

## Article XXI.—A REVISION OF THE GENUS *CAPROMYS*.

By FRANK M. CHAPMAN.

PLATES XXXIX-XL.

Mr. G. S. Miller, Assistant Curator of Mammals in the U. S. National Museum, having very kindly loaned me all the specimens of *Capromys* contained in the collections under his charge, their addition to the specimens of this genus in the American Museum of Natural History doubtless brings together a larger number of examples of this West Indian group of mammals than has heretofore come to the attention of mammalogists at one time. Indeed, it is quite possible that the combined collections of all other museums would not result in the formation of so large a series.

Opportunity is thus offered for a study of the variations presented by some of the species of *Capromys*, including a series of *C. prehensilis* from the Isle of Pines, while the changes in the character of the dentition with age can now be shown, giving a better basis for the determination of the relationships of the island-inhabiting members of the genus with the recently described *Capromys geayi* Pousargues from Venezuela. Furthermore, the recent acquisition by the American Museum of a specimen of *Capromys brownii* (= *brachyurus* auct.) from Jamaica—the only example of this species, so far as I know, in this country—permits, for the first time, comparison of the Jamaican species with *Capromys thoracatus* (True) of Swan Island.

In the appended study of this material I recognize six species and one subspecies of *Capromys*. The arboreal species are grouped with the type of the genus, *Capromys pilorides*, under the genus and subgenus *Capromys*; the terrestrial species are grouped, with *Capromys brownii* as the type, under a new subgenus, *Geocapromys*.

### *Capromys*<sup>1</sup> *Desmarest*.

*Capromys* DESMAREST, Mém. Soc. d'Hist. Nat. I, Dec., 1822, 43. Type, *Capromys fournieri* Desm. = *C. pilorides* (Say).

---

<sup>1</sup> For general papers on *Capromys* see the following:  
Say, Journ. Acad. Nat. Sci. Phila., II, 1822, 232-343.  
Desmarest, Mém. Soc. d'Hist. Nat., I, 1822, 43.  
MacLeay, Zool. Journ., IV, 1829, pp. 269-278.  
De la Sagra, Hist. Phys. de l'île de Cuba, Mammifères, pp. 11, 12; Atlas, pl. iii-viii.  
Waterhouse, Nat. Hist. Mamm., II, 1848, pp. 286-294, pl. xii, pl. xiii, fig. 1.  
Gundlach, Contribucion á la Mamalogia Cubana, Havana, 1877, pp. 44-47.  
Dobson, P. Z. S., 1884, pp. 233-250, pls. xvii-xxi.  
Allen, Bull. Am. Mus. Nat. Hist., III, 1891, pp. 329-336, figs. 1-10.

*Isodon* SAY, Journ. Acad. Nat. Sci. Phila. II, Nov. 1822, 332 (*nec Isodon* E. Geoffroy, 1806).

SUBGENUS *Capromys*.

1. *Capromys pilorides* (Say). Generally distributed throughout Cuba.
2. *Capromys prehensilis* Poeppig. Generally distributed throughout Cuba.
- 2a. *Capromys prehensilis gundlachi* nobis. Isle of Pines.
3. *Capromys melanurus* Poey. Eastern Cuba.

SUBGENUS *Geocapromys*, subgen. nov.

Similar to *Capromys* but tail short, little if any longer than the hind foot with claws; the claws of both hind and fore feet shorter than in *Capromys*, the inner toe of the fore foot barely evident; dentition and cranium as in *Capromys*, but the ascending maxillary arch of the zygoma wider, the superior margin of the squamosal narrower and without processes, the occipital region lower.

4. *Capromys brownii* Fischer. Jamaica.
5. *Capromys thoracatus* (True). Swan Island.
6. *Capromys ingrahami* Allen. Easternmost of Plana Keys, Bahamas.

**Capromys pilorides.**

*Isodon pilorides* SAY, Journ. Acad. Nat. Sci. Phila. II, Nov. 1822, 333.  
*Capromys fournieri* DESM. Mém. Soc. d'Hist. Nat. I, Dec. 1822, 43.

This, the most common species of the genus, is represented by thirteen specimens; one is imperfect and four are unaccompanied by skulls. Four were collected in March, 1900, at El Guama, and one in April, 1900, at San Diego de los Baños, in western Cuba, by Messrs. Palmer and Riley for the U. S. National Museum; three were collected in March, 1892, at Trinidad, central southern Cuba, by the writer, for the American Museum of Natural History, and five specimens in the last-named museum died in captivity in zoölogical gardens. Only the skulls of the latter are used in the present connection.

*Variations in Color.*—The anterior parts of the face, the sides of the neck and upper surface of the fore legs vary in color from grizzled whitish with a very slight admixture of the color of the back, to black and fulvous, with only a slight sprinkling of white; the crown, nape, back, sides, and outer surface of the hind legs vary from black and pale buff to black and deep rusty; the tail is unicolor and varies from buff to deep rusty brown. In two specimens the underparts are uniform buffy whitish, in one the underparts, except the chin, which is grizzled, are black and

rusty, nearly as dark as the color of the back ; the normal color appears to be about half way between these extremes. Practically the entire range of variation in color, thus briefly described, is shown in two specimens from El Guama, showing that it is not geographical ; the palest specimens in the series, however, are females, indicating a possible sexual difference in color.

*Variations in Size.*—Comparing only the six examples which, by cranial characters, are shown to be mature, variations in size are presented in the following table of measurements from fresh specimens :

Collection.	No.	Sex.	Total Length.	Tail.	Hind Foot.	Ear.
U. S. N. M.	103880	♀	730	170	97	
"	103882	♀	720	175	95	27
"	103885	♂	743	205	100	28
Am. Mus. Nat. Hist.	48888	♂	710	237	90	
"	48889	♀	810	255	100	
"	48890	♂	800	200	95	

*The Skull.*—In skulls of presumably about the same age no noteworthy variation is observed, the enamel pattern of the molars being especially constant in outline.

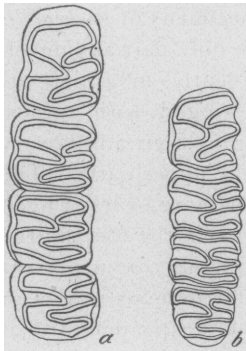


Fig. 1. *Capromys pilorides*, right upper molars, ♀. a, Am. Mus. Nat. Hist. 48888, ♂ ad. Trinidad, Cuba. b, Am. Mus. 8811, ♂ juv. N. Y. Zool. Society.

Two of the zoölogical park specimens are about half grown and their skulls, although in a more or less diseased condition, furnish some basis for the determination of variation in cranial characters with age in this species. As might be expected, the usual sutural changes, narrowing and raising of the sagittal crest, production of the supra-orbital processes, etc., accompanying increased age, are to be seen, but it is especially to be noted that, so far as the present material is concerned, no change

in the pattern of the enamel outline of the molars occurs with age. This is evident on comparison of the accompanying figures.

(<sup>1</sup>) Contained 4 embryos, each about 19 mm. in length.

**Capromys prehensilis** *Poeppig.*

*Capromys prehensilis* POEPPIG, Journ. Acad. Nat. Sci. Phila. IV, 1824, II.  
*Capromys poeyi* GUÉRIN, Mag. de Zool. 1834, Cl. I, pl. xv.

This species is not represented in the American Museum, but through Mr. Miller's kindness I am permitted to examine an exceedingly beautiful and instructive series of thirteen specimens collected in Cuba by Messrs. Palmer and Riley. Five were secured at San Diego de los Baños in April, 1900, two at Cabañas in May, 1900, and six in the Isle of Pines in July, 1900. The latter prove to be separable from true *prehensilis*, as represented by the first-named specimens, and are described below under the name *Capromys prehensilis gundlachi*.

*Variations in Size.*—Two adults of true *prehensilis*, from San Diego de los Baños, measured in the flesh as follows :

Collection.	No	Sex.	Total Length.	Tail.	Hind Foot.	Ear.
U. S. N. M.	103888	♂	710	305	82	30
"	103890	♂	715	313	82	20

*Variations in Color.*—Five of the seven specimens of *prehensilis* are adult, two are young, one of them with only partially developed dentition. One of the adults is evidently an albino, its nearly uniform white pelage being only tinged with rufous, which is stronger posteriorly. The remaining four adults vary comparatively little in the coloration of the upper parts. The anterior parts of the head are soiled whitish more or less tinged with brown in three specimens, grayish brown in the fourth; the back is a mixture of black, buff, and ferruginous rufous present in varying proportions; the tail is bright ferruginous rufous in two specimens, light brown in the third, and nearly denuded of ferruginous rufous colored hair in the fourth. In the color of the underparts one specimen is creamy white, ferruginous rufous posteriorly, one creamy white with a brownish neck band, and two are whitish on the throat, and about the fore and hind legs, with the intervening areas mixed with brownish.

Two young specimens in soft pelage, taken at San Diego de los Baños April 8 and 20, respectively, resemble the adults in the

coloration of the upper parts but have the head brown anteriorly and the tail wholly blackish. Below, one specimen is creamy white, and one is grayish with white on the throat, at the fore legs and about the vent. The differences in color here noted appear to be related neither to age, sex nor climate, and may therefore be considered as purely individual.

*The Skull*.—Although *Capromys prehensilis* is a much lighter, slenderer animal than *C. pilorides*, its longer tail disguises this fact, which is much more apparent on comparison of the skulls of these species. The skull of *pilorides* is about twice the bulk of that of *prehensilis*, and, as might be expected, is in consequence heavier and more massive throughout and with more strongly pronounced processes. There appears to be no difference in the enamel pattern of the molars.

In the younger of the two immature specimens of *prehensilis* already mentioned only the two anterior molars have as yet appeared and in them the enamel pattern is too imperfect to be clearly distinguished. In the other only the last molar has not as yet appeared above the border of the alveolus, but the three molars already acquired have fully developed enamel outlines. The two anterior molars agree in pattern with the corresponding teeth in the adult; the third, or what for the time is the last molar, is rounded posteriorly with a corresponding change in the enamel outline, which thus more closely resembles the last (fourth) molar in the adult than its true representative, the third. There is thus a slight change in the outline of the enamel with age.

### ***Capromys prehensilis gundlachi*,<sup>1</sup> *subsp. nov.***

*Char. Subsp.*—Similar to *Capromys prehensilis* Poeppig but less ferruginous rufous in color, the zygomatic arch heavier, the postorbital processes less produced.

*Description of the Skin of Type* (No. 103905 U. S. Nat. Mus., ♂, Nueva Gerona, Isle of Pines, July 4, 1900, Palmer and Riley).—Back and outer surface of the hind legs mixed buffy, black, and ferruginous, the two former predominating, except on the rump where the ferruginous is brightest; the crown and cheeks browner without black, the nose and supraocular region buffy, the

<sup>1</sup> I have named this form in honor of the late Dr. Juan Gundlach, who, in spite of often adverse circumstances, pursued for over forty years his study of the Cuban fauna, and to whom, more than anyone else, we are indebted for our present knowledge of Cuban mammals and birds.

lower part of the cheeks whitish; upper surface of the fore legs grayer than the back and without black; sides of the body with less rufous than the median dorsal area; entire underparts, from the chin to the base of tail and including the lower (inner) surfaces of both front and hind legs, creamy white or buffy white; tail uniformly hairy with no bare space, mixed rufous and brownish black, the former prevailing on the basal third, the latter on the apical two thirds.

*Measurements*.—Total length, 695; tail, 300; hind foot, 80; ear, 23 mm.

*Description of the Skull of Type* (U. S. Nat. Mus., 103905, ♂).—Similar in dentition and general dimensions to the skull of *Capromys prehensilis* but with the malar and portion of maxilla adjoining the frontal and premaxilla wider, the squamosal heavier, its superior margin adjoining the frontal and parietal wider and more pronounced, especially anteriorly where it nearly fills the concavity in the outline of the frontal occasioned by the production of the postorbital process, the latter, however, less pronounced than in *prehensilis*.

*Measurements*.—Greatest length, 80.5; greatest width, 40; width at postorbital processes, 24.5; width of superior margin of the squamosal at parieto-frontal suture, 2.5; width of malar at the maxillary suture, 8.5; nasals, 22.5; frontal, 26.5; parietal, 28; molars, length of upper series, 11.5; width between inner margins of upper anterior molars, 3.5; distance from anterior margin of alveolus of first upper molar to posterior margin of the alveoli of the incisors, 20; height of lower jaw at condyle, 26.5; from tip of incisors to end of coronoid process, 60.5 mm.

*Remarks*.—Whether the range of individual variation in this form and *Capromys prehensilis* is sufficiently great to bridge the differences separating them the material in hand does not show, but in spite of the fact that geographical intergradation is impossible I describe the Isle of Pines animal under a trinomial designation, because, being the undoubted representative in that island of *C. prehensilis*, such a name best shows its derivation and, to a certain extent, the degree of its relationship.

*Variations in Color*.—Of the five additional specimens from the Isle of Pines two adult females agree essentially in the color of the upper parts with the type, but are somewhat more ferruginous posteriorly; both have the tail ferruginous, in one the color being darker than in the other, the basal inferior surface in each being blackish. In the color of the lower parts one of these specimens agrees with the type but has a slight brownish neck band, and some brownish on the inner side of the hind legs. In the adult female the throat, breast, a median abdominal line and the posterior parts of the abdomen are creamy whitish, the rest of the under surface being mixed with brownish.

Two immature females taken at Nueva Gerona, July 4, measure respectively 576 and 590 millimetres in total length, and agree closely with the type in color of the parts below, being slightly washed with brownish on the neck and abdomen ; in each the tail is uniform brownish black.

The sixth Isle of Pines specimen, as before remarked, is apparently albinistic.

*Variations in Size.*—The collector's measurements of the four adult specimens are given below :

Collection.	No.	Sex.	Total Length.	Tail.	Hind Foot.	Ear.
U. S. N. M.	103901	♂	705	295	80	20
"	103902	♀	666	260	75	25
"	103904	♀	705	295	80	22
"	103905 <sup>1</sup>	♂	695	260	73	19

*Variations in the Skull.*—The skulls of three adult specimens — the fourth being without a skull — agree closely in form, and in each the cranial characters attributed to the Isle of Pines race are well marked. Particularly is this true of the superior margin of the squamosal, which, as shown by the accompanying plate (Pl. XXXIX), is much more prominent than in true *prehensilis* ; and in the immature specimens above mentioned this character is also present.

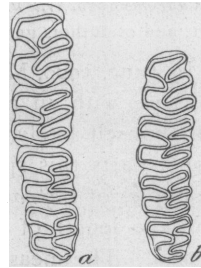


Fig. 2. *Capromys prehensilis gundlachi*, right upper molars, ♀. a, U. S. N. M., 103905, ♂ ad. Isle of Pines. b, U. S. N. M. 103903, ♀ juv. Isle of Pines.

In the enamel pattern of the molars, these young specimens resemble the adults, as is shown by the accompanying figure.

### **Capromys melanurus Poey.**

*Capromys melanurus* POEY, M-B. Akad. Berlin, 1864, 384 ; DOBSON, P. Z. S. 1884, 234, plls. xviii-xxi.

Of this little-known species I have only the skin of two heads with their skulls, presented to the American Museum by the late

<sup>1</sup> Type.

Dr. Gundlach. They are without date, sex, or exact locality; one is adult, but not aged, the other somewhat immature. In the older the hair is mixed sooty brown and whitish, browner on the nose, blacker on the nape and changing to sooty grayish on the chin and throat. In the younger there is less whitish, the face being nearly uniform sooty brown.

Comparison of the skull (Am. Mus. No. 7980) of the older animal with a skull of *C. prehensilis*, of apparently the same age, shows very slight differences. The superior margin of the squamosal is even less pronounced in *melanurus* than in *prehensilis*, the supraorbitals are also less prominent, but these differences may be individual, and the characters separating *melanurus* from *prehensilis* are doubtless to be found in the much blacker color of the former, in the softer hair, and greater hairiness of the tail, which is said by Dobson to be penicillate for nearly an inch.

### **Capromys brownii** *Fischer.*

*Capromys brownii* FISCHER, Synop. Mamm. Adden. 1830, 389 [= 589], based on the "Small Indian Coney" of Brown's Hist. Jamaica, 1770, p. 484.

*Capromys brachyurus* HILL in Gosse, Naturalist's Sojourn in Jamaica, 1851, 471, and of authors generally.

In June, 1900, Mr. Francis C. Nicholas presented the American Museum with an adult male of this now rare species which he had himself lately secured in Jamaica. In the coloration of the upper parts this specimen closely agrees with the darker colored examples of *Capromys pilorides*, but the hair is finer and less than half the length of that of *pilorides*; below it is a uniform dusky brown. The measurements of the dried skin are: Total length, 450; tail, 35; hind foot, 60; ear from crown, 6 mm. The latter measurement is doubtless affected by the nature of the specimen, nevertheless the ear is evidently much smaller than in any other species of the genus.

The skull, of which a figure is presented (Pl. XL), shows this specimen to be an aged adult, and in connection with the size of the species it therefore presents the cranial characters of the short-tailed members of the genus, which are here grouped under the subgeneric title *Geocapromys*, in a highly developed degree. Compared with the skulls of the two other members of its subgenus, apart from its greater size, and allowing for differences



in age, the absence of supraorbital processes, the relatively greater width at the interorbital constriction, the narrowness and relative greater height of the condyle of the lower jaw are noticeable. The measurements are: greatest length, 82; greatest width, 45; width at interorbital constriction, 19.5; width of malar at the maxillary suture, 10; least width of the ascending maxillary arch of the zygoma, 5.5; nasals, 28; frontal, 29; parietal, 24.5; length of upper molar series, 18.5; width between inner margins of first upper molars, 2; distance from anterior margin of first upper molar to posterior margin of the alveoli of the incisors, 19.5; height of lower jaw at condyle, 24.5; least width of condyle, 6; distance from tip of incisors to end of coronoid process, 63.5 mm.

Dr. Allen calls my attention to the fact that Fischer's name for this species antedates that of Hill by twenty-one years.

### **Capromys thoracatus (True).**

*Capromys brachyurus thoracatus* TRUE, Proc. U. S. Nat. Mus. XI, 1888, 469.

The acquisition of the above-mentioned specimen of *C. brownii* (= *brachyurus* auct.) permits, for the first time, actual comparison of *thoracatus* with the form to which it has generally been supposed to be subspecifically related. The result shows the two animals to differ widely from each other in color, dimensions, particularly of the ears, and in cranial characters. In fact, *thoracatus* proves to be much more closely related to *ingrahami*, from which indeed it is to be distinguished externally only by size, the two known specimens of *thoracatus* agreeing exactly in color with the prevailing type of *C. ingrahami* as it is shown by a series of twelve specimens in the American Museum. In the absence of measurements from fresh specimens a satisfactory comparison of the two animals as regards size is not possible, but reference to the life-sized figures (Pl. XL) of their skulls here presented gives a fair idea of their proportions. In short, *thoracatus* and *ingrahami* are evidently representatives of the same form, perhaps of one of the species of *Capromys* which, we learn from the writings of Columbus and Oviedo, inhabited Hayti at the time of its discovery.

**Capromys ingrahami** Allen.

*Capromys ingrahami* ALLEN, Bull. Am. Mus. Nat. Hist. III, 1891, 329, figs. 1-10.

I can add nothing to Dr. Allen's description of the series of *Capromys ingrahami* secured by the American Museum from its discoverer. Comparison, however, with the specimen of *C. brownii*, received by the Museum since *ingrahami* was described, shows that the latter has no specific relationships with the former.

**"Capromys" geayi** Pousargues.

*Capromys geayi* POUSARGUES, Bull. Mus. d'Hist. Nat. 1899, p. 150.

*Capromys geayi*, described by Pousargues from the mountains between La Guayra and Caracas, Venezuela, I consider as closely related to, but generically distinct from, the West Indian species of *Capromys*, and therefore place it in a new genus which may be characterized as follows :

**Procapromys**, gen. nov.

Size smaller than the smallest known species of *Capromys*; tail half as long as the body; ear half as high as the length of the hind foot without the claws; enamel outline in first three upper molars continuous, with two external and one internal folds; the fourth—last molar—with three distinct and disconnected transverse enamel ellipses, the posterior one about half the size of either of the anterior two; enamel outline in the four lower molars continuous, the first molar with three internal and one external folds, the first and second interior folds being

more extended than in the corresponding tooth of *Capromys*; the remaining three lower molars each with two internal and one external fold, the enamel enclosed space on the posterior margin of the last molar being scarcely wider than the enamel itself.

Type, *Capromys geayi* Pousargues.

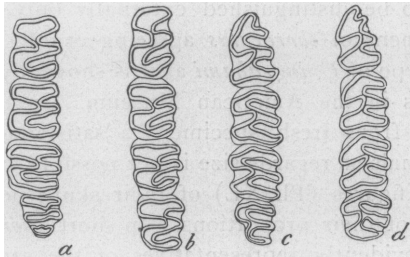


Fig. 3. *a*, *Procapromys geayi*, right upper molars; *b*, *Capromys ingrahami*, right upper molars; *c*, *Procapromys geayi*, left lower molars; *d*, *Capromys ingrahami*, left lower molars. All twice natural size. After Pousargues.

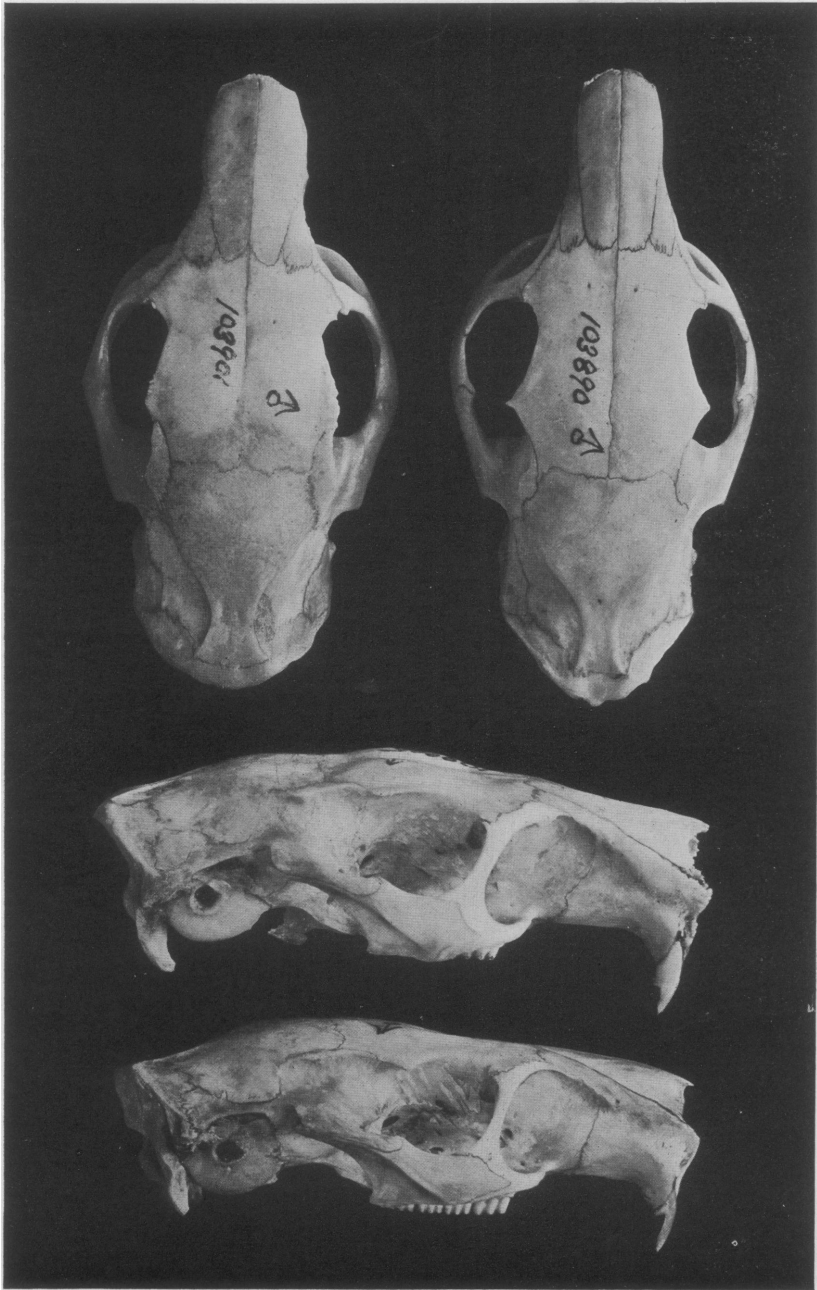
Without examination of the type and only known specimen of *pro-*

---

*capromys geayi* a satisfactory diagnosis of its generic characters is impossible, but M. Pousargues's excellent description and figures of the dentition doubtless enable one to determine its most salient features. In view of the remarkable constancy of the enamel pattern in *Capromys*, even when the most unlike members of the genus are compared, the difference in the enamel outline of the last lower molars in *Capromys* and *P. geayi* is of much importance and, in connection with the characters mentioned above, seems to warrant the generic distinction here proposed. M. Pousargues attributed this difference to the probable immaturity of his specimen, but, as the material at hand abundantly proves, there is no essential difference with age in the enamel pattern of *Capromys*.

The importance of the discovery of *geayi* is by no means affected by this proposed change in names. It quite probably represents the ancestral mainland type whence *Capromys* descended





No. 103901, ♂, U. S. Nat. Mus., *Capromys prehensilis gundlachi*.  
No. 103890, ♂, U. S. Nat. Mus., *Capromys prehensilis*.

Upper profile figure, No. 103905, ♂, U. S. Nat. Mus., *Capromys prehensilis gundlachi*, type.  
Lower profile figure, No. 103892, ♂, U. S. Nat. Mus., *Capromys prehensilis*.





No. 3035, Am. Mus., *Capromys ingrahami*.  
 No. 22691, U. S. Nat. Mus., *Capromys thoracatus*, type.  
 No. 15976, Am. Mus., *Capromys browni*.  
 No. 103890, U. S. Nat. Mus., *Capromys prehensilis*.

The three upper figures show the skulls of the known members of the subgenus *Geocapromys*; the lower figure shows the skull of a typical member of the subgenus *Capromys*. Compare, especially, the ascending arch of the maxillary.

