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Notes on a collection of Bats (*Microchiroptera*) from the Iberian Peninsula

by

DAVID L. HARRISON M. A., M. B., B. Ch., F. Z. S.

(2 plates and 1 fig.)

These observations are based on material obtained during four visits by the author to the Iberian Peninsula, in September 1949 to the French Pyrenees, in July 1952 to Gerona Province, in September 1956 to Santander Province and in September 1957 to Málaga Province. The material comprises forty-five specimens and includes nine species. This collection reveals some interesting data on the distribution of subspecies in the area which are worthy of record as supplying additional knowledge to that placed on record by Bauer (1956) as well as helping to clarify the status of the forms comprising the bat fauna of Spain. All the material is in the author's collection at Sevenoaks. In addition material in the British Museum of Natural History collection has been examined by the author where relevant to the particular problems here treated in detail.

Pipistrellus pipistrellus Schreber

- 5 ♂ 17—18 Sept. 1957 Marbella-Fuengirola, Málaga, S. Spain.
2 ♂ 1 ♀ 8—16 Sept. 1956 Laredo, Santander Prov. N. Spain.
1 ♂ 22 Sept. 1956 San Cristo de Lempias, Santander Prov., N. Spain.
1 ♀ 19 Sept. 1956 Near Ampuero, Santander Prov., N. Spain.
10 ♂ 6 ♀ 2—20 Sept. 1949 Fabian-Aragnouet, Hautes Pyrenees, France.
Altitude 3000 feet.

The five examples from Marbella-Fuengirola, Málaga, obtained in September 1957 are outstanding on account of their uniformly pale colour both on the dorsal and ventral surfaces. On the dorsal surface their colour approximates to 6D (Cracker) of Plate 13 in Maerz and Paul (1950) and shows little variation in the series. The ventral surface is rather paler buffy brown with the hair bases dusky grey. These specimens are clearly referable to the race *Pipistrellus pipistrellus mediterraneus* Cabrera and it is interesting that amongst thirty-nine examples of the typical subspecies from various localities in Britain in the author's collection none approach these animals in pallor. Even the palest examples from Britain, where the coloration in this species appears particularly variable, are more rufous in hue than the south Spanish race. This series adds further confirmation to the validity of this race. It is interesting however that the series from three localities in Santander Prov., N. Spain, which are seasonally exactly comparable are uniformly and contrastingly dark (See Plate I) and fall well within the colour range of typical *P. p. pipistrellus* to which subspecies they are clearly ref-

erable. Similarly the series of sixteen specimens from Fabian-Aragnouet, Hautes Pyrenees, are also darker and although showing less colour variability than *P. p. pipistrellus* in Britain they also belong to this form. There appears to be no significant size difference between any of these series as is shown by the figures given below.

Table I. *Measurements of Pipistrellus pipistrellus* Schreber in mms.

Locality	No. of specimens.	Forearm	Condylar-basal length.
Marbella-Fuengirola	5	28,2—31	10,7—11,3
Santander Province	5	28,6—31,1	10,8—11,1
Fabian-Aragnouet	16	28,5—33,3	10,6—11,9
Great Britain	34	29,1—32,7	10,9—12,1

It is clear therefore that the race *P. p. pipistrellus* extends as far south as the Hautes Pyrenees and also along the north coast of Spain, while *P. p. mediterraneus* is found in central and southern Spain and the Balearic Islands. Some further research has been undertaken in order to clarify as far as possible the distribution of the two forms. The accompanying distribution map (Fig. I.), includes the localities given by Bauer (1956) for *P. p. mediterraneus* as well as specimens in the Harrison collection and the material in the British Museum of Natural History which has been examined and racially determined by the author as listed below, and the Type Locality, Valencia, of *P. p. mediterraneus*.

British Museum material.

No. 7453	24 Dec. 1906	Granada	<i>P. p. mediterraneus</i>
No. 22.12.3.1	31 Oct. 1922	Candileda, Avila.	<i>P. p. mediterraneus</i>
No. 22.12.3.2	4 Sept. 1922	Aranjues, C. Spain.	<i>P. p. mediterraneus</i>
No. 22.12.3.3.	6 Sept. 1922	Aranjues, C. Spain.	<i>P. p. mediterraneus</i>
No. 8.8.4.15	14 Oct. 1906	Silos, Burgos.	<i>P. p. pipistrellus</i>
No. 8.8.4.14	1 Oct. 1906	Burgos.	<i>P. p. pipistrellus</i>
No. 22.11.1.11	10 July 1922	Porto, Portugal	Intermediate between <i>P. p. pipistrellus</i> and <i>P. p. mediterraneus</i> .

None of the specimens seen from Central Spain are quite so pale as those from Málaga Province. That from Porto appears to be a definite intermediate. It is highly probable that a colour cline exists in this species in the Iberian Peninsula. The two specimens available from Burgos Province suggest that the typical subspecies is dominant there but a series is required from N. Central Spain to determine whether marked intermediation occurs there as is to be expected. As Bauer has remark-

ed, the stage has now been reached in the study of European bats where more attention should be given to the study of their geographical races and the definition of their distribution. These studies require abundant material, which has been lacking hitherto.

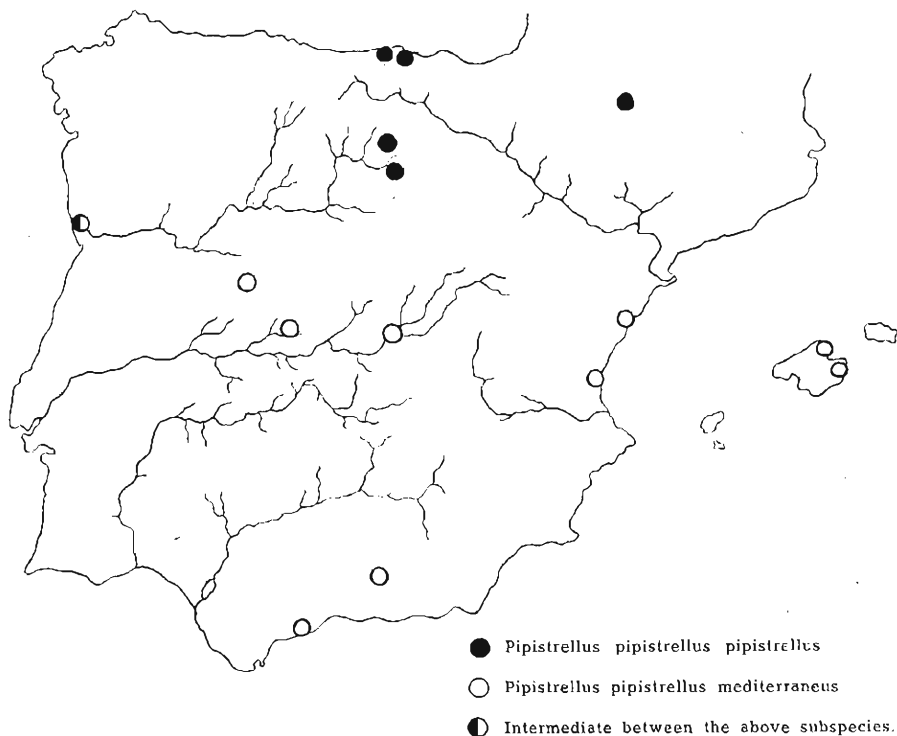


Fig. 1.

Distribution Map of the subspecies of *Pipistrellus pipistrellus* in the Iberian Peninsula.

Pipistrellus savii Bonaparte.

1 Fabian-Aragnouet, Hautes Pyrenees. 11 Sept. 1949.

At the time this specimen was recorded (Harrison 1949) there seemed to be inadequate material to determine the validity or otherwise of the Spanish race *P. s. ochromixtus* Cabrera. Bauer (1956) has asserted that this race is in fact valid and the forearm measurements given by him for three specimens from Lagunilla, Bejar (37.3, 37.1 and 35.2 mms) certainly exceed those of any material of the typical subspecies available to the author. However, the forearm measurement of specimens from Italy occasionally attains 35 mms as is shown by the three specimens obtained and prepared by the author at Rapallo, N. Italy on the 20th to 23rd June 1950, the measurements of which are given below.

It is clear therefore that the Fabian-Aragnouet specimen falls within the size range of *P. s. savii*, while an old specimen in the British Museum collection from the Pyrenees, without exact locality or date has a forearm measurement in the dried skin of 33.6 mms. The colour of this species is also very variable, one of the Italian specimens has lighter golden brown tips to the hairs on the dorsal surface than the Fabian specimen, the other two are much darker, but none are so white on the ventral surface as that from Fabian-Aragnouet. It would appear therefore that more material is required from the Pyrenees to determine the racial status of *P. savii* there more accurately and Bauer's conclusion (1956) that the above specimen represents *P. s. ochromixtus* cannot be considered fully proved.

Table 2. Measurements of *Pipistrellus savii* Bonaparte in mms.

Locality	Date	Forearm	Condyllo-basal length.
Fabian-Aragnouet	11th Sept. 1949	34,9	13,4
Rapallo, N. Italy	23rd June 1950	35	13,3
Rapallo, N. Italy	20th June 1950	32,5	12,9
Rapallo, N. Italy	20th June 1950	32,5	12,9

Pipistrellus kuhli kuhli Kuhl

6 ♂ 1 ♀ 13—18 July 1952 San Feliu de Guixols, Gerona, Spain.
1 ♀ 16 Sept. 1957 Marbella-Fuengirola, Málaga, Spain.

These specimens are all representative of the typical subspecies and it is interesting that the individual from the extreme south in Málaga Province is the darkest in colour. Since the N. African forms of *P. kuhli* are paler one might expect that the species in S. Spain would show a tendency in this direction as in the case of *E. serotinus boscai* but this is not the case. A general review of the geographical variation in *P. kuhli* is being undertaken and further consideration of this material is best deferred.

Myotis oxygnathus Monticelli

2 ♀. 22—33 July 1952. San Feliu de Guixols, Gerona.

Since there appear to be few authenticated records of this species from Spain, where its status is obscure, the principal measurements of these two specimens are given below compared with those of two examples from Yugoslavia in the author's collection. Miller (1912) recorded two examples from Burgos and Bauer (1956) one from Tremp in the Pyr-

enees. These two specimens from San Feliu de Guixols are very different in colour on the back and this is probably an age difference since one female with worn dentition and hypertrophic mammary glands, more than 10 mms. in diameter, is light brown on the back, differing little from the Yugoslavian bats, while the other, with unworn teeth and no mammary hypertrophy, is much greyer on the back. The smaller skull and ears readily distinguish this species from *Myotis myotis*.

Table 3. Measurements of *Myotis oxygnathus* Monticelli in mms.

No.	Locality	Date	Length	Tail	Forearm	Hind Foot	Ear	Wing Span
1.1325	San Feliu de Guixols	22. 7. 52	126,8	46,5	55,9	13,6	21,7	382
2.1326	San Feliu de Guixols	23. 7. 52	113	50,8	61	12,5	21,7	384
3.2389	Zagotska Pec	12. 5. 57	123	55	54	12,5	20,5	—
4. 2390	Zagotska Pec	12. 5. 57	137,5	57,5	56	13	22	—

Skull measurements in mms.

No.	Greatest Length	Condyllo-basal length	Zygomatic Breadth	c-m ³	c-m ₃	Mandible.
1.1325	21,6	20,2	—	8,3	9,1	16,5
2 1326	21,3	—	12,1	8,4	9,1	15,8
3.2389	21,3	19,8	13,3	8,2	8,9	16,4
4.2390	21,5	20	13,7	8,2	9	16,3

Plecotus auritus Linnaeus

1 ♀ 17th Sept. 1949. Fabian-Aragnouet, Hautes Pyrenees, 3000 feet.

The subspecific status of this specimen is not clear since the two described forms from S. Europe *P. a. meridionalis* Martino and *P. a. hispanicus* Bauer depend on average size and colour characteristics for the demonstration of which good series are required. The condyllo-basal length of this specimen is 15.9 mms. which is within the size range of *P. a. auritus*. It's coloration is unusual. The general colour is almost pure white below and pale grey brown above. The most striking feature however is well defined black patches on both shoulders having a sharp semi-circular anterior border disappearing towards the mid-line and producing the effect of a pale mantle on the head and neck. One example amongst fifteen British specimens, which was obtained near Godstone,

Surrey in 1951 has a similar shoulder pattern, but less well developed. One cannot fail to be impressed by the similarity of this pattern to the pale mantle of Fruit Bats of the Genus *Pteropus* for the curved line marking the edge of the mantle is in precisely the same situation, commencing at the insertion of the ante-brachial membrane. The occasional appearance of variants resembling some far-removed and little related species in birds has recently been brought to notice by Dr J. M. Harrison (1953) and named autophoric mutation. It is tentatively suggested that the present specimen may constitute an instance of such phenomena occurring in bats. Such variants, which may well be due to the recombination of recessive genes, are obviously of great evolutionary significance and interest.

Eptesicus serotinus Schreber

1 ♀. 10th Sept. 1956 Laredo, Santander Prov., N. Spain.

1 ♀. 14th Sept. 1957 Sohales Castle, Fuengirola, Málaga, S. Spain.

The specimen from Málaga Province is a very pale golden brown and clearly belongs to the form *E. s. boscai* Cabrera which Bauer (1956) has shown to be a valid subspecies. The specimen from Laredo, however, is very dark, comparing well with the series in the author's collection from Britain and N. Germany. It clearly belongs to the typical form *E. s. serotinus* which therefore, like *P. p. pipistrellus*, occurs in N. Spain. It is interesting that a male specimen in the British Museum collection obtained by A. Ruxton on the 15th Sept. 1925 at Sangenjo, Pontevedra, N. W. Spain is very dark also with some isabelline hair tips on the dorsum and is an example of *E. s. serotinus* also. Another specimen however obtained on 27th June 1907 at Pajares, Asturias, N. Spain by N. Gonzalez appears intermediate in colour between the preceding specimens and the very pale bat from Fuengirola. There is as yet inadequate material to state with precision the status of *E. s. serotinus* in N. Spain or whether there is intermediation with *E. s. boscai*. It seems quite likely that as in *P. p. pipistrellus* a colour cline will be found to exist and that the remarkably pale animal from Fuengirola represents the southern extreme of it in Europe. In this respect it may well be regarded as intermediate with the very pale *E. isabellinus* of N. Africa, which as has been remarked elsewhere (Harrison 1956.), appears doubtfully separable at a specific level from *E. serotinus*. Far more material is needed to elucidate these problems.

Miniopterus schreibersi schreibersi Kuhl

1 ♀. 21st Sept. 1956 Laredo, Santander Prov., N. Spain.

This specimen conforms in size and coloration with the typical form of the species and requires no further comment.

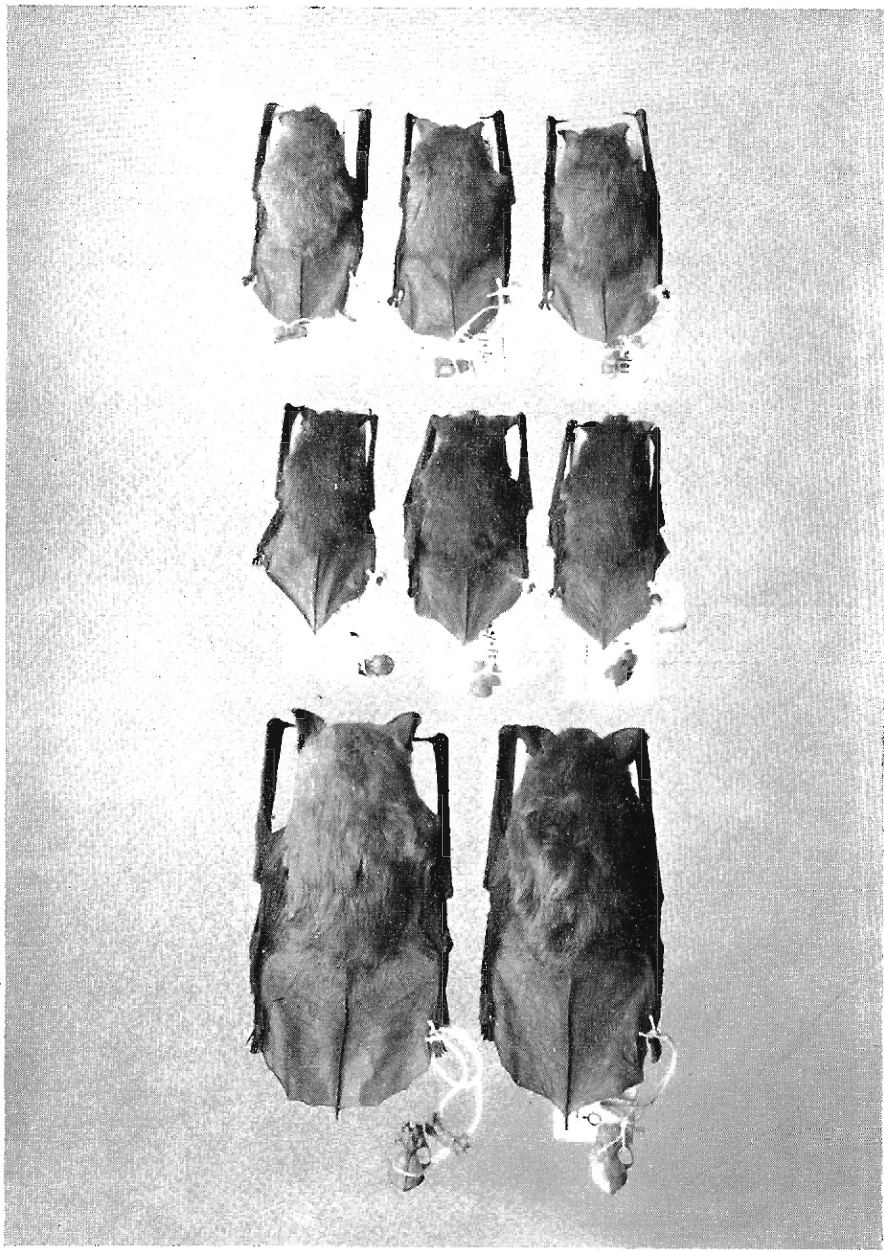


Plate 1.

Above. *Pipistrellus pipistrellus mediterraneus*. Three specimens from Marbella-Fuengirola, Málaga, S. Spain. Sept. 1957.

Middle. *Pipistrellus pipistrellus pipistrellus*. Three specimens from Santander Prov., N. Spain, Sept. 1956.

Below, left. *Eptesicus serotinus boscai*. ♀ No 24.2427. Soñales Castle, Fuengirola, Málaga, S. Spain.

Below, right. *Eptesicus serotinus serotinus*. ♀ No. 23.2088. Laredo, Santander Prov., N. Spain.

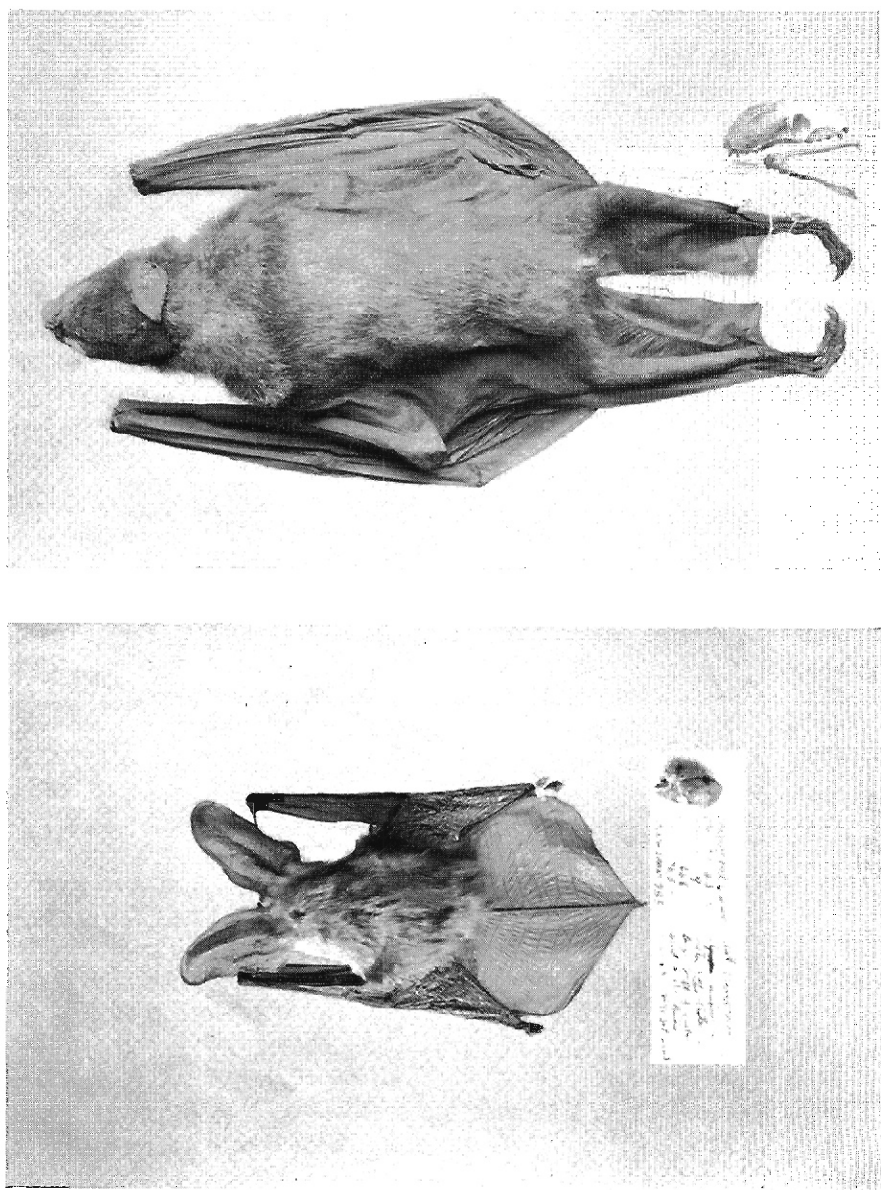


Plate 2.

Above. *Pteropus vampyrus* No 1.1116 Singapore, Malaye.

Below. *Plecotus auritus* No 15.893 Fabian-Aragnouet, Hautes Pyreness. 17 th Sept. 1949, showing the black 'mantle' pattern on the shoules.

Rhinolophus euryale euryale Blasius

1 ♀. 23rd July 1952 San Feliu de Guixols, Gerona Prov., Spain.

Flesh Measurements. Length 81,3 mms. Tail 28,2 mms. Forearm 46,1 mms. Ear 21,2 mms. Hind Foot 2 mms. Wing span 294 mms. Noseleaf, greatest height 2 mms., greatest breadth 5,8 mms.

Skull Measurements. Condylar-basal length 16,8 mms. Zygomatic breadth 9,2 mms. Breadth of Braincase 9,1 mms. Mandible 11,8 mms. c-m³ 5,8 mms. c-m³ 6,2 mms.

This specimen agrees closely with the typical form.

Rhinolophus ferrum-equinum ferrum-equinum Schreber

1 ♀. 13th Sept. 1956 Near Laredo, Santander Prov., N. Spain.

3 ♀. 18th and 20th Sept. 1956 Near San Cristo de Limpias, Santander Prov., N. Spain.

These four specimens fall within the range of the size and colour variation of the typical subspecies.

Conclusions

1. A collection of Bats from the Iberian Peninsula is described consisting of forty-five specimens and including nine species.
2. It is shown that the populations of *Pipistrellus pipistrellus* and *Eptesicus serotinus* are not homogeneous throughout the Peninsula and *P. p. pipistrellus* and *E. s. serotinus* are recorded from the northern part of the region.
3. An interesting pattern variant is described in *Plecotus auritus*, having resemblance to the mantle of Fruit Bats of the Genus *Pteropus*.

Author's address: Dr. David L. Harrison, Bowerwood House, St. Botolph's Road, Sevenoaks, Kent.

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