

A NOTE ON RECAPTURE OF *NANORANA VICINA* (ANURA: AMPHIBIA) FROM MURREE, PAKISTAN

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ABSTRACT

Despite low anuran diversity, Pakistan possesses few endemic anuran species which merit researcher's attention. *Nanorana vicina* (*Paa vicina*) is one of the least studied Pakistani anuran, since its first report and description in 1872, it has never been collected from its type locality. This species is believed to occur in northern Pakistan and northwestern India at high elevation. This frog has high conservation value as it is endemic to South-east Asian highland and has a high ED (Evolutionarily Distinct) and EDGE (Evolutionarily Distinct and Globally Endangered) scores of 2.64 and 12.96, respectively. Recently we have collected two specimens from Aliot, Jheka Gali near type locality Murree, North Punjab, Pakistan. The area is hilly and rocky supporting subtropical moist high-altitude forest growths. The description of recently collected two specimens of *Nanorana vicina* along with photographs of live specimens and data on morphometric measurements, habits, ecology and conservation status are given

Key words: *Nanorana vicina*, morphology, ecology, conservation.

INTRODUCTION

Twenty four amphibian species belonging to families Bufonidae, Microhylidae, Megophryidae, and Dicroglossidae are recorded from Pakistan. The dicroglossid frogs are represented by seven genera: *Allopaia*, *Chrysopaa*, *Euphylyctis*, *Fejervarya*, *Hoplobatrachus*, *Nanorana* and *Sphaerotoca* (Khan, 2010). A mutilated specimen from Lun Bagla (near border with Azad Kashmir) was assigned as *Paa pleskei* by Mertens (1969), which Dubois (1976) later identified as *Paa vicina*. Sclater (1892) reported extension in the range of the species to Simla, India. Baig (2002) reported the species from Ayubia, Khyber Pakhtunkhwa, based on a blurred photograph of the specimen. Masroor (2011) included the species in the checklist of amphibians of Margalla Hills National Park, Islamabad, but did not provide any photograph or detailed description of the species.

In this paper, we have given the description of two specimens of *Nanorana vicina* recently collected from type locality along with photographs of live specimens and data on morphometric measurements, habits, ecology and conservation status.

MATERIALS AND METHODS

The two specimens were collected from a spring pool in Aliot village (N 33°, 56.154'; E 73° 27.001), at an elevation of 2004 meters during herpetofaunal survey from Jheka Gali, Murree (Fig.1). Later laboratory studies revealed that the specimens belong to genus *Nanorana*. The identification was confirmed by Dr. Muhammad

Sharif Khan (Herpetological Laboratory, USA). Morphometric measurements were taken (to the nearest of 0.05 mm) using a non-digital vernier caliper and were photographed by using Sony Cyber Shot DSC-HX1, 20X Optical zoom, 9.1 Megapixel.

The specimens were collected using dip-nets, euthanized, fixed and tagged:

Rais 051.12, juvenile female, with under developed ovaries (Fig.2)

Rais 052.12, an adult male with well developed testis (Fig.3).

RESULTS

The following sections are based upon our examination of taxonomic characters, morphometric measurements and observations on habits and ecology of two specimens that we captured.

Diagnosis: Tympanum indistinct; head wider than long; snout rounded, slightly projecting with strong forward slope; canthus round, loreal region oblique, depressed in the middle. Naris oval with thick rim, under canthus, closer to eye than snout tip. A thick fold of skin from back of upper eyelid to the angle of jaws. Iris golden, pupil vertically round, lips thick. Vomerine teeth in two small oblique groups, are closer to each other than to choanae. Tongue cordiform, broadly ovate, slightly emarginate posteriorly.

Slight web between base of fingers; fingers slender, slightly flat; tips round, III > I > II > IV; inner palmer tubercles distinct, longer than wide at the base of I finger, outer longer than wide at the base of IV finger.

Prominent rounded subarticular tubercle between first and second phalanx, no distal subarticular tubercle.

Toes moderately long, round with rounded obtuse tips, IV > V + III > II > I; tips of toes wider than the subarticular tubercles, no dorsal groove between tip of the last toe phalanx and toe tip. Inner metatarsal tubercle, longer than wide, no outer metatarsal, inter-phalangeal tubercles small, round. Toes not completely webbed, web reaches to the base of penultimate phalanx of fourth toe; web strongly emarginated between toes, reaches to the base of penultimate tubercle of IV toe, extends as a thin lining along sides of the penultimate phalanx of IV toes and along outer margin of V toe; toe tips not included in web.

Color: Body dorsum and limbs uniform light-olive. An indistinct sooty interrupted stripe from snout to the angle of jaws. Black mottling on lips, tympanic region, chest and posterior sides of the limbs, with indistinct dark bars on thigh and shank. Yellowish white ventrum with dusky chin and black mottling on chin and undersides of the limbs. Dorsum with numerous low obtuse smooth tubercles scattered on back and hind limbs, those at thighs and shank arranged in more or less in rows, no spines.

Habits: The frogs were resting on rocks well outside water, when disturbed they jumped to settled at the bottom of the clear pool, partially covered with sand at the bottom. When approached with net they buried deeper. When captured they presented least resistance, were quite docile, allowed moderate handling.

Ecology: The area around Aliot, Jheka Gali, Murree is hilly, rocky supporting subtropical moist high-altitude forest growths. Local people use spring water for household use, carrying it in pitchers and buckets. The pool gets dry for short periods. The dominant grasses around the locality were *Avina fatua*, *Poa* and *Viburnum* sp.; and most frequent herbs were *Urtica dioica*, *Rumex dentatus*, *Ocimum sanctum*; shrubs: *Berberis lyceum*, *Rubus* species and a climber *Hedera nepalense*.

Conservation status: The murree hills frog (*Nanorana vicina*) is listed as Least Concern (LC) on IUCN Red List of Threatened Species. It is believed that the species is uncommon rather rare. This frog has high conservation value as it is endemic to the Himalayas. The EDGE (Evolutionarily Distinct and Globally Endangered) of Existence programme developed by the Zoological Society of London rated *N. vicina* with a high ED (Evolutionarily Distinct) and EDGE scores of 2.64 and 12.96, respectively (Isaac *et al.*, 2007).

Table 1: Morphometric measurements (in mm) of two specimens of *Nanorana vicina*

Characters	Rais 051-12	Rais 052-12
	Juvenile female	Adult male
Snout-vent length	50.8	77.3
Combined length of thigh and shank	47.2	85
Head width	20.5	33.6
Head length	16.5	20.6
Distance from the nostril to the tip of the snout	5.8	7.2
Distance from the front of the eye to the nostrils	2	4.8
Distance from the back of the mandibles to the nostril	12.1	22
Distance from the back of the mandibles to the back of the eye	4.7	7.9
Distance from the back of the mandibles to the front of the eye	6.5	15
Distance between the front of the eyes	8.5	13.3
Distance between the back of the eyes	13.5	18.2
Inter-nasal space	6	7.5
Width of upper eyelid	7	8.3
Eye length	6.3	9
Forelimb length (from the elbow to the base of outer tubercle)	15.6	21.6
Hand length (base of outer palmer tubercle to the tip of finger III)	12	19.6
Inner palmer tubercle (length, width)	3.5, 2.6	4.5, 2
Outer palmer tubercle (length, width)	3.1, 1.4	4.7, 2
Femur or thigh length (from vent to knee)	24.6	45
Tibia or shank length	22.6	40
Length of tarsus and foot (from the heel to tip of toe IV)	33.4	58.4
Foot length (from the base of the inner metatarsal tubercle to the tip of the toe)	24.3	41.6

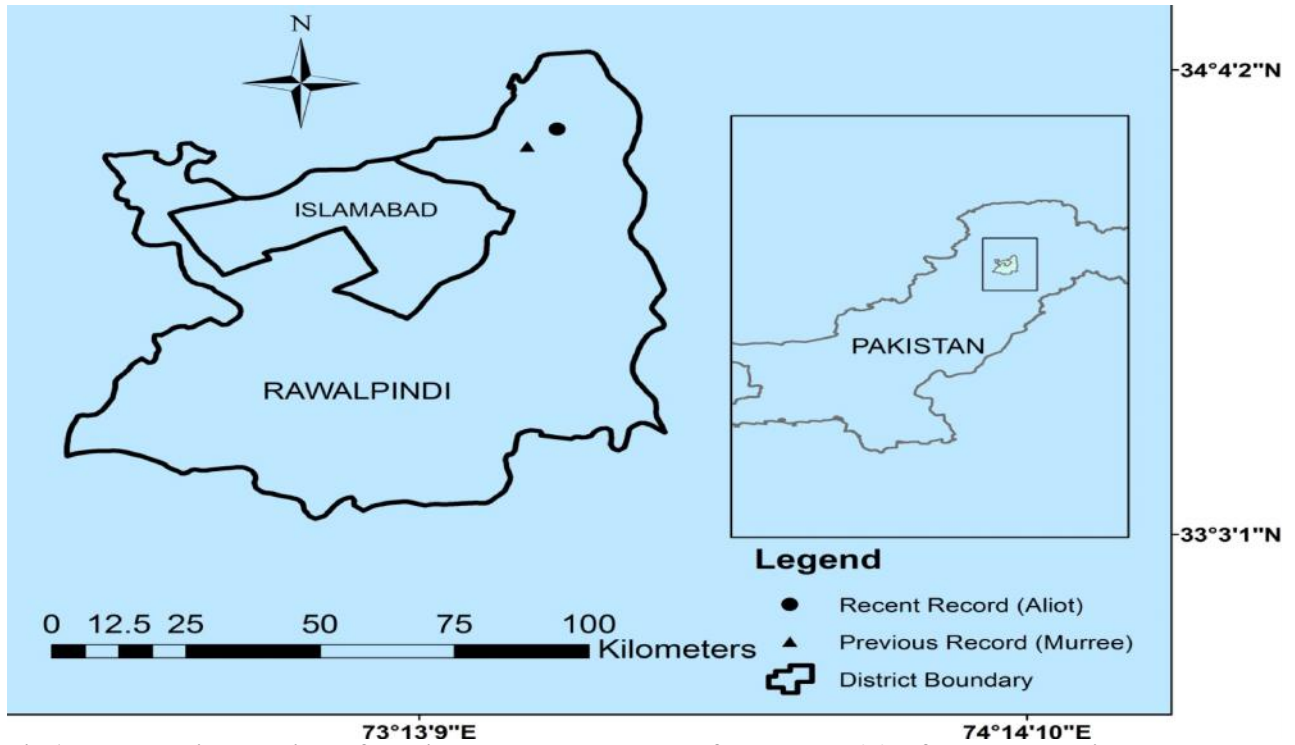


Fig.1. Map showing locations of previous and recent records of *Nanorana vicina* from type locality-Murree- North Punjab, Pakistan.

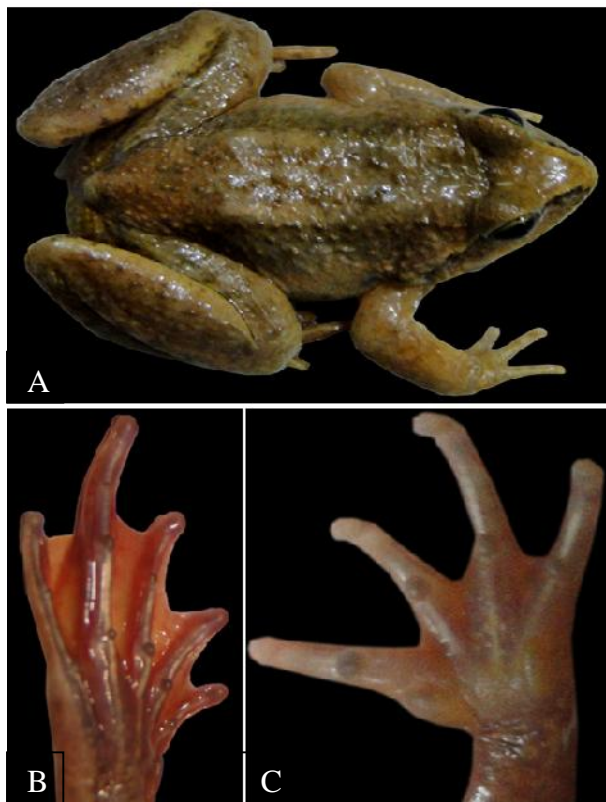


Fig. 2. Rais 051.12. A. *Nanorana vicina* female. B. Hand; C. Foot.



Fig. 3. Rais 052.12 A. *Nanorana vicina*, male; B. Hand; C. Foot.

DISCUSSION

Nanorana vicina shares characters with its sub-Himalayan brook-water congeners: *Allopaa barmoachensis* (Khan and Tasnim, 1989) and *Allopaa hazarensis* (Dubois and Khan, 1979): has longer hind limbs, indistinct tympanum, prominent post-ocular skin fold to the angle of jaws, wider head, naris nearer to the eye than to snout tip, internasal space narrower than width of the upper eyelid. However it differs from the species in having low spine-less tubercles on body and limbs, male (Rais 052.12) is without secondary sexual character (nuptial pads, spines etc), body and limbs without dark spots, absence of a distinct groove between penultimate and last phalanyx of the digits. Mertens (1969) reported *Rana libigi* from locality Lun Bagla near border of Azad Kashmir which was later recognized as *Paa vicina*. Sclater's (1892) reported *Rana vicina* from Simla, alpine India, which differ from our specimens in having tubercles only along flanks.

Nanorana vicina frequents Himalayan moist temperate forest and Himalayan moist alpine zone (Khan, 2006). Based on review of altitudinal range distribution of the species and our field observations of the habitat, we believe that in Pakistan the species inhabits clear lotic water bodies at an altitude as high as 2500 meters, or even more, which includes areas of Margalla Hills, Murre, Galiat, Ayubia and parts of Azad Jammu and Kashmir. More specimens are to be collected for detailed morphological, reproductive and population studies.

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