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Short Note

Arshad Javid*, Muhammad Shahbaz, Muhammad Mahmood-ul-Hassan and Syed Makhdoom Hussain

The Blasius' horseshoe bat *Rhinolophus blasii* (Chiroptera, Rhinolophidae) still extends to Pakistan

Abstract: Specimens of *Rhinolophus blasii* were captured in Manawa, district Lahore, 43 years after the first and single ascertained record in Pakistan. External, cranial, and bacular measurements of *R. blasii* are given for the first time in the country.

Keywords: distribution; morphometrics; Punjab.

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Rhinolophus, the only genus of family Rhinolophidae is the second most diversified bat genus, with 71 and 77 species recognized by Csorba et al. (2003) and Simmons (2005), respectively. From a center of evolution in Southeast Asia (Bogdanowicz and Owen 1992), rhinolophids extended across the Old World from rainforest to dry savanna and predertic areas through southern temperate habitats.

Rhinolophus blasii Peters, 1866 has one of the largest range both in the Palaearctic and the Afrotropics, where it is patchily distributed, extending marginally into the Indomalayan region (Simmons 2005) including only one confirmed specimen in Pakistan, which was collected on 28 December 1968 in Lahore (Roberts 1977); a kin labeled “Mekran coast” in the British Museum (Natural History) may have been collected in either Iran or Pakistan (DeBlase 1980).

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Then, *Rhinolophus blasii*, possibly *R. blasii meyeri* Felten, 1977 according to Corbet and Hill (1992), is considered to be a marginal species in Pakistan, and the population status of the species in the Indian subcontinent is unknown (Bates and Harrison 1997). The finding of five horseshoe bats hanging in an underground cellar is the first record of *R. blasii* after 43 years.

These horseshoe bats were identified in the field by a short third metacarpal and second phalanx of the fourth finger and additionally by the connective process of sella, which was very much pointed and rose to quite a prominent slender point (Figure 1A). The body fur was very long and dense, dorsal hairs being whitish brown at the base and dark gray brown at the tips.

This small group was recorded on January 21, 2011 from Manawa (31°35.647, 074°27.660, 217 m a.s.l.) in Lahore

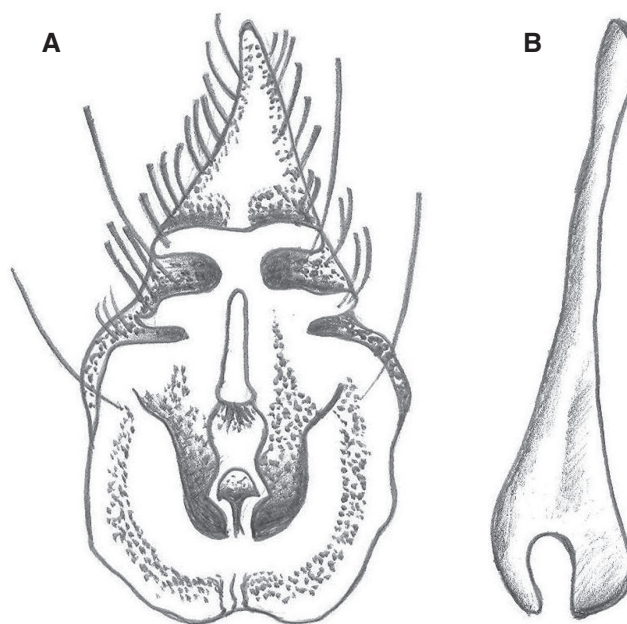


Figure 1 Noseleaf (A) and baculum (B) of *Rhinolophus blasii* from Manawa (Lahore, Pakistan).

district. Located on the left bank of river Ravi, this city is the second most populated in Pakistan. Hot and moist climate prevails during summer (mean July temperature: 32°C) and colder during winter season (mean January temperature: 13°C). The city receives an average annual rainfall of 650 mm, but the rainfall is more frequent during monsoon (Qadir et al. 2008, Ullah et al. 2009). Undulating and low alluvial plains are the characteristics of the area (Naeem et al. 2007). An irrigation system supplies extensive agricultural areas and gardens, detrimental to and caused expansion of the city at the expense of the subtropical thorn forest ecozone (Champion et al. 1965, Chaudhry et al. 1990).

These specimens of *Rhinolophus blasii* (1♂, 2♀) were captured with a hand net, placed in cotton bags and weighed up to 0.1 g (Pesola balance 10050, Swiss made) before being euthanized and preserved in absolute alcohol. The bottles were assigned field numbers (MMH210111.1, MMH210111.2, and MMH210111.3). In the laboratory, external body measurements (Table 1) were recorded using a digital vernier caliper (0–150 mm). These measurements were used to ascertain the identification of the captured bat and to compare them with published data (DeBlase 1980, Roberts 1997, Csorba et al. 2003). Skulls were prepared for recording cranial measurements following Bates et al. (2005). The penis of the male specimen was cut down

Table 1 External, cranial, and bacular measurements (in mm, except weight in g) of *Rhinolophus blasii* (mean and range when at least two specimens were recorded).

Measurements	DeBlase 1980	Csorba et al. 2003	Roberts 1977	This note (mm)
Body mass	–	–	–	8.56±0.58
Head and body length	55.8 (47–64)	–	33	39.33±0.58
Tail length	26.6 (21–35)	(15.4–35.0)	21	19.23±1.94
Ear length	20.0 (15.8–22.0)	(15.0–22.0)	15	15.67±1.26
Forearm length	47.8 (43–50)	(40.0–51.0)	41	40.17±1.16
Hind foot length	10.3 (8.0–11.0)	–	–	7.90±0.36
Third metacarpal (3mt)	–	(28.5–33.5)	–	30.67±0.76
First phalanx of 3mt	–	–	–	12.13±0.90
Second phalanx of 3mt	–	–	–	19.10±1.02
Fourth metacarpal (4mt)	–	(30.9–36.5)	–	31.43±0.51
First phalanx of 4mt	–	–	–	9.43±0.60
Second phalanx of 4mt	–	–	–	12.27±1.12
Fifth metacarpal	–	(32.6–38.5)	–	30.90±0.96
First phalanx of 5mt	–	–	–	10.20±0.17
Wing span	–	–	–	212.33±2.52
Tibia length	–	–	–	17.00±0.50
Calcar length	–	–	–	5.00±0.00
Penis length	–	–	–	7.00
Greatest length of skull	19.7 (19.1–20.1)	19.20 (18.17–19.98)	–	17.22
Condylar-canine length	16.5 (16.0–17.0)	–	–	16.01
Condylar-basal length	–	–	–	16.50
Zygomatic breadth	9.2 (8.8–9.5)	9.21 (8.09–9.88)	–	8.32
Breadth of braincase	8.6 (8.2–9.1)	–	–	7.50
Postorbital constriction	2.3 (2.2–2.8)	–	–	1.51
Maxillary toothrow length (C-M ³)	6.4 (6.0–7.6)	6.70 (5.65–7.10)	–	4.93
Anterior palatal width	–	–	–	4.54
Posterior palatal width	–	–	–	6.24
Mandible length	12.2 (11.9–12.7)	12.05 (10.99–12.80)	–	11.80
Mandibular toothrow length (C-M ₃)	7.00 (6.9–7.2)	7.00 (6.01–7.62)	–	7.00
Total bacular length	–	–	–	3.5
Shaft length	–	–	–	2.5
Proximal branch length	–	–	–	1.0
Proximal branch width	–	–	–	1.0
Distal branch length	–	–	–	0.0
Distal branch width	–	–	–	0.5
Baculum height	–	–	–	1.1

and the baculum prepared and measured following Bates et al. (2005). Its shape (Figure 1B) with cylindrical shaft, quite deep basal cone, and without dorsal emargination is in accordance with Csorba et al. (2003).

External and cranial measurements of the three collected specimens (Table 1), and the former specimen reported by Roberts (1997), are smaller than those of a large set of specimens from Iran (DeBlase 1980). On the other hand, all the measurements except the length of the fifth metacarpal and maxillary toothrow length fall within the ranges given by Csorba et al. (2003). According to Felten et al. (1977), the samples collected from Iran and Afghanistan represent a large subspecies, *Rhinolophus blasii meyerohemi* Felten, 1977. This was anticipated by Aellen (1959) who reported that specimens from the eastern part of the range were larger and supported by Corbet and Hill (1992). However, Kock and Howell (1988) pointed out that Pakistanese population could not belong to *R. b. meyerohemi*.

Rhinolophus blasii is one of the five species of *Rhinolophus* in Pakistan. Two are part of the Palaearctic fauna (*Rhinolophus ferrumequinum* and *Rhinolophus hipposideros*), and two range in the Indo-Malayan region (*Rhinolophus lepidus* and *Rhinolophus macrotis*). In the area, *R. blasii* prefer to live in arid to semi-arid conditions and lives in temples, ruins, and abandoned cellars and buildings (Bates and Harrison 1997). In the Mediterranean region, they mainly roost in caves and other underground sites (Aulagnier et al. 2009) and typically forage in shrubland and woodland, although it may penetrate to the desert habitat in Jordan (Amr 2000). In Punjab, the areas in close vicinity of Lahore should be further explored to find out the species, and it necessitates further analysis whether the subspecies recorded from Pakistan is *Rhinolophus blasii meyerohemi*.

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