Darjeeling, West-Bengal, India.

Is the situation in the Himalayas clear now? The answer is no. There are many mysteries still to be resolved, e.g. regarding the Red Giant Flying Squirrel-complex *Petaurista petaurista/albiventer* and the Gray-headed Giant Flying Squirrel-complex *P. caniceps/elegans/sybilla*. And also the *Biswamoyopterus*-species deserve some extra attention, as well as the smaller flying squirrel species.

## Literature

The most important paper that reviews the entire taxonomy and is still up to date is:

Ghose, R. K., & Saha, S. (1981). Taxonomic review of Hodgson's giant flying squirrel, *Petaurista magnificus* (Hodgson)(Sciuridae: Rodentia) with description of a new subspecies from Darjeeling district, West Bengal, India. - The journal of the Bombay Natural History Society 78: 93-101

Here you will also find references to the other papers cited.