



Rec. zool. Surv. India : 103 (Part 1–2) : 171-177, 2004

NEW RECORDS OF BATS FROM CENTRAL WESTERN INDIA

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INTRODUCTION

During ecological study and faunastic survey of bats from Pune city (Maharashtra) performed for two years 1998–2000, three bat species are recorded for the first time from Central Western India. All three bat species belong to genus *Pipistrellus* i.e. *P. pipistrellus* (Schreber, 1774), *P. kuhli* (Kuhl, 1819) and *P. savii* (Bonaparte, 1837).

The occurrence of small evening bats is common in the study area. These bats prefer to live in small groups of 5 to 25 bats, but their consolidated population is large. The bats belonging to genus *Pipistrellus* show species diversity in the city area, about 8 species are recorded in Pune city.

Pipistrellus pipistrellus, *P. kuhli* and *P. savii*, all these species are confirmed by morphological, cranial and dental measurements. Their occurrence in the peninsular India has extended their distribution in the Indian subcontinent.

OBSERVATIONS

TAXONOMY AND ECOLOGICAL DETAILS

(1) COMMON PIPISTRELLE

Class MAMMALIA

Order CHIROPTERA

Suborder MICROCHIROPTERA

Family VESPERTILIONIDAE

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Genus *Pipistrellus*Species *Pipistrellus* (Schreber, 1774)

1774. *Vespertilio pipistrellus*, Schreber, 167, pl. 54. Type locality : France.

Diagnosis of the species : Small sized pipistrelle, with forearm length 29–32 mm and head and body length 43–46 mm. The tail is relatively long (32–35 mm). The brain case is moderately high and rounded and interdental palate is longer than wide. Inner upper incisor I^2 is bicuspidate, outer upper incisor (I^3) is similar in crown area to I^2 , but half or slightly more in height. Pm^2 is similar in crown area to I^2 and not much intruded from tooth-row. Upper canine is clearly separated from posterior premolar Pm^4 , and Pm^2 is visible laterally.

$$\text{Dental formula : } i \begin{array}{c} -2 \ 3 \\ 1 \ 2 \ 3 \end{array}, c \begin{array}{c} 1 \\ 1 \end{array}, pm \begin{array}{c} -2-4 \\ -2-4 \end{array}, m \begin{array}{c} 1 \ 2 \ 3 \\ 1 \ 2 \ 3 \end{array} = 34$$

External, cranial and dental measurements (mm) of *Pipistrellus pipistrellus*

HB	43–46	GTL	11.8–12.2
HF	6–7	CCL	10.6–11.3
T	32–35	ZB	6–6.3
FA	29–32	BB	5.8–6.2
E	10–12	PC	3.4–3.8
5MT	27–30	CM ³	4.2–4.5
4MT	28–31	CM ₃	4.3–4.6
3MT	28–31	M ³ –M ³	5.4–5.6
TIB	10–11	M	8.4–8.7
WSP	190–203	RW	5–5.2

*n = 3 (2 female, 1 male)

HB : Head & body length, HF : Foot length, T : Tail length, FA : Forearm length, E : Ear length, 5MET : Length of 5th metacarpus, 4MET : Length of 4th metacarpus, 3MET : Length of 3rd metacarpus, TIB : Length of tibia, WSP : Wingspan, GTL : Greatest length of skull, CCL : Condylor-canine length, ZB : Zygomatic breadth, BB : Length of braincase, PC : postorbital constriction, CM³ : Maxillary toothrow, CM₃ : Mandibular toothrow, M³–M³ : Posterior palatal width, M : Mandible length, RW : Width of rostrum.

Pelage is soft, dense and silky. Dorsally the pelage colour is blackish brown and slightly paler on the ventral side. Some of the hair tips on the ventral side are grey to buffy brown. Snout, ears and membranes are uniformly dark brown. The ears are held almost horizontally on the head, the

tragus is tall and slightly curved inwardly. The tibiae are short and the soles are small. The dorsal profile of the skull rises gradually from the nasal aperture to lambda. The cranium is bulbous and the rostrum is long and narrow.

Collecting locality : The evening bats of the present species are found hiding behind the wooden notice board at the second floor of Bharati Vidyapeeth, near Katraj lake, on southern border of the city.

Systematic remark : Specimens from India and Pakistan are provisionally referred to the Indian subspecies *P. p. aladdin* (Corbet & Hill, 1992). Those from north of the main massif of the Hindu-Kush Mountains Afghanistan are referred to *P. p. bacrianus* (Gaisler, 1970).

Distribution : The present species of bat is reported from North Pakistan (Gilgit), Kashmir; and to W. Europe, N. Africa and Turkestan.

Ecological note : A group of about 20 bats of adult and subadults were found roosting under the same shelter in early February. This part of city is comparatively cool and humid in monsoon i.e. from June to September but for the remaining season the surrounding is dry, when the bats were located. After trapping and releasing, the disturbed colony left the roosting site and did not turn up to this site till the date. Nothing is known about the reproduction cycle.

(2) KUHLMAN'S PIPISTRELLE

Class MAMMALIA

Order CHIROPTERA

Suborder MICROCHIROPTERA

Family VESPERTILIONIDAE

Genus *Pipistrellus*

Species *kuhlii* (Kuhl, 1819)

1819. *Vespertilio kuhlii* Kuhl, 199. Type locality : Trieste, Italy.

Diagnosis of species : The medium sized pipistrelle with forearm length ranging between 34.8–36. The tail length (33–35 mm) is sub equal to the head and body length (46.8–49.4 mm). It differs from other closely related species in dental peculiarities. I^2 is unicuspid, I^3 and pm^2 are small, about one half or less in the crown area of I^2 . The tip of I^3 extends slightly beyond the cingulum of I^2 . The wing membranes are translucent and the most characteristic feature is the presence of distinct white border on the patagium running between the foot and the fifth digit.

External, cranial and dental measurements (mm) of *Pipistrellus khlii*

HB	46.8–49.4	GTL	13–13.6
HF	6–7	CCL	12–13
T	33–35	ZB	8.5–8.8
FA	34.8–36	BB	6.8–7
E	11.1–13	PC	3.4–3.8
5MT	31–33.8	CM ³	4.8–5
4MT	31.8–34.5	CM ₃	5.2–5.6
3MT	32–35	M ³ –M ³	5.7–6
TIB	13–14	M	10–10.6
WSP	233–242	RW	4.9–5

*n = 3 (2 female, 1 male)

HB : Head & body length, HF : Foot length, T : Tail length, FA : Forearm length, E : Ear length, 5MET : Length of 5th metacarpus, 4MET : Length of 4th metacarpus, 3MET : Length of 3rd metacarpus, TIB : Length of tibia, WSP : Wingspan, GTL : Greatest length of skull, CCL : Condylor canine length, ZB : Zygomatic breadth, BB : Length of braincase, PC : postorbital constriction, CM³ : Maxillary toothrow, CM₃ : Mandibular toothrow, M³–M³ : Posterior palatal width, M : Mandible length, RW : Width of rostrum.

The dorsal pelage is dark brown and slightly paler ventrally. The hair roots on the ventral body surface have darker base. The snout, ears and wing membranes are uniformly brown. The tragus is inwardly curved, but the tip is narrow and the outer border lacks triangular projection, the presence of which is the peculiarity of *P. savii*. The skull is long, its dorsal profile is almost straight and the lambdoid crest in front of the small triangular area is well developed. Pm² is displaced inwardly as a result the upper canine and pm⁴ seem to be in contact. Pm² is smaller, about half of Pm⁴ in height and crown area.

Collection locality : While surveying bat colonies in urban area of Pune city (Maharashtra, India), two colonies of *Pipistrellus kuhlii* were located. In the first case, from the small population of about 6–7 bats, two bats were trapped in early June from the old stony building of St. Hilda's Girls' School premises in Guruwar Peth. The adult males and females live in the crevices of an old stony building at the ground floor verandah covered with old-fashioned clay tiles. The bats of *P. ceylonicus* and *P. savii* were also trapped from the vicinity. Another colony of about four to five bats of *P. kuhlii* was located in early February roosting behind the wooden board again at the ground floor of an old stony building of Fergusson College.

Systematic remark : There is no endemic subspecies in the Indian subcontinent.

Distribution of species : This bat species is reported from southern Europe to India and also from Morocco to Egypt and South Africa (Corbet and Hill, 1992). From India it is reported from Kolkata (West Bengal), Cachar District from Assam and Cherapunji from Meghalaya (Kurup, 1968). The present report is the extension of the species in the central western region of India.

Ecological note : Both these colonies are located in the urban area, where the surrounding is quite green due to indigenous plants and hence cool and humid even in summer.

Like other species of *Pipistrellus*, the bats of the present species come out from their diurnal roost about 10 to 15 minutes after sunset. The bats leave their roost one by one at the interval of about 2 to 3 minutes. The flight is jerky but regular.

Nothing is known about the reproduction. The bats seem to shift the day roosts in response to even slight disturbance in their habitat or due to human interference.

(3) SAVI'S PIPISTRELLE

Class MAMMALIA

Order CHIROPTERA

Suborder MICROCHIROPTERA

Family VESPERTILIONIDAE

Genus *Pipistrellus*

Species *savii* (Bonaparte, 1837)

1837. *Vespertilio savi* Bonaparte : fasc. 20 Type Loc. : Pisa, Italy.

Diagnosis of species : Inner upper incisor I^2 is bicuspid. I^3 is half or more in height to I^2 , but similar in crown area. Pm^2 is little reduced in crown area, about two thirds of that of I^2 . Postorbital region, supraorbital region and rostrum are moderately widened. Supraorbital tubercles are small. Braincase is low, flat and elongate. Basial pits are lacking. Pelage is soft, dense, long and silky.

Dental formula : $i \frac{-2\ 3}{1\ 2\ 3}, c \frac{1}{1}, pm \frac{-2-4}{-2-4}, m \frac{1\ 2\ 3}{1\ 2\ 3} = 34$

External, cranial and dental measurements (mm) of *Pipistrellus savii*

HB	46-51	GTL	14.4-14.5
HF	6-7	CCL	12.4-13.5
T	29.5-30	ZB	8.3-8.5
FA	35.8-36.7	BB	7-7.2

E	11.6–12.2	PC	3.5–3.7
5MT	31–31.6	CM ³	5.1–5.2
4MT	33.6–34.3	CM ₃	5–5.2
3MT	30.2–33.4	M ³ –M ³	6–6.1
TIB	13.2–14.5	M	9.5–10.5
WSP	235–249	RW	5.5–5.7

*n = 2 male

HB : Head & body length, HF : Foot length, T : Tail length, FA : Forearm length, E : Ear length, 5MET : Length of 5th metacarpus, 4MET : Length of 4th metacarpus, 3rd MET : Length of 3rd metacarpus, TIB : Length of tibia, WSP : Wingspan, GTL : Greatest length of skull, CCL : Condylor canine length, ZB : Zygomatic breadth, BB : Length of braincase, PC : postorbital constriction, CM³ : Maxillary toothrow, CM₃ : Mandibular toothrow, M³–M³ : Posterior palatal width, M : Mandible length, RW : Width of rostrum.

The medium sized bat with uniformly dark brown long, silky, soft and dense pelage. Ventrally the hair bases are darker, while the tips are pale in colour. The snout, ears and wing membranes are uniformly dark brown. The muzzle is naked and flat. The membranes are translucent. The ear lobes are long and broad at the base. The tip of the ear lobe is rounded. The tragus is long, inwardly curved and with blunt tip. On its outer margin on the lower half, there is a triangular projection. The tail is significantly shorter than the head and body length.

Collecting locality : The bats of the present species *Pipistrellus savii* were trapped, when hiding behind the nameplate fitted on the stony wall of old building in the premises of Fergusson College. Two isolated males were trapped, one in mid March 1999 and the other in mid February next year.

Systematic remark : Specimens from India and Myanmar are provisionally referred to *P. s. austenianus* (Ellerman & Morrison-Scott, 1951 and Hill, 1962) as reported by Corbet & Hill, (1992).

Distribution of the species : *Pipistrellus savii* is reported from Korea, Japan, Arabia, Iran, Afghanistan, India, Myanmar and North Africa. In India Cherapunji (Meghalaya) is the type locality of *P. s. austenianus*. It is a widespread but little studied species. In Indian subcontinent the endemic subspecies *P. s. austenianus* has a restricted range. But its occurrence in the peninsular India has extended its distribution in this subcontinent.

Ecological notes : Nothing is known about the food and feeding habit or reproduction cycle of the present species.

SUMMARY

Occurrence of three species of pipistrelles, *Pipistrellus pipistrellus* (Schreber, 1774), *P. kuhlii* (Kuhl, 1819) and *P. savii* (Bonaparte, 1837) in urban area of Pune (Maharashtra, India) has extended the distribution of these species in the Indian subcontinent. The results are based on the morphological, cranial and dental measurements.

ACKNOWLEDGEMENT

Korad V. S. is thankful to the Director, UGC (WRO) for financial assistance for the pilot survey of bats in Pune corporation limits (Maharashtra, India). Authors are grateful to the Principal, Fergusson college, Pune & Prof. Momin M. M., Head, Dept. of Zoology, Fergusson College, Pune for providing laboratory facilities and cooperation for smooth running of the project. Special thanks are due to Dr. Pradhan M. S., Scientist D, and Dr. Mahabal A. S. Office-in charge, Zoological Survey of India (WRS); Akurdi, Pune for rendering help for scientific identification of the material, valuable suggestions and encouragement.

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