

Possible occurrence of *Muntiacus gongshanensis* in Dibang Valley district of Arunachal Pradesh, Northeast India

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Abstract

In January 2013, photographs were taken by the second author of two dead muntjacs in Dibang Valley district, Arunachal Pradesh, Northeast India which appear most likely to be *Muntiacus gongshanensis*. The photographs showed diagnostic feature of a blackish upper tail, absence of prominent tuft on the forehead in the male and the female appears to have small tufts at the side of the forehead which distinguish the species on the basis of tail colour from *M. muntjak sensulato*, and *M. crinifrons* and *M. feae* on the basis of hair tufts. *M. montanus* cannot be completely ruled out, but is highly unlikely on the basis of range, whilst *M. reevesi* has a paler upper tail, *M. atherodes* a dark forehead and neither species has tufting in the female. *M. vuquangensis* differs in tail, antler and tufting characteristics. This leaves animals in the *M. rooseveltorum* group of species, which however are currently poorly understood. Within this group some animals ostensibly lack tufts on the forehead of the male and some have blackish tails, although no male animals with both these features have yet been recorded and some females have tufting and dark tails. This is the second report of this species from India. *M. gongshanensis* has only recently been found in Arunachal Pradesh and in Nagaland. Outside India, *M. gongshanensis* is reported from North Myanmar, China/South East Tibet and West Yunnan.

Resumen

Fueron tomadas, por el segundo autor en enero de 2013, las fotografías de dos de los muntjacs muertos en el distrito Dibang Valley, Arunachal Pradesh, noreste de la India, que podrían tener mayor probabilidad de ser *Muntiacus mangshanensis*. Las fotografías mostraban características diagnósticas cola superior negruzca, ausencia de mechones prominente en la frente en el macho y en la hembra hay pequeños mechones en la parte de la frente los cuales distinguen a las especies sobre la base del color de la cola de *M. muntjak sensulato* y *M. crinifrons* y *M. feae* sobre la base de mechones de pelo. *M. montanus* no se puede descartar por completo, pero es muy poco probable, mientras que *M. reevesi* tiene una cola superior más pálida, *M. atherodes* la frente oscura y ninguna de las especies tiene formación de nudos en la hembra. *M. vuquangensis* difiere en las características de la cola, cornamenta y mechones. Esto deja a los animales en el grupo *M. rooseveltorum* de especies, que son actualmente poco conocidos. Dentro de este grupo algunos animales aparentemente carecen de mechones en la frente de los hombres y algunos tienen cola negruzcas, aunque no hay animales machos aún no se han registrado estas características y algunas hembras tienen formación de nudos y colas oscuras. Este es el segundo informe de esta especie en la India. *M. gongshanensis* ha sido encontrado recientemente en Arunachal

Pradesh y en Nagaland. Fuera de la India, *M. gongshanensis* se informó desde el norte de Myanmar, China / Sureste de Tíbet y el oeste de Yunnan.

Key words: Gongshan muntjac, *Muntiacus gongshanensis*, Arunachal Pradesh, Dibang Valley, Mishmi hills, India

Introduction

There are 12 species of Muntjacs presently in the world according to the IUCN red data list (IUCN 2014), out of which, three are found in India. The most common and widespread is the red muntjac (*Muntiacus muntjak*) (*M. vaginalis* in the IUCN Red List), the other two species have been reported only recently from the region. The Gongshan muntjac, *M. gongshanensis* was reported from the Mishmi hills of Arunachal Pradesh (Choudhury 2003, Choudhury 2009) and the leaf muntjac *M. putaoensis* was reported in 2003 from Namdapha National Park in Arunachal Pradesh (Datta *et al.* 2003).

There is considerable confusion that arose from the application of the name '*M. crinifrons*' in a series of papers in the late 1990s (e.g. Rabinowitz *et al.* 1998, Amato *et al.* (1999) which considered *M. gongshanensis* to be junior synonym of *M. crinifrons*, because no significant differences were detected in a small amount of mitochondrial DNA analyzed; there was no discussion of morphological differences between these two taxa. *M. crinifrons* was reported from Namdapha National Park in Arunachal Pradesh (Datta 2003), but the authors made no mention of *M. gongshanensis*. A new book on field guide to Indian mammals also refers to Gongshan muntjac and Black muntjac as the same species (Menon 2014). The situation has been complicated by the report that muntjacs with 'black' pelage have recently been observed in 2013 from Darjeeling, India, according to a newspaper article (Mukherjee 2013); the article speculates that these are most likely melanistic muntjac, but also could be *M. crinifrons* or *M. gongshanensis*. In fact it is most likely that these Darjeeling animals are melanistic *M. muntjak*, as has been previously reported (Inglis 1952). All muntjacs have varying degrees of orange (/red/yellowish crowns/hind crowns with or without tufting, the main diagnostic external features of *M.*

crinifrons are extensive and long tufting on the forehead (forecrown and crown) of both sexes, with very subdued and often barely noticeable frontal stripes, in combination with large body size and a dark upper tail (Timmins unpub).

The only explicit report of Gongshan muntjac for India is by Choudhury (2009) from Dibang Valley, Lohit and Anjaw district of Arunachal Pradesh. The information is based mainly on skulls and skin samples from local villages in the Mishmi hills. However, all reports from India of black muntjac that do not explicitly discount Gongshan muntjac and or melanistic *M. muntjak* from the identification should be considered as potential Gongshan muntjacs and or melanistic *M. muntjak*.

Material and Methods

We report the probable presence of *Muntiacus gongshanensis* in Dibang Valley district of Arunachal Pradesh and also probably the first photographic evidence of entire body specimens of a male and female. Two animals were found in the possession of a hunter who had just killed them at a site approximately 25 km from Gipulin village N 28° 51' 690, E 95° 55' 835 on 13 November 2013 at an altitude of 2060 m. The second author had sighted 5-6 individuals of the same species near Awa River, a day before. Two individuals (male and female) were shot by a local villager on the following day (see images) close to where the animals were sighted earlier. The weight was approximately between 15-20 kg. Hunting wildlife is common in Dibang Valley as in the rest of the state and in Northeast India (Aiyadurai 2011). Muntjacs are mainly hunted for meat, skins are preserved and used as mats; their antlers and tail are used as key chains. Body parts were not preserved and the meat was partially consumed. Later the remaining meat was smoked and carried back to the village. The second author, who happened to see the animals, is not a biologist and the first author was not present to make any measurements or collect and preserve any body parts. Though there is a practice of preserving skulls and

skins as a local practice, not all animals are preserved. It is done only if the animals were shot near the village.

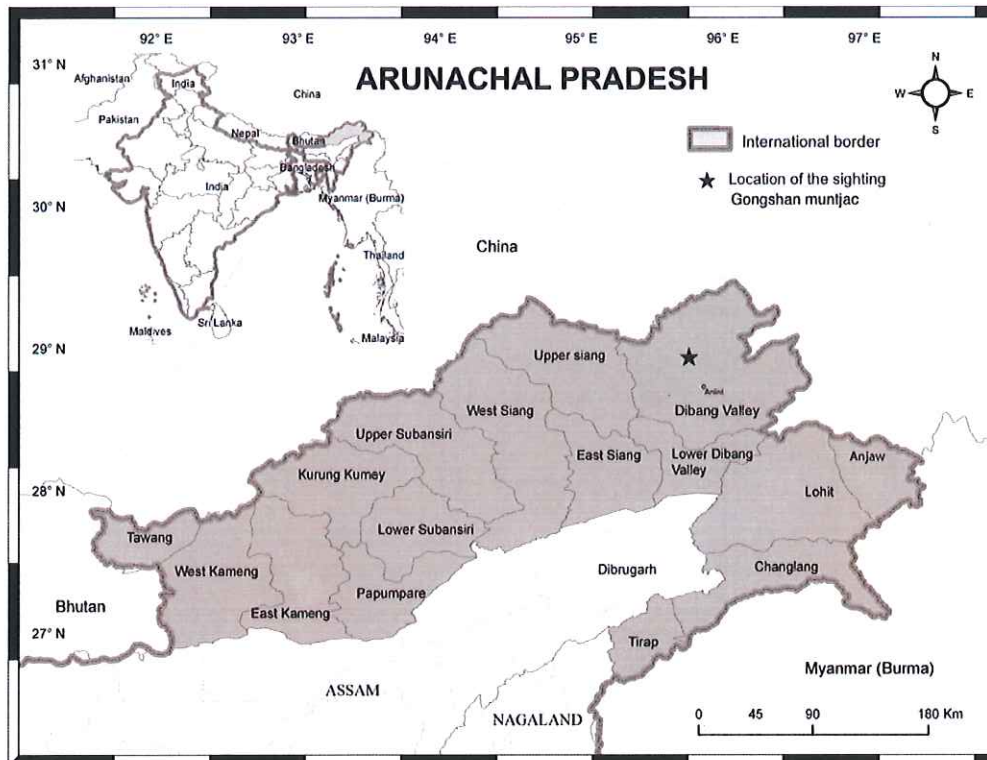


Figure 1 Map of Arunachal Pradesh showing the location of the sighting of possible *M. gongshanensis*.

Study Area

Diband Valley district is spread over an area of 9129 sq. km and nearly half the district is under state protection in the form of Dibang Wildlife Sanctuary (4149 sq.km) (Fig. 1). This sanctuary was declared in 1998 but there is still resentment among the local Idu Mishmi tribe that the sanctuary was declared without their consensus. The district has the least human density in the country at one person per sq. km and most of the district's terrain is unsuitable for agriculture or other sustenance practice. The remoteness, rugged terrain and low infrastructural development, and lack of road networks have made

field research difficult.



Figure 2. Male with the diagnostic morphological features.

Results

These animals are identified possibly as *M. gongshanensis*. The photographs showed diagnostic feature of a blackish upper tail (Fig. 2), absence of prominent tuft on the forehead in the male and the female appears to only have small tufts at the side of the forehead (Fig. 3). This distinguished the species on the basis of tail colour from *M. muntjak sensulato*, and *M. crinifrons* and *M. feae* on the basis of hair tufts. *M. montanus* cannot be completely ruled out, but is highly unlikely on the basis of range. *M. reevesi* has a paler upper tail, *M. atherodes* a dark forehead and neither species has tufting in the female. *M. vuquangensis* differs in tail, antler and tufting characteristics (Timmins *et al.* 2008). This leaves animals in the *M. rooseveltorum* group of species, which however are currently poorly understood, some animals ostensibly lack tufts on the forehead of the male and some have blackish tails, although no male animals with both these features have yet been recorded and some females have tufting and dark tails (Timmins *pers comm*).

Northern part of Dibang valley bordering South Tibet is known for abundant musk deer *Moschus chryogaster* populations and to contain takin *Budorcas taxicolor*. Due to its proximity to Tibet, the Idu Mishmi tribe, in the past, bartered musk pods, Mishmi teeta *Coptis teeta* and animal skins with Tibetans for pieces of metal, yarns and salt. After the India-China war of 1962, people movement to Tibet was

largely restricted due to militarization of the borders that led to the increase in trade links with Assam, Dimapur and Nepal. The district of Dibang Valley falls under the Eastern Himalayan Biodiversity Hotspot (Myers *et al.* 2000). Forests in the region are classified as temperate broad-leaved forest.



Figure 3. The photographs show diagnostic feature of a blackish tail and absence of prominent tuft on the forehead of male and the female

Local information on the species

Locally *M. gongshanensis* is apparently identified as Manzo-imbu (Idu Mishmi name). The name for *Muntiacus muntjac* appears to be Manzo and the suffix imbu is probably added for *M. gongshanensis* (Manzo-imbu). It is not absolutely clear whether the local people used this term Manzo-imbu consistently for *M. gongshanensis*. Choudhury (2003) in his book on the mammals of Arunachal Pradesh also reported the Idu Mishmi name for Gongshan muntjac as Menjo-Imbu.

According to the local people, Imbu means large tree groves far from human settlements or cultivable areas (Imbupa in Idu language is a place where there is no cultivation but only dense forests). According to the Idu Mishmi people, Manzo-imbu is a very rare species and not too many are found. While Manzo is reported to be plentiful and found very close to the villages, Manzo-imbu never come close to the village. Local people say that Manzo-imbu is slightly larger than Manzo, which suggests that local names might not be consistently applied to the biological species. Other wildlife found in the region where Gongshan muntjac was found are Takin (*Budorcas taxicolor*), Asiatic black bear (*Ursus thibetanus*), clouded leopard (*Neofelis nebulosa*) and tiger (*Panthera tigris*).

Discussion

M. gongshanensis was first described by Ma *et al.* (1990) from Gaoligong and Biluo mountain, Yunnan, north-western China. It is distributed in North Myanmar where camera traps have recorded multiple images of animals that show characteristics consistent with *M. gongshanensis* (Timmins, *et al.* 2008), although genetic analysis of material collected from the same regions as the camera-trap imagery was reported as *M. crinifrons* (Amato *et al.* 1999, Rabinowitz *et al.* 1998). Neither paper considers *M. gongshanensis* and *M. crinifrons* as two different species, nor does either give any indication of morphology that would allow identification as *M. gongshanensis*. The species has been reported from Mishmi hills (Arunachal Pradesh) and Pangsha village (Nagaland) based on skin and skull remains by Choudhury (2009). According to the IUCN (2014), *M. gongshanensis* falls under the category of Data Deficient. There is no mention of this species in India's Wildlife protection Act, as this is a new entrant into the list of Indian mammals with the only record as reported by Choudhury (2009).

The history of confusion makes it challenging to determine the identity of the two specimens reported here. The present finding is the result of an anthropological enquiry into the Idu Mishmi people's perception of nature. The first author had chanced upon the pictures of Muntjac and assistance from deer

specialists, which led to the possible occurrence of *M. gongshanensis* in Dibang Valley. Less accessible frontier regions like Dibang Valley district in Arunachal Pradesh in Northeast India have often hampered academic research for a long time and long-term research in any discipline has only begun. More research, tissue samples for genetic analysis, and morphological measurement of skulls of *M. gongshanensis* from the region are needed to ascertain the current status of the species.

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