56.9,33(729.5)

Article XIX.— TWO NEW FOSSIL BATS FROM PORTO RICO.

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Plate LVI.

Among a large number of skulls and limb bones of bats found fossil in Porto Rican caves in 1916, examination has disclosed two species new to science; they are herewith described in this preliminary paper,[1] the rest of the material being reserved for a final report on Porto Rican mammals to be completed in the near future.

Monophyllus frater, sp. nov.

Plate LVI, Figs. 5, 6.

Type, No. 40941, Dept. of Mammals, from the Cueva Catedral, near Morovis, Porto Rico, July 29, 1916; collector H. E. Anthony. The type is a broken skull with complete rostrum and palate but with most of the braincase missing; the only teeth present are the last premolar and the three molars of the left side. Topotypes supply a few details indeterminable from the type.

Very similar to *Monophyllus portoricensis* but decidedly larger.

Skull narrow and elongate; rostrum very long, tubular, with shallow nasal depression in region of terminal suture, external nares subelliptical, opening decidedly upwards; interorbital constriction scarcely noticeable; braincase incompletely known but of rounded type; zygomatic arch doubtless complete; palate long, narrow, shallowly concave posteriorly, incisive foramina large; interpterygoid notch about midway between last molars and tips of pterygoid processes; dentition normal for the genus. Mandible unknown.

Dentition.— Only upper dentition known from specimens, lower dentition assumed to be normal and so indicated in following formula.

I, $\frac{2-2}{2-2}$; C, $\frac{1-1}{1-1}$; Pm, $\frac{2-2}{3-3}$; M, $\frac{3-3}{3-3}$, = 34.

The first tooth of the series present is the second premolar but the alveoli of the incisors, canine and first premolar indicate a strictly normal *Monophyllus* dentition. Cusp of second premolar the highest of the molar series, triangular in outline with trenchant edges and conspicuous anterior and posterior accessory cusp on cingulum;

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[1] This is the fourth of the preliminary papers issued by the author on the Porto Rican fossils, the others appearing as follows:

Annals New York Academy of Sciences, Vol. XXVII, pp. 193–203, 9 August, 1916.

Bulletin American Museum Natural History, Vol. XXXV, Art. LXI, pp. 725–728. November 16, 1916.

Bulletin American Museum Natural History, Vol. XXXVII, Art. IV, pp. 183–189. January 29, 1917.

molars with flattened out and widened W-pattern, the cusps well developed, the commissures low; third molar with W incomplete, lacking the posterior stroke; outline of posterior border of first two molars with distinct indentation.

Measurements.

	Interorbital breadth	Breadth of rostrum at m^2	Length of palate	Breadth of palate inside m^2	Alveolar length of maxillary molar series
Monophyllus frater					
40941 [1]	4.6	5.5	12.4	3.6	7.1
40944	4.8	...	11.6	3.8	6.8
40945	4.9	...	12.7	...	...
Monophyllus portoricensis					
39431	3.8	4.5	9.3	2.9	5.3

Specimens collected.— Five fragmentary skulls, only one of which, the type, shows any great assemblage of characters, but all are unmistakably of the same species. They were collected in the Cueva Catedral, near Morovis.

Remarks.— This large species of *Monophyllus* was apparently contemporaneous with *M. portoricensis,* the living species of the island, since a typical skull of the smaller *portoricensis* was found in the same deposit with the skulls of *frater.* It is partly for this reason that *frater* has been accorded full specific rank instead of being placed in the line of direct ancestry of *portoricensis.* It is a case similar to that of the two species of *Chilonycteris* found on Porto Rico today although the size difference between the two species of *Monophyllus* is not so great.

The relationship with *portoricensis* is very close however and the differences appear to be in size rather than detail. Were the two forms from adjacent islands rather than from the same island doubtless they would best be considered as subspecifically related. From *portoricensis* the fossil species may be readily distinguished by the greater length and breadth of the rostrum and palate and by the much heavier dentition.

M. frater is probably even more closely related to the larger *M. luciæ* [2] from the Island of St. Lucia, Lesser Antilles, than to the small *portoricensis.* Judging from the material secured *frater* is the largest species of the genus.

[1] Type.

[2] Through the kindness of Mr. Gerrit S. Miller, Jr., the author has been able to borrow specimens of *Monophyllus luciæ, clinedaphus* and *plethodon* from the collection of the United States National Museum, and has thus, with the material in the American Museum, examined all the known species of the genus.

Compared with *M. luciæ* the fossil *Monophyllus* may be distinguished by its rather longer rostrum and noticeably longer toothrow.

The possibility that this species may yet be found living is obvious and only a long period of extensive collecting can give positive negative evidence.

Phyllonycteris major sp. nov.

Plate LVI, Figs. 1, 2.

Type, No. 40925, Dept. of Mammals, from the Cueva Catedral, near Morovis, Porto Rico, July 29, 1916; collector H. E. Anthony. The type is a skull nearly complete but lacking full dentition; m^1 and m^3 on left side, m^2 and m^3 on right side are the only teeth present.

Closely related to *Phyllonycteris poeyi* but noticeably larger, with wider braincase and heavier dentition.

Rostrum long, deep and rather tubular, external nares opening slightly upward, nasals marked as flattened ridge along rostrum; interorbital constriction very slight; braincase high and rounded, not rising abruptly from rostral plane, broader than deep, expanded posteriorly, very low sagittal crest; mastoid process poorly developed; zygomatic arch incomplete; palate very long, shallowly concave, narrowed anteriorly, small incisive foramina present, pterygoid region very long, processes flattened, concave for half their extent; V-shaped interpterygoid notch not reaching plane of last molars; very low median ridge along floor of interpterygoid fossa; poorly developed basisphenoid pits; paroccipital processes well developed; bullæ unknown; mandible (not particularly associated with type skull) long and narrow; horizontal ramus very straight, of good depth; ascending ramus scarcely elevated above horizontal ramus; coronoid high, wide, triangular; condyle much lower than coronoid, about level with molar crowns; dental foramen large and conspicuous.

Dentition.[1]— I, $\frac{2-2}{2-2}$; C, $\frac{1-1}{1-1}$; Pm., $\frac{2-2}{2-2}$; M, $\frac{3-3}{3-3} = 32$.

Dentition heavier than that of *P. poeyi*.

Upper. Incisors not present in any skull but alveoli indicate incisors as in *poeyi*, a larger inner pair, a smaller outer pair, all in contact but separated by diastema from canines; canine large, simple, with well developed anterior and posterior cutting edges and narrow internal cingulum; first premolar small, subterete, second premolar rather more than twice as large as first, with single triangular cusp, practically no cingulum; molars with low crowns not reaching level of crown of second premolar; first molar with crown about as broad as long, paracone and metacone scarcely distinguishable on the external cutting edge, internal crushing surface broad, outline from above subelliptical; second molar wider than long, the greatest length along external cutting edge, crown pattern of raised cutting edge with two cusps and broad internal crushing surface; third molar about half size of second, crown flattened, subtriangular, the tooth set inside of extreme border of molar series.

Lower. Incisors not present but indicated as minute, subequal; canine large, with prominent posterior notch on cingulum; first premolar not known but alveolus as large as that of second; second premolar with well developed triangular median cusp; first molar with crown longer than wide, flattened, outline of cusps lost; second

[1] Description taken from type and topotype material.

molar subrectangular, slightly longer than wide, crown flattened, with trace of shallow concavity, cusps very faintly indicated; third molar smaller than either first or second molars.

Measurements.

	Greatest length	Interorbital breadth	Breadth of braincase	Breadth of rostrum at m²	Length of palate	Breadth of palate, inside m²	Alveolar length of maxillary molar series	Length of mandible	Alveolar length of mandibular molar series
Phyllonycteris major									
40925 [1]	26.7	5.5	11.3	7.8	10.7	4.5	6.7		
40926	....	5.9	....	8.1	11.1	4.8	6.7		
40927	27.2	5.5	11.1	7.6	10.7	4.5	6.8		
40928	27.3	5.9	11.2	7.8	10.6	4.3	6.7		
40929	28.1	5.7	11.4	8.2	10.7	5	6.8		
40930	27.7	5.6	11	7.3	....	5	....		
40932	....	5.7	11.3	7.6	....	4.9	6.8		
40933								18.1	....
40934								17.6	8.3
Phyllonycteris poeyi									
23758	25.7	5.2	10.5	7.3	10.5	4.5	6.1	16	7.3
23759	24.7	5.3	9.9	6.9	9.7	4.3	5.7	15.4	7.2

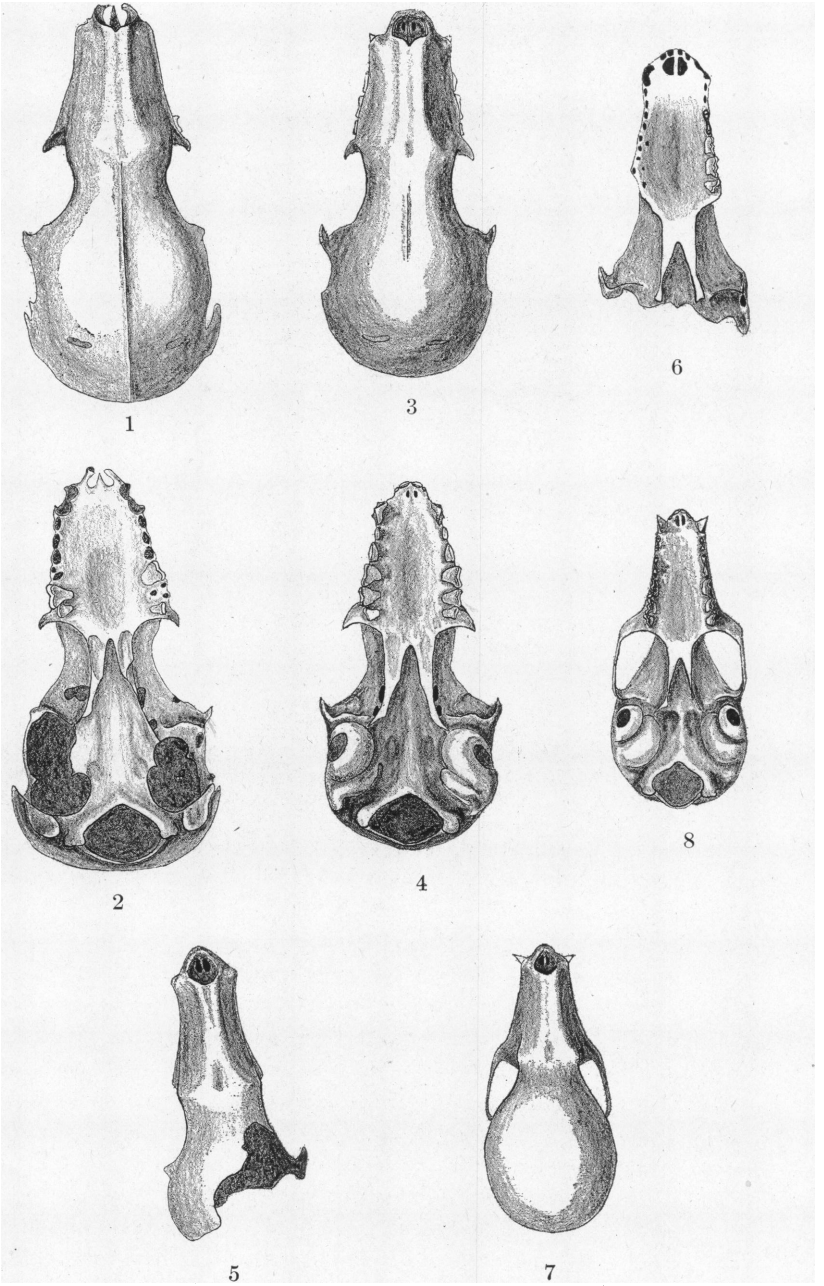
Specimens collected.— 60 fragmentary skulls, only a few of which are nearly complete; 22 mandibles mostly without any teeth, and small fragments not worth listing.

Remarks.— *Phyllonycteris major* is so obviously congeneric with *poeyi* that comparison elsewhere is unnecessary. From *poeyi* it may be told by its larger size, more widely expanded braincase and much larger second upper premolar.

This species was found only as a fossil and in but one cave. It was contemporaneous with *Nesophontes* as well as with *Stenoderma rufum* and other bats to be found living today. Possibly *P. major* may be found as a living bat, the chances for this being very favorable since *P. poeyi* and the species of the related genus *Erophylla* occur only in isolated localities and escape notice for long periods, as witness the rarity till recently of *P. poeyi* and *E. sezekorni* in collections.

Heretofore *Phyllonycteris*, with but a single species, has been known only from Cuba. The discovery of a closely related species of this peculiarly West Indian genus upon Porto Rico is an added bit of evidence in favor of an earlier intimate connection between the now detached islands.

[1] Type.



Figs. 1, 2. *Phyllonycteris major.*
" 3, 4. " *poeyi.*

Figs. 5, 6. *Monophyllus frater.*
" 7, 8. " *portoricensis.*