Bulletin of Arunachal Forest Research, Vol. 37(1&2), 38–41: 2023 ISSN 0970-9487

Notes on the occurrence of *Kurixalus naso* (Rhacophoridae), a rare high-altitude tree frog in Arunachal Pradesh

P. Nanda[1]*, B. Saikia[2]

[1]Department of Zoology, Dera Natung Government College, Itanagar 793 113, Arunachal Pradesh, India
[2]Zoological Survey of India, North Eastern Regional Centre, Shillong 793 003, Meghalaya, India
*Corresponding Email: nandapz71@gmail.com

Abstract

Kurixalus naso is a high-altitude tree frog described from Arunachal Pradesh in 1912. Post its description, close to nine decades, there were no further report of this species until its rediscovery from Mouling National Park in Arunachal Pradesh and subsequent series of reports from Mizoram, Meghalaya and few more localities in Arunachal Pradesh. Outside India, this species is confirmed to be present in Tibet. However, the reports of this species from Bhutan and Myanmar need confirmation. Herein, we are reporting a new locality record of *K. naso* from Upper Subansiri District in Arunachal Pradesh.

Keywords: Abor expedition, Eastern Himalayas, *Nacho*, Northeast India, rare frog.

INTRODUCTION

The genus *Kurixalus* belonging to the family Rhacophoridae consists of 23 species. The genus is characterised by small body size with a strikingly pointed snout, digit tips enlarged with circum-marginal grooves, limbs with serrated dermal fringes along the outer edge, one '**)(**-shaped' and one inverted dark-brown triangular marks on the ventrum, coarse dorsal skin with irregular tubercles and granular ventral surface (Messenger *et al*., 2022).

In India the genus is represented by four species (*Kurixalus appendiculatus, K. naso, K. verrucosus* and *K. yangi*) (Frost, 2023; Saikia, 2021), of which *K. naso* was described from Arunachal Pradesh. The species was first collected from East Siang District from a small stream (*Eager*) during the Abor Expedition in 1911–12. Later Pawar and Birand (2001) reported two male individuals from Mouling National Park in Upper Siang District. Subsequently, the species was further reported from Eaglenest Wildlife Sanctuary, Lower Dibang Valley and Lower Subansiri in Arunachal Pradesh by Athreya (2006), Roy *et al*., (2018) and Sinha and Saikia (2022), respectively, as well as from other parts of Northeast India (Mathew and Sen, 2008; Mathew and Sen, 2009; Shangpliang *et al*., 2020).

Further reports of this species from Bhutan, China and Myanmar exists (Wangyal *et al*., 2020; Yu *et al*., 2017; Zug, 2022), however the reports of this species from Bhutan and Myanmar do not have any photographic or specimen records, and hence, needs further confirmation.

New locality report of *Kurixalus naso* in Upper Subansiri: In February 2022, five specimens of *Kurixalus* were received by the first author for identification. The specimens were collected by Y. Garam from Nacho area (28°23'37 N."; 93°50'44" E) in Upper Subansiri District in Arunachal Pradesh at an elevation of around 700 m. The species were later identified as *Kurixalus naso* (Annandale, 1912) which is a new distributional report for the locality. Three specimens were deposited at Zoological Survey of India, Shillong (Voucher No. V/A/NERC/ZSI/1938) (Fig. 1) and two specimens were deposited at Dera

Natung Govt. College, Itanagar (Voucher No. DNGC/A/016).

Figure 1: A specimen of *Kurixalus naso* preserved at Zoological Survey of India, Shillong.

Threat status: With more than a century since its discovery *Kurixalus naso* is known from 12 different localities (Table 1) till now, signifying its rarity. Presently, the species is categorized as Least Concern (LC) by the IUCN and has no legal protection. Being a tree canopy dweller, deforestation is a major threat to its populations. Of the 12 known localities, nine fall under Northeast India where *jhum* cultivation (slash and burn, shifting farming technique) is prevalent.

Note on some species of *Kurixalus*: The species of *Kurixalus* are morphology cryptic due to which species identification is difficult (Nguyen *et al*., 2020). Due to this crypticity, there is a potential for the discovery of many undescribed lineages of this genus (Yu *et al*., 2017). Considering this, it is interesting to note that three *Kurixalus* species with overlapping morphological characters (*K. naso, K. verrucosus* and *K. yangi*) are known to occur in Mizoram (Mathew and Sen, 2008; Lalronunga *et al*., 2021; Saikia *et al*., 2021). Moreover, the reports of *K. naso* from Meghalaya (Mathew and Sen, 2009; Shangpliang *et al*., 2020) also needs to be verified to ascertain proper specific identity.

Additionally, the report of *K. appendiculatus* from Arunachal Pradesh is erroneous. Wolf (1936) synonymised *K. naso* under *K. appendiculatus verrucosus*, however post the resurrection of *K. naso* into a valid species, the range of *K. appendiculatus* into Arunachal Pradesh still remains in some recent literature. Interestingly, Sarkar and Ray (2006) while cataloguing the amphibians of Arunachal Pradesh did not include *K. appendiculatus*. Due to these reasons, Sinha and Saikia (2022) removed this species from the faunal list of the State.

Table 1: Reported localities of *Kurixalus naso*

Sl.	Locality	Reference	n
1.	Eger Stream, East Siang, Arunachal Pradesh, India	Annandale (1912)	1
2.	Mouling National Park, Arunachal Pradesh, India	Pawar and Birand (2001)	2
3.	Eaglenest Wildlife Sanctuary, Arunachal Pradesh, India	Athreya (2006)	1
4.	Zebawk, Lunglei district, Mizoram, India	Mathew and Sen (2008)	37

5.	Daribokgree, Nokrek Bioshphere Reserve, Meghalaya, India	Mathew and Sen (2009)	1
6.	Motuo, Tibet, China	Yu *et al*., (2017)	8
7.	Nizamghat, Lower Dibang Valley, Arunachal Pradesh, India	Roy *et al*., (2018)	8
8.	Mawsynram, East Khasi Hills, Meghalaya, India	Shangpliang *et al*., (2020)	15
9.	Samdrup Jongkhar, Bhutan	Wangyal *et al*., (2020)	1
10.	Kachin, Myanmar	Zug (2022)	–
11.	Yachuli, Lower Subansiri, Arunachal Pradesh, India	Sinha and Saikia (2022)	1
12.	Nacho, Upper Subansiri., Arunachal Pradesh, India	Present study	5

[n: Number of specimens reported]

ACKNOWLEDGMENTS

The authors are grateful to the specimen collector Yapi Garam. The first author is thankful to the Principal of Dera Natung Government College, Itanagar and the second author is thankful to the Director, Zoological Survey of India, Kolkata and Officer-in-Charge, Zoological Survey of India, Shillong for providing research facilities.

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