

**Observations on some rare Arabian *Pipistrellus*
(Chiroptera: Vespertilionidae)
with special reference
to the external male genitalia**

by

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***Pipistrellus arabicus* Harrison, 1979, Arabian Pipistrelle**

Material:

HZM 4.10060 ♂ Wadi Sahtan, Oman 23°22'N 57°18'E 12. IV. 1979 M.D. Gallagher
HZM 5.11625 ♂ Wadi Fidah, near Dank and Ibri, Oman 23°30'N 56°31'E 6. IV. 1981
M. D. Gallagher

Major Gallagher recently obtained the two further specimens of this recently discovered little Arabian Pipistrelle listed above, which are now located in the Harrison Zoological Museum. They agree with the holotype and referred specimen previously known in all essential features (Harrison, 1979). The example from Wadi Fidah is of special interest since it extends the known range of the species to the interior of Oman and tends to support the view that it is a relict species inhabiting the Jebal Akhdar Range.

It is clear from the original description that the species stands, in respect of its dental characters, in an intermediate position between *Pipistrellus bodenheimeri* Harrison, 1960 and *Pipistrellus pipistrellus* Schreber, 1774. This new material provides an opportunity to study the male external genitalia and describe the baculum in comparison with those of the other two species. The external and cranial measurements of the two new specimens are given below.

Measurements: (HZM 4.10060 and 5.11625 in each case, in mm.)

Total length 66, 69; forearm 29.0, 29.2; foot (S.U) 5.6, 5.8; tail 34, 34; ear 9.8, 8.3; tragus 4.1, 4.4. Cranial measurements: greatest length 11.4, 11.7; condylobasal length 10.7, 10.9; zygomatic width 6.8, —; breadth of the braincase 5.6, 5.8; postorbital constriction 2.9, 3.1; maxillary cheekteeth $c-m^3$ 3.7, 3.9; mandibular cheekteeth $c-m_3$ 4.1, 4.2; mandible 7.8, 7.8.

This is one of the smallest Arabian bats, fully as small as *P. bodenheimeri*, and distinguishable from all other Arabian *Pipistrellus* and indeed all other

members of the genus by its relatively enlarged thumbs (measuring about 4.8 mm including the claw).

Genitalia

The penis measures 4.3 mm in a spirit specimen and is sharply angulated near the base of the shaft, differing in that respect from both *P. pipistrellus* and *P. bodenheimeri* (See Fig. 1). The glans penis is not noticeably expanded, as it is in *P. pipistrellus* and the urethral orifice extends as a simple vertical slit just on to the dorsal aspect of the glans. It differs in this respect also from *P. pipistrellus* in which the urethral orifice is V-shaped, with a surrounding area of smooth mucosa extending as a lanceolate median band, across the whole dorsal aspect of the glans. In *P. arabicus* the glans is furnished with numerous long fine hairs, while in *P. pipistrellus* the hairs on the glans are shorter and more bristly. The penis of *P. bodenheimeri*, also described here for the first time, is much smaller than that of *P. arabicus* and lacks the pronounced angular bend at the base of the shaft. The glans is rather similar to that of *P. arabicus*, furnished with long fine hairs and the urethral orifice

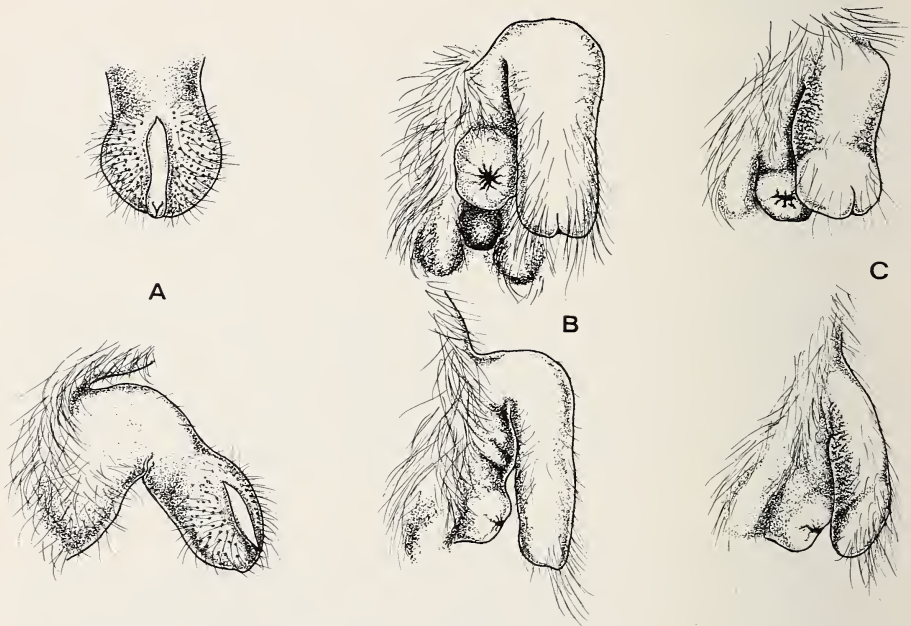


Fig. 1: Male external genitalia of *Pipistrellus*. Dorsal views of the penis above, lateral below. Scale (applicable to all) = 1 mm. — A, *Pipistrellus pipistrellus*, HZM 127.11665, Upsall, near Thirsk, N. Yorkshire, 17. VIII. 1981, collected by D.L. Harrison. — B, *Pipistrellus arabicus*, HZM 1.8274, Rostaq, Oman, 25. IX. 1975, collected by M. St. C. Baddeley. — C, *Pipistrellus bodenheimeri*, HZM 5.8279, Ein Gedi, Israel, 8. XII. 1975, received from D. Makin. — Stereomicroscope drawings by D.L. Harrison.

with a simple vertical slit extending to the dorsal glans. In *P. arabicus* the scrotal swellings, situated behind the anal orifice, are pigmented with melanin and with a deep retro-anal pocket situated between them and the anal papilla. These features are shown in Fig. 1 from which it is clear that all three species exhibit distinctive features in their external male genitalia.

Baculum (Os penis)

The bacula of the three species have been prepared from dried specimens by immersion in 5 % Potassium hydroxide, staining with Alizarin Red and subsequent micro-dissection. Stereomicroscope drawings were then made from the prepared specimens (See Fig. 2) using a Wild Heerbrugg Stereomicroscope.

The baculum of *P. arabicus* is the largest of the three species studied and differs in a number of striking characteristics. The distal end is broadly expanded and trifid, the shaft robust with a slight curvature, convex above, the base with a shallow median indentation. By contrast the baculum of *P. pipistrellus* has a small bifid point and very slender shaft, more strongly curved, convex above and the base with a deep median indentation. This British specimen agrees closely with the description and figures of Hungarian *P. pipistrellus* bacula given by Topal (1958). The baculum of *P. bodenheimeri*, of which the base unfortunately fractured during preparation, is nevertheless quite different from both the other species. It is short and broad, with an expanded distal end, the single terminal point directed somewhat

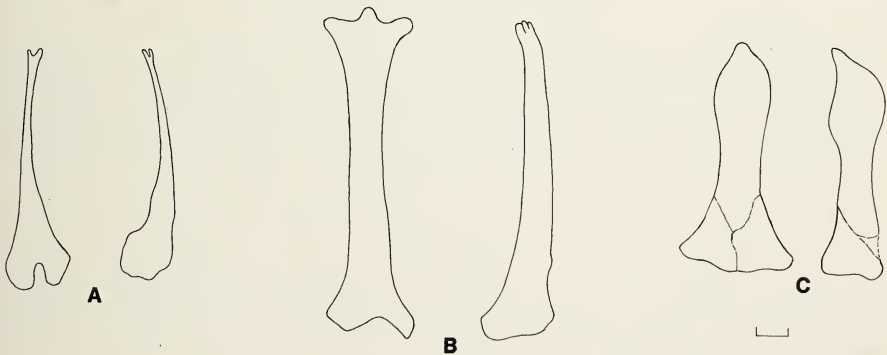


Fig. 2: Bacula (Os penis) of *Pipistrellus*. Dorsal view on left, lateral on right. Scale (applicable to all) = 0.25 mm. — A, *Pipistrellus pipistrellus*, HZM 117.8650, Aylsford, Kent, 11. II. 1977, collected by Mrs Brentnall. — B, *Pipistrellus arabicus*, HZM 4.10060, Wadi Sahtan, Oman, 12. IV. 1979, collected by M.D. Gallagher. — C, *Pipistrellus bodenheimeri*, HZM 3.3786, Jazirat al Abid, Aden, South Yemen, 13. XI. 1963, collected by D.L. Harrison (base of baculum fractured during preparation). — Stereomicroscope outline drawings by D.L. Harrison.

ventrally. The base is broad and probably with little median indentation. These features are shown in Fig. 2.

The degree of morphological difference displayed by the external genitalia and more particularly the bacula of these three species of *Pipistrellus* is indeed surprising. It certainly suggests the great antiquity of *Pipistrellus* as a genus. It seems likely that a more general systematic review of the genitalia in this complicated genus, now being undertaken by the author, may help to resolve some taxonomic difficulties as well as define subgeneric groupings and intergeneric relationships.

Acknowledgments

The author is much indebted to Major M.D. Gallagher, who obtained the new specimens of *P. arabicus* described above and to those who kindly obtained for the Museum the comparative material employed for this study, namely M.St.C. Baddeley, D.Makin and Mrs Brentnall.

Summary

Further material of the recently described and little-known *Pipistrellus arabicus* from Oman is here recorded. The external male genitalia and baculum are described and compared with those of *P. pipistrellus* and *P. bodenheimeri*, the latter also described in detail for the first time. Marked morphological differences are revealed.

Zusammenfassung

Weiteres Material der kürzlich beschriebenen und wenig bekannten *Pipistrellus arabicus*, aus Oman wird mitgeteilt. Das äußere männliche Genitale und Baculum wird beschrieben und mit dem von *P. pipistrellus* und *P. bodenheimeri* verglichen, wobei letztere Art erstmals im Detail beschrieben wird. Zwischen allen drei Arten bestehen markante morphologische Unterschiede.

References

- Harrison, D.L. (1960): A new species of Pipistrelle Bat (Chiroptera: *Pipistrellus*) from South Israel. — Durban Mus. Novit. 5 (19): 261–267.
— (1979): A new species of Pipistrelle Bat (*Pipistrellus*: Vespertilionidae) from Oman, Arabia. — Mamm. (Paris) 43 (4): 573–576.
Schreber, J.Ch.D. von (1774): Die Säugethiere in Abbildungen nach der Natur mit Beschreibungen. I: 167.
Topal, G. (1958): Morphological studies on the os penis of bats in the Carpathian Basin. — Ann. Hist. nat. Mus. Nat. hung. 50: 331–342.

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