

<i>Travaux du Muséum National d'Histoire Naturelle «Grigore Antipa»</i>	Vol. L	pp. 363–370	© Octobre 2007
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DESCRIPTION OF THE INNER SIDE OF THE MANDIBLE IN TEN BAT SPECIES (MAMMALIA: CHIROPTERA) FROM BRAZIL (SOUTH AMERICA)

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Abstract. The author presents the corresponding drawings and explanations on the morphology of the inner side of the mandible in ten bat species – Mammalia: Chiroptera: Emballonuridae, Mormoopidae, Phyllostomidae (subfamilies Phyllostominae, Lonchophyllinae, Glossophaginae, Carollinae, Desmodontinae) and Furipteridae. Skulls are from the scientific collection of “Grigore Antipa” National Museum of Natural History (Bucharest). They are results of the field collecting made by the scientists of the museum in Brazil (1994) in collaboration with those of the Santa Ursula University (Rio de Janeiro).

Résumé. L’auteur présente des dessins et les explications qui leur correspondent concernant la morphologie de la face interne de la mandibule chez 10 espèces de chauves-souris – Mammalia: Chiroptera: Emballonuridae, Mormoopidae, Phyllostomatidae (Sousfamilles Phyllostominae, Lonchophyllinae, Glossophaginae, Carollinae, Desmodontinae) et Furipteridae. Les crânes proviennent de la collection scientifique du Muséum National d’Histoire Naturelle „Grigore Antipa” (Bucarest). Ils résultent des récoltes effectuées sur le terrain par les chercheurs du musée au Brésil (1994), en collaboration avec ceux de l’Université Santa Ursula (Rio de Janeiro).

Key words: mandible, morphology, description, Mammalia, Chiroptera, Brazil.

INTRODUCTION

Many studies on the comparative anatomy focused, first of all, on the skull morphology and secondary on the mandible in different mammal genera and species - Miller (1912), Grassé (1955 a, b), Topál (1969) (for chiropterans), Eisenberg (1989), but without discussing their anatomical differences.

In other studies of comparative anatomy the main parts of the skull or/and of the outer side of the mandible were described - Nițescu-Andreescu (1973); Andreescu (1974); Sánchez-Villagra & Smith (1997); Parra, Jaeger & Bocherens (1999); Renaud & Millien (2001); Răduleț (2005, 2006 a, b).

Some scientists described also structures from the inner side of the mandible, sometimes presenting the morphological differences between them - George & Gaughran (1954); Pucek (1981); Giannini, Wible & Simmons (2006).

Thus, the number of the features according to which the species are recognized and identified easier increases.

The knowledge of the outer and inner morphology of the mandible is of a real help, mainly to the systematic mammalogists, palaeontologists and to some of the ornithologists.

MATERIAL AND METHOD

Studied bat skulls are from the mammal collections of “Grigore Antipa” National Museum of Natural History, (Bucharest). Collected material is the result of the collaboration between the scientists of “Grigore Antipa” National Museum of

English translation by Mihaela Barcan Achim.

Natural History, and those from Santa Ursula University, Rio de Janeiro, from 1994. The bats were collected from different regions of Brazil: Serra do Navio, Vila Nova, Ilhéus, Olivénça, Andarai, the caves Pratinha and Lapa Doçe, farms Arvoredo and Ponte Alta.

The mandibles of about 20 bat specimens were studied using the stereomicroscope and drawn with camera lucida.

Răduleț (in press) proposed the name for some formations present on the inner side of the mandible in micromammals (Mammalia: Insectivora, Chiroptera, Rodentia): *incisura mandibulae inferior*, *incisura mandibulae superior*, *processus angulus mandibulae*, *crista ramus mandibulae* and *processus corpus mandibulae*.

Abbreviations:

foramen mandibulae – FM; *fossa (fovea) submandibularis* – FSM; *incisura mandibulae inferior* – IMI; *linea mylohyoidea* – LM; *processus angulus mandibulae* – PAM; *processus condylaris (condyloideus)* – PCON; *ramus mandibulae* – RM; *sulcus mylohyoideus* – SM; *tuberositas pterygoidea* – TP.

RESULTS AND DISCUSSIONS

The description of the mandible morphology in the ten chiropterans species.

Order Chiroptera

Family Emballonuridae Gervais, 1856

On the inner side of the mandible in *Saccopteryx bilineata* (Temminck, 1838) (Fig. 1) it can be observed: a triangular crest which begin from M₃ above FM towards PCON; FM oval, centrally distributed in RM, with the opening to IMI; LM is oblique, slightly arched; FSM superficially elongated under M₃; IMI semicircular.

Family Mormoopidae Koch, 1862-63

Pteronotus parnellii (Gray, 1843) (Fig. 2) has: from PCON a crest to M₃ starts from where it continues with the LM; FM semicircular, wide, centrally in RM,

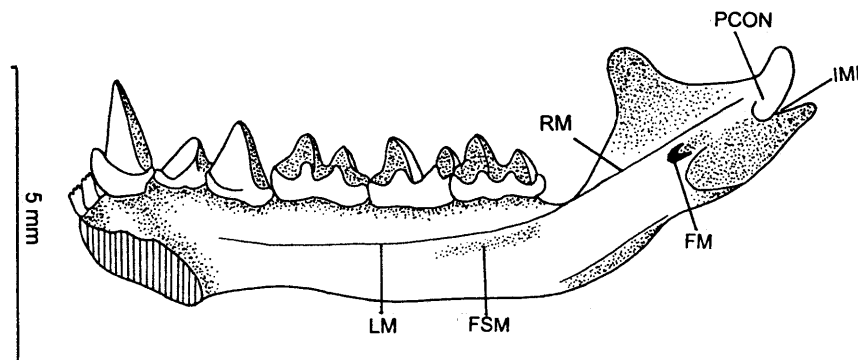


Fig. 1 – Internal lateral view of the mandible in *Saccopteryx bilineata* (Temminck, 1838).

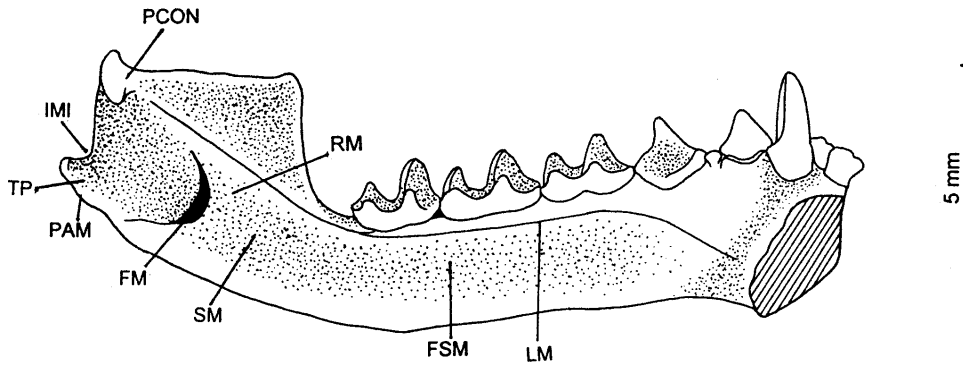


Fig. 2 – Internal lateral view of the mandible in *Pteronotus parnellii* (Gray, 1843).

with the opening towards IMI; SM is a superficial wide depression; IMI in a right angle; TP a concave oval area on PAM and RM; FSM superficial.

Family Phyllostomidae Gray, 1825
Subfamily Phyllostominae Gray, 1825

In *Macrophyllum macrophyllum* (Schinz, 1821) (Fig. 3) it can be seen: FM semicircular, in the lower half of RM, with the opening towards PCON; LM oblique; FSM oval, superficial; IMI semicircular.

Phyllostomus hastatus (Pallas, 1767) (Fig. 4) has an arched crest, pointed from PCON and continues with LM; FM oval, with the opening towards IMI and it continues with a ditch to PCON; TP as a surface almost triangular on PAM; IMI oval; SM superficial oval depression.

Subfamily Glossophaginae Gray, 1821

In *Glossophaga soricina* (Pallas, 1766) (Fig. 5) it is a crest which begins from M_2 above FM to PCON; FM oval, in the lower half of RM, with the opening towards IMI; LM oblique in comparison with the row of teeth; FSM is like a narrow elongated ditch; IMI semicircular.

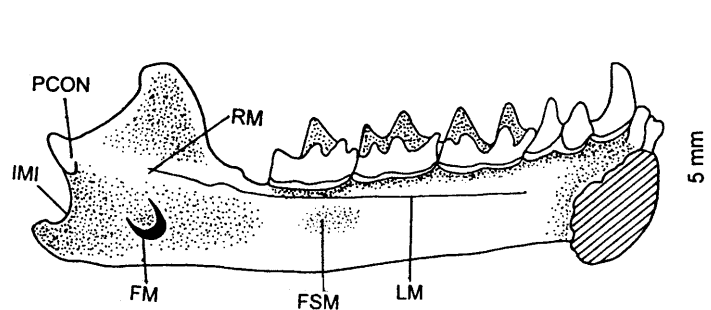


Fig. 3 – Internal lateral view of the mandible in *Macrophyllum macrophyllum* (Schinz, 1821).

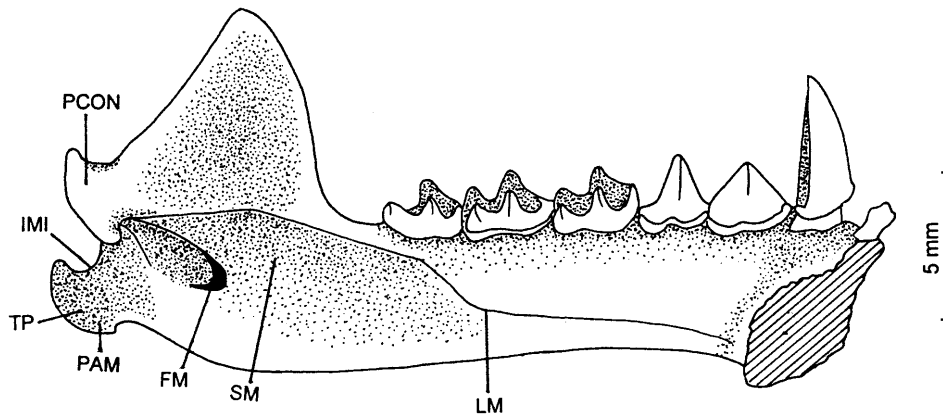


Fig. 4 – Internal lateral view of the mandible in *Phyllostomus hastatus* (Pallas, 1767).

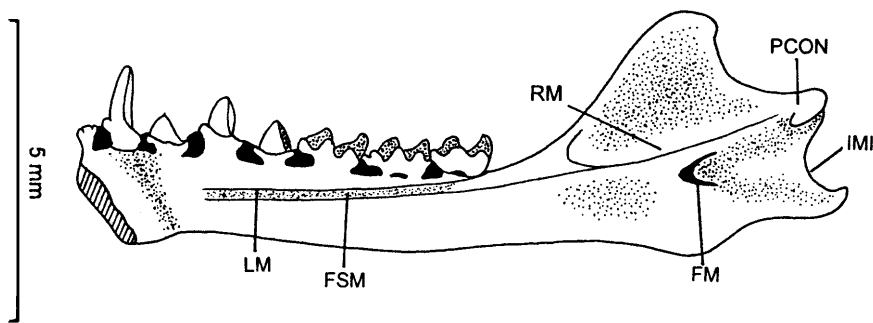


Fig. 5 – Internal lateral view of the mandible in *Glossophaga soricina* (Pallas, 1766).

Subfamily Lonchophyllinae Griffiths, 1982

Lonchophylla mordax Thomas, 1903 (Fig. 6) has a triangular crest from M_3 above FM towards PCON; FM is semicircular, continuing with a ditch to PCON lowerely limited by a small prominence; LM almost parallel with M_3 - M_1 ; FSM has a narrow elongated ditch; IMI semicircular.

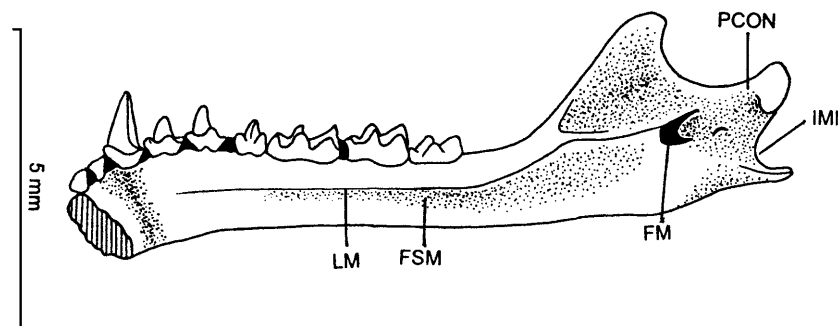


Fig. 6 – Internal lateral view of the mandible in *Lonchophylla mordax* Thomas, 1903.

Subfamily Carolliinae Miller, 1924

Carollia perspicillata (Linnaeus, 1758) (Fig. 7) has on the inner side: FM semicircular, big in the lower half of RM, with an opening to IMI; SM is like an oval depression; TP oval ditch in RM and PAM; LM oblique; IMI approximately in right angle; FSM superficial.

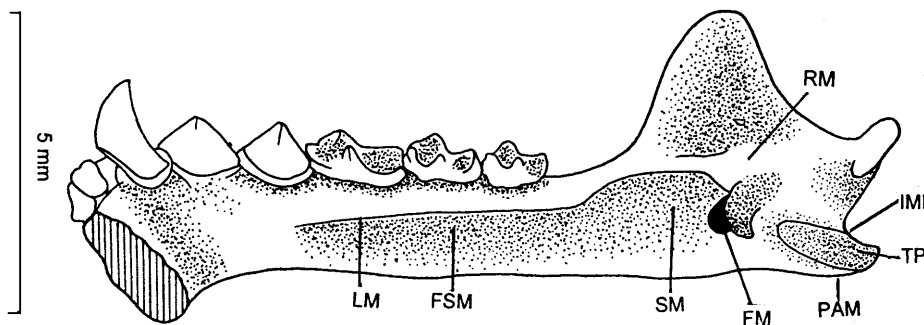


Fig. 7 – Internal lateral view of the mandible in *Carollia perspicillata* (Linnaeus, 1758).

Subfamily Desmodontinae Bonaparte, 1845

In *Desmodus rotundus* (E. Geoffroy, 1810) (Fig. 8) FM is big, like an arrow with the opening towards IMI; TP as a short semicircular ditch; LM oblique; FSM narrow but elongated; IMI in right angle.

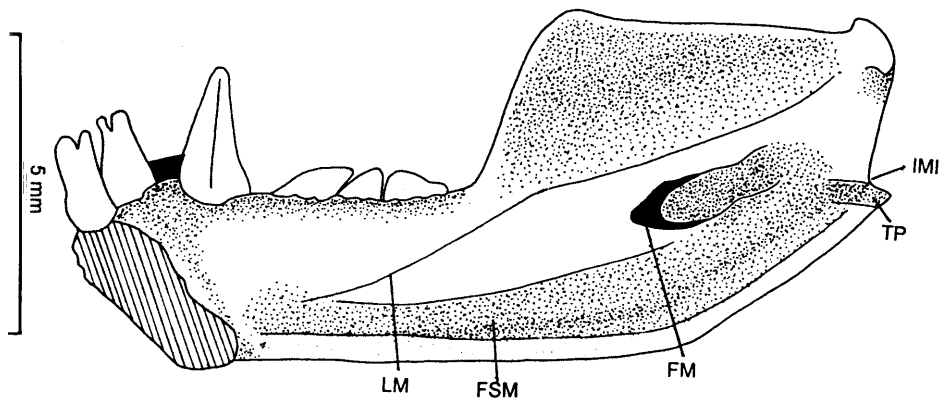


Fig. 8 – Internal lateral view of the mandible in *Desmodus rotundus* (E. Geoffroy, 1810).

Family Furipteridae Gray, 1866

On the inner side of the mandible in *Furipterus horrens* (F. Cuvier, 1828) (Fig. 9) an obvious crest can be observed, from M₁ towards PCON; FM big, semicircular, very much directed to the anterior part of RM, but with the opening to IMI; TP like a depression in RM and PAM; IMI in right angle; LM oblique, slightly visible; FSM elongated, superficial; SM superficial.

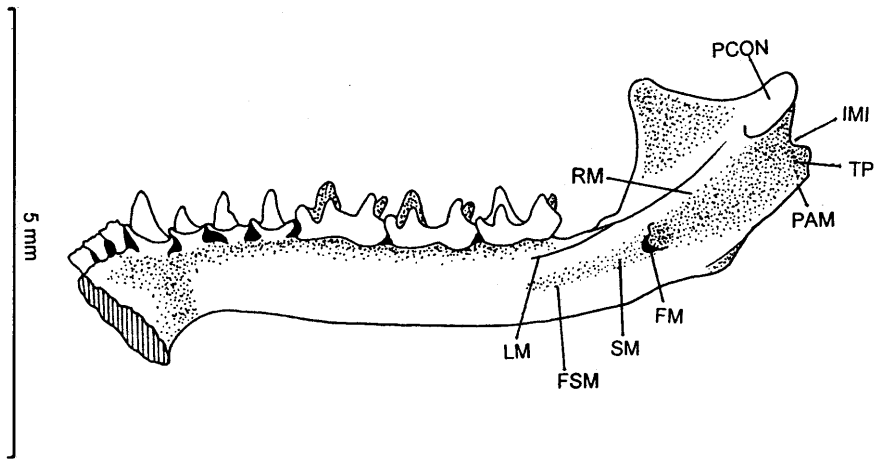


Fig. 9 – Internal lateral view of the mandible in *Furipterus horrens* (F. Cuvier, 1828).

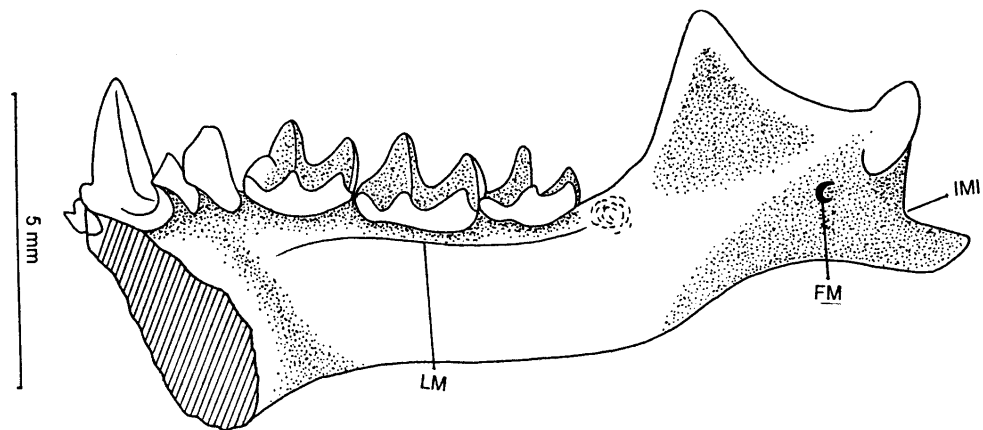


Fig. 10 – Internal lateral view of the mandible in *Promops nasutus* (Spix, 1823).

Family Molossidae Gervais, 1856

Promops nasutus (Spix, 1823) (Fig. 10) has: FM semicircular, small with the opening towards IMI; LM almost parallel with the row of teeth; IMI approximately in right angle.

Conclusions

As the structures from the outer side, those of the inner side of the mandible of the micromammals differ according to the genus or species. Thus, the features of the mandible related to the other features of the species or genus create the possibility of their easier knowledge among the remains present in the pellets, terrestrial substratum, caves, collections, etc.

ACKNOWLEDGEMENTS

The author thanks to the referees and Dr. Ileana Negoescu for her advice, and to Mrs Petruța Dumitrică for tracing the drawings in China ink.

DESCRIEREA FEȚEI INTERNE A MANDIBULEI LA ZECE SPECII DE LILIECI
(MAMMALIA: CHIROPTERA) DIN BRAZILIA (AMERICA DE SUD)

REZUMAT

În lucrare este ilustrată și descrisă morfologia mandibulei de la 10 specii de lilieci (Chiroptera), din fauna Braziliei (America de Sud). Materialul este rezultatul colectărilor de teren efectuate în Brazilia (1994) de cercetătorii de la Muzeul Național de Istorie Naturală "Grigore Antipa" (București) în colaborare cu cei de la Universitatea Santa Ursula (Rio de Janeiro). Sunt evidențiate caracteristicile feței interne a mandibulei, care diferă cu specia și genul. Astfel, crește numărul caracterelor după care se recunoaște o specie sau un gen, iar determinarea sa este mai ușoară.

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Received: January 24, 2007

Accepted: March 12, 2007

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