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# Synoptic revision of the United States scarab beetles of the subfamily Dynastinae, No. 4: Tribes Oryctini (part), Dynastini, and Phileurini

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ENTOMOLOGY.—*Synoptic revision of the United States scarab beetles of the subfamily Dynastinae, No. 4: Tribes Oryctini (part), Dynastini, and Phileurini.*<sup>1</sup>  
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This paper is the fourth in the series of my United States dynastine scarab beetle studies and completes the specific listings and notes. The fifth, and last, part will include a complete classification of the tribes and genera, from the Nearctic standpoint.

Genus **Aphonus** LeConte

*Aphonus* LeConte, 1856, p. 21; Horn, 1882, p. 122; LeConte and Horn, 1883, p. 259; Casey, 1915, pp. 178, 210; Ritcher, 1944, p. 28, Cartwright, 1944, p. 36.  
*Podalgus* (part) Burmeister, 1847, p. 117; Lacordaire, 1856, p. 408.

*Aphonus* (as now constituted) is limited to the Eastern United States and contains four valid species; the farthest west I have knowledge of the genus occurring is Texas, where *brevicruris* Cartwright was collected.

The only character separating the adults of *Aphonus* from United States species of *Cheiroplatys* Hope is the trilobed (varying to subtridentate to even simply carinate in worn examples) preapical carina of the clypeus. In the larvae, Ritcher has pointed out (1944) the very close similarity between *Cheiroplatys pyriformis* LeConte and *Aphonus castaneus* (Melsheimer), the only real difference being that the first antennal segment in the latter is bare of setae, and the other two key characters being those of degree only (relative distance between lobes of the thoracic spiracle, respiratory plate, and width of the head capsule). In the adults, the peculiar preapical carina and the rather odd apical, front tibial tooth, as well as external facies and proportions in general, immediately disclose the close affinity of the two groups at present called *Aphonus* and *Cheiro-*

*platys*. Indeed, I have relatively fresh specimens of *A. castaneus* (from Massachusetts and New Hampshire) in which the preapical clypeal carina is distinctly *bidentate*, so that the only character for the retention of the name *Aphonus* as a valid genus is gone.

However, even though I feel that *Aphonus* must eventually be considered a synonym of the earlier described *Cheiroplatys* I am unable definitely to synonymize the two genera until I can review the genotypes; I desire also to dissect carefully the mouthparts of many of the Neotropical and Australian forms of the genus.

The sexes of *Aphonus* are rather similar in most characters, but in the male the last abdominal sternite is shorter and is feebly but distinctly emarginate apically, whereas the last abdominal in the female is longer and the apex is evenly rounded.

I have been unable to construct a satisfactory key to the species based on nonvariable external differences, so that to place the species properly it is necessary to make genital dissections. The only general statement that can be made as to the external facies is that *castaneus* is most frequently rufous, averages 10 to 11 mm in length, and is more robust; whereas *densicauda* and *tridentata* are both more elongate, and the former averages 13 mm in length and the latter 15 mm. Obviously, such generalities are interesting but of little assistance in actually separating closely allied and variable species. According to Cartwright's description of *brevicruris* (the unique type of which I have not seen) the proportions of the heavy, short tibia and femora will readily separate this species from all other described forms.

<sup>1</sup> Received September 3, 1947.

**Aphonus castaneus** (Melsheimer)Fig. 1, *k, m*

- Bothynus castaneus* Melsheimer, 1856, p. 138; LeConte, 1856, p. 22.  
*Podalgus obesus* Burmeister, 1847, p. 119; Arrow, 1909, p. 341.  
*Aphonus castaneus* (Melsheimer) Casey, 1915, p. 220; Sims, 1934, p. 334 (larvae); Johnson, 1942, p. 79; Ritcher, 1944, p. 30, pls. 2-5 (larvae).  
*Aphonus cubiformis* Casey, 1915, p. 221.  
*Aphonus saginatus* Casey, 1915, p. 220.  
*Aphonus trapezicollis* Casey, 1915, p. 219.

All examples of this small species that I have examined vary from rufocastaneous to piceocastaneous in color, and from 8 to 13 mm in length. The species ranges generally along the East Coast from Maine south through the Carolinas, Georgia, and Alabama. Johnson mentions finding numerous larvae on the surface of a Connecticut golf course during a gentle July rain, and these larvae retreated into the sod when the sun reappeared. Sims records the larvae as common in the turf of the coastal plains golf courses and in sandy soil generally.

**Aphonus densicauda** CaseyFig. 1, *h, l*

- Aphonus densicauda* Casey, 1915, p. 216; Ritcher, p. 31 (larvae).

Described from Pennsylvania, and seen also from New Hampshire, south to Georgia and Kentucky and west to Iowa; will probably be found to have a much wider distribution than indicated by available specimens. Ritcher records it as fairly common in Kentucky where full-grown larvae may be found in pastureland, in or just beneath the sod, from November to May, and pupation occurs late in May or early in June; he found adults in the soil throughout the year.

The color is usually piceous or piceocastaneous, varying to rufous, as do all species of the genus, and the length averages 13 mm. The adults are hard to separate from typically black *tridentatus* other than on genital characters and the slightly larger average size of the latter (15 mm.); the larvae are also very similar but distinct according to Ritcher (1944).

**Aphonus tridentatus** (Say)Fig. 1, *f, i, j, n*

- Scarabaeus tridentatus* Say, 1823, p. 209.  
*Bothynus variolosus* LeConte, 1848, p. 88 (new synonymy).

- Aphonus tridentatus* (Say) Horn, 1882, p. 122; Casey, 1915, p. 215; Ritcher 1944, p. 33 (larvae); Arrow, 1937, p. 42 (additional refs.).  
*Aphonus aterrimus* Casey, 1915, p. 216.  
*Aphonus congestus* Casey, 1915, p. 218.  
*Aphonus elongatus* Casey, 1915, p. 215.  
*Aphonus frater* LeConte, 1856, p. 22.  
*Aphonus hydropicus* LeConte, 1856, p. 22.  
*Aphonus ingens* Casey, 1924, p. 334.  
*Aphonus modulatus* Casey, 1915, p. 219.  
*Aphonus politus* Casey, 1915, p. 218.  
*Aphonus scutellaris* Casey, 1924, p. 335.

Usually piceous, this largest United States species of the genus varies to entirely rufous, especially in specimens from Florida, and these latter are the *variolosus* of LeConte; the Florida specimens are often 2-3 mm smaller than the more northern specimens and superficially look different, but the genitalia and all essential diagnostic characters are identical and I have no doubt of the correctness of the synonymy. I have seen specimens from Michigan, Indiana, Illinois, south through Georgia, South Carolina, and Florida; also recorded from New York and Wisconsin. Cartwright has taken numbers at Clemson, S. C., from March through July. Ritcher says that the larvae are found in woodland loam; collected by Yeager from "forest duff" in Michigan.

**Aphonus brevicurvis** CartwrightFig. 1, *e*

- Aphonus brevicurvis* Cartwright, 1944, p. 36, pl. 1, fig. 5.

Described from a unique male collected at Austwell, Tex., May 20, 1941 (Goodpaster collector), and not taken since to my knowledge. I have not seen the type, and the information here is reworded and taken from Cartwright's paper: Easily separable from all other United States species by the proportions of the hind legs: the femur is three-fifths as wide as it is long, the tibia is *shorter* than the femur, and the tibial apex is widely flared and *more than* half as wide at apex as the full tibial length; in all other United States species the hind femur is only *half* as wide as long, the hind tibia and femur are *subequal* in length and the hind tibial apex is flared but at most is one-third as wide at apex as the length.

## Tribe DYNASTINI

Some of the largest and heaviest insects in the world occur in this tribe, including

the well-known *Dynastes hercules* of the American Tropics. Arrow (1937) lists only 21 genera in the tribe from the world, many of these genera being monobasic. The essential character of the enlarged male forelegs is not too well shown in our United States species, but in our relatively common *Golofa* Hope and such *Megasoma* as *elephas* the character is strongly indicated. In the Colombian *Golofa porteri* Hope the front legs in the male are as long as the entire body and exactly twice as long as the forelegs of the females. Bates (1889) reports the immense *Megasoma elephas* (Fabricius) as feeding in numbers on ripe mangoes in Panama, and my father has collected numbers around street lights in central Panama, where the large lumbering insects often fly into the faces of passersby and occasionally badly scratch or at least scare them! Since a large male specimen weighs nearly half a pound, the bruises and abrasions that could be occasioned by such a specimen flying into a person's face is easily imaginable.

We have only two genera in the United States.

#### KEY TO UNITED STATES GENERA

First segment of hind tarsus sharp on outer side but not really extended into a long spine (length of segment on *outer* side exclusive of apical movable setae only one-third to one-fifth longer than length on *inner* side); prosternal spine high between front coxae (as "tall" as its own width across base) and always either densely hairy or at least hairy or setose apically on posterior side; surface glabrous and usually gray, speckled with piceous spots (rarely unicolorous in some females); male with front thoracic angles normal, that is, not sinuous (southeast and southern United States and Mexico).....*Dynastes* Kirby

First segment of hind tarsus with a long distinct apical spine (length of segment on outside, including spine, one-half to three-fourths times longer than length on inner side); prosternal spine much shorter than coxal length (two-thirds as "tall" as its own width across base) and always quite glabrous on external face; surface always hairy (velvety) and unicolorous piceous; male with each front thoracic horn strongly sinuous (Arizona and Mexico).....*Megasoma* Kirby

#### Genus *Dynastes* Kirby

*Dynastes* Kirby, 1825, p. 568; Burmeister, 1847, p. 256; Lacordaire, 1856, p. 444; Casey, 1915, p. 258; Arrow, 1937 (many references given), p. 95; Ritcher, 1944, p. 39 (larvae).

Our species have been variously listed or described in the genera *Scarabaeus*, *Geotrupes*, *Xylotripes*, and others by the older authors and such references are readily available in Arrow (1937) and Burmeister (1847).

Arrow lists 13 species of these so-called "rhinoceros beetles" as valid in his 1937 catalogue, these occurring in India, the Philippines, Java, Burma, Borneo, Nigeria, the Congo, and the Americas. I seriously doubt that all these could possibly be congeneric. At any rate, six species are listed from the Americas, and two of these are supposed to occur in the United States. The large and well-known *hercules* apparently has not been taken yet north of Guatemala, except possibly in quarantine interceptions, and it appears to be replaced in Mexico by the much smaller so-called *hyllus* of Chevrolat. I have seen specimens of the latter species from central and southern Mexico and am entirely unable to separate them either on genital or external characters from our common *tityus* (Linnaeus).

Our Arizona *Dynastes* are usually called *granti* Horn; the male genital characters are identical with those of *tityus* and the only differences can be summed up in the following (the thoracic horn is measured with a micrometer scale in a direct line between the laterobasal denticles at each side of the horn base, and the horn apex):

Male thoracic horn *distinctly* 6-8 times longer than scutellar length (19-23 mm/3 mm); this horn also much broader basally through the denticles; horn on head long, with a very distinct and large, preapical tooth on the dorsal side (Arizona).....*granti* Horn  
Male thoracic horn 3-5 times longer than scutellar length (7-12 mm/2.5 mm); horn of head usually *faintly* notched dorsally or entirely smooth, never with a dorsal preapical tooth. Eastern United States and Mexico.....*tityus* (Linnaeus)

As anyone who has worked to any extent in the Dynastini knows, these characters as listed above are highly variable in a group where exceptionally dimorphic forms are the rule rather than the exception, and I am not at all sure of the validity of *granti*. We have an exact counterpart of this in the related and well-known *Golofa imperialis* Thomson and *pizarro* Hope where the males are unusually variable and the thoracic horn in *male majors* is unusually long and toothed within, varying through all degrees to the *male minors*, in which the horn is

the merest sort of a knob with a smooth inner surface. Until such time as exact intermediate specimens can be collected between Arizona

and the more typically eastern *tityus*, it appears best to retain the name *granti* as a weak subspecies of *tityus*.

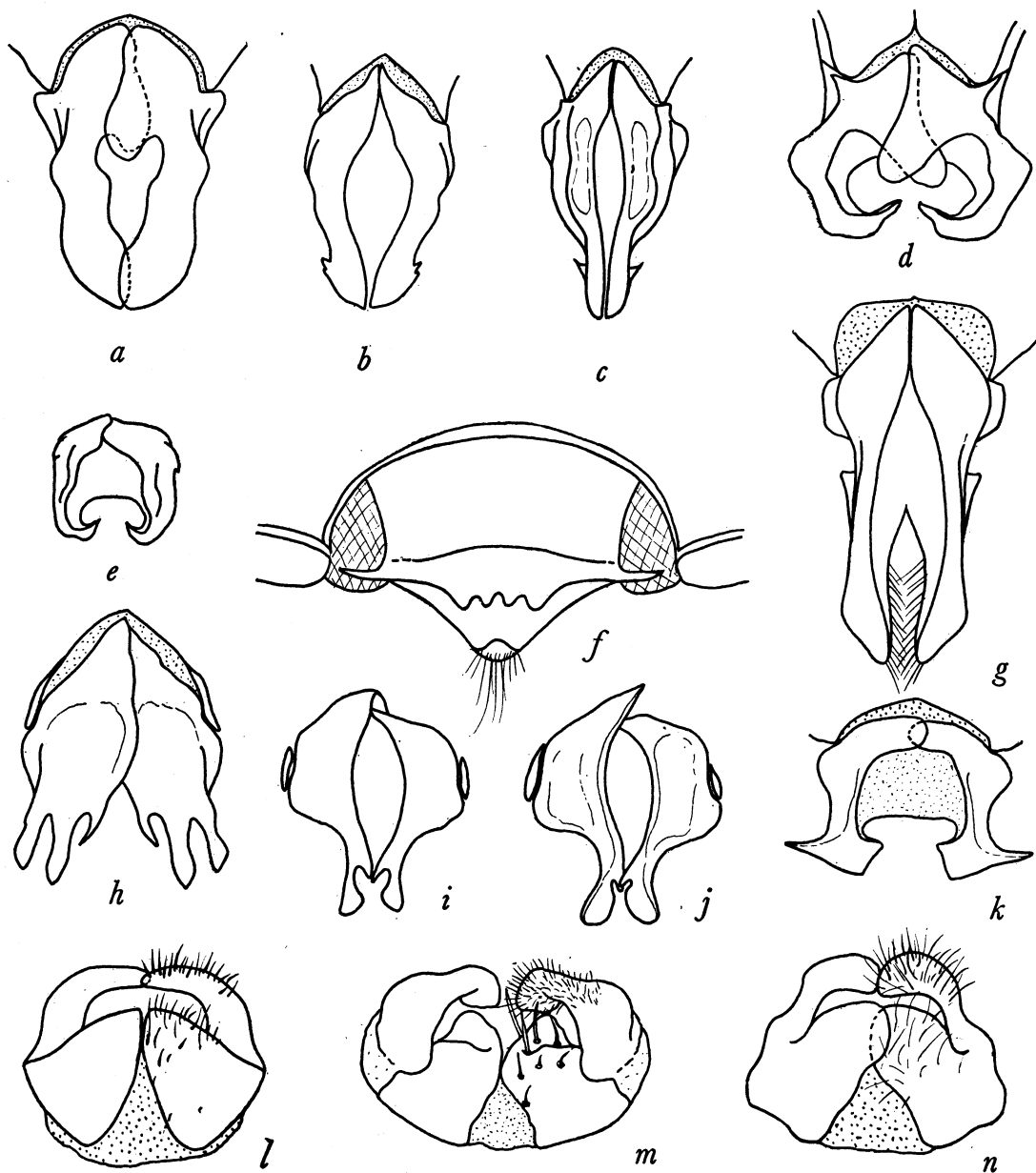


FIG. 1.—a, *Phileurus truncatus* (Beauvois): Male genitalia; b, *Archophileurus cribrosus* (LeConte): Male genitalia; c, *Phileurus illatus* LeConte: Male genitalia; d, *Phileurus castaneus* Haldeman: Male genitalia; e, *Aphonus brevicruris* Cartwright: Male genitalia; f, *Aphonus tridentatus* (Say): Head of female, front view; g, *Dynastes tityus* (Linnaeus): Male genitalia; h, *Aphonus densicauda* Casey: Male genitalia; i, *Aphonus tridentatus* (Say): Male genitalia, from Jacksonville, Fla.; j, *Aphonus tridentatus* (Say): Male genitalia, from South Carolina; k, *Aphonus castaneus* (Melsheimer): Male genitalia, from Rhode Island; l, *Aphonus densicauda* Casey: Female genitalia; m, *Aphonus castaneus* (Melsheimer): Female genitalia; n, *Aphonus tridentatus* (Say): Female genitalia.

**Dynastes tityus** (Linnaeus)

Fig. 1, g

- Scarabaeus tityus* Linnaeus, 1763, p. 391.  
*Scarabaeus marianus* Linnaeus, 1767, p. 549.  
*Scarabaeus pennsylvanicus* DeGeer, 1774, p. 308.  
*Scarabaeus hyllus* Chevrolat, 1843, p. 33 (new synonymy); Bates, 1888 (as *Dynastes*), p. 336; Dugès, 1887 (as *Dynastes*), p. 137 (biology).  
*Scarabaeus iphiclus* (Panzer) Burmeister, 1847, p. 259.  
*Dynastes tityus* (Linnaeus) Burmeister, 1847, p. 260; Lacordaire, 1856, p. 444; Arrow, 1937, p. 98 (many references); Casey, 1915, p. 260; Hamilton, 1886, p. 112 (biology); Manee, 1915, p. 266 (biology); Ritcher, 1944, p. 39 (larvae).  
*Dynastes corniger* Sternberg, 1910, p. 26 (new synonymy).  
 Subspecies: *Dynastes granti* Horn, 1870, p. 78; Casey, 1915, p. 261; Arrow, 1937, p. 97.

This large and familiar species is widespread throughout the eastern United States from New York and Pennsylvania south through Florida, west to Arizona and south into Mexico, and possibly Guatemala. Varies greatly in size and color, especially in the females. The smallest specimen I have seen was 37 mm and the largest 74 mm; with the average about 55 mm. The often asymmetrical (bilateral) coloration has been frequently noted, especially in the females, and a good description is given by Ritcher (1944) of this variation in adults he collected in a single stump and very probably from a single parent: in 14 pupal cells (7 males, 7 females), 8 individuals were spotted, 5 had one elytron spotted and the other of a solid dark mahogany color, and 1 was of a uniform dark mahogany color. The larvae are recorded as feeding in decaying wood of oaks, pines, chestnut, willows, wild cherries, black locust, and fruit trees such as peaches and apples. The adults feed on the sap of wounded trees as well as decaying fruit of peaches, plums, pears, and apples, and Casey claims that the adults have a characteristic odor that can be smelled for some distance, if the observer is downwind of a considerable number of individuals.

*D. granti* Horn was described from Arizona, though *tityus* has also been recorded from this State. As stated above, I am not at all sure that the form is sufficiently distinct to warrant its retention.

**Genus Megasoma** Kirby

- Megasoma* Kirby, 1825, p. 566; LeConte and Horn, 1883, p. 260; Casey, 1915, p. 261; Arrow, 1937, p. 98 (other references).

*Megasominus* Casey, 1915, p. 261; Arrow, 1937, p. 35.

*Megalosoma* Burmeister, 1847, p. 273.

*Lycophontes* Bruch, 1910, p. 73.

Arrow lists eight species of this American genus, five of them from South America. Our only species in the United States is the *thersites* of LeConte, which occurs in Arizona and Lower California. Casey erected the genus *Megasominus* for this species, the essential differences between it and the very much larger Neotropical *elephas* (Fabricius) being the presence of a large basal horn dorsally on the base of the male cephalic horn in the latter, and also the marked sexual dimorphism in the front legs of the two sexes of *elephas* (fore tibia of male noticeably elongated and curved, and not so in female); in *thersites* there is no trace of a dorsal tooth on the base of the large cephalic horn, nor is there any difference between the length of the front legs in the two sexes. At first glance, there is a marked difference between male *elephas* and *thersites*: the former is very large (3½ to 4½ inches) and with a dense uniform clothing of short velvety pile, and a very large forward-projecting tooth on the base of the cephalic horn, and the mid-disc of the thorax is evenly convex without a central horn; whereas in *thersites* the male is small (1¼ to 1½ inches long), the cephalic horn has no basal tooth, the dorsal clothing of pile is slightly longer, less velvety, and much less uniformly placed, and the mid-disc of the thorax has a narrow, semierect horn, which is slightly bifurcate apically. However, in the females of the two species, the only essential difference besides size is that the thorax base in *elephas* is strongly margined, as opposed to the non-margined base of *thersites*, but all other essential characters are so closely similar that it is necessary to treat the two species as congeneric.

**Megasoma thersites** LeConte

*Megasoma thersites* LeConte, p. 336.

*Megasominus thersites* (LeConte) Casey, 1915, p. 259.

This uncommon species is usually confined to Lower California, but I have a specimen taken in the "Coyote Mts., Arizona, August, 3,500 ft. elevation." Ross and Bohart collected the species at San Venancio in Lower California on October 8, 1941. Easily separable in the male from all other United States Dynas-

tini by the combination of the strongly bifurcate clypeal horn, and the sharp tooth of each front thoracic angle, as well as the moderate to short, narrow, erect, weakly bifurcate horn of the mid-disc of the thorax. The female is readily separable from female *Strategus* by the *widely separated* front teeth on the apex of the clypeus (one at each side angle) as well as the sharp, bidentate mandibles and the non-margined center base of the thorax. The female *thersites* somewhat resembles a female *Aphonides dunnianus*, but the clypeus there is unidentate at apex and the mandibles are equally rounded and not at all toothed. The life history is apparently unknown.

It is very surprising to me that the male aedeagus of this species is inseparable in form from that of male *Dynastes tityus*, but such appears to be the case, based on my own careful dissections; throughout dynastines generally, the characters of the male genitalia appear to be specific within narrow boundaries of variation.

#### Tribe PHILEURINI

This tribe is the most aberrant of the subfamily Dynastinae, as the labial palpi are inserted on the *underside* of the ligular plate instead of *at the sides*, and the generally black color and the depressed (majority of species) dorsal surface is suggestive of the Passalidae. Numerous genera and species are described and the tribe is world-wide; our American (Neotropical) species and genera are very poorly and inadequately known.

The two sexes are not well differentiated externally in this tribe. The only obvious external sexual difference is that the male sixth abdominal sternite (instead of being emarginate apically as in most other dynastine tribes) is subtruncate at apex, whereas the same sternite in the female is somewhat narrowly rounded, though at times it is practically impossible for even an experienced student of the group to be certain of the sex unless he dissects the specimen. This condition, however, does not hold good throughout the tribe, since males of the Neotropical *Amblyodus* Westwood show the typical emargination of the last sternite.

#### KEY TO UNITED STATES GENERA AND SPECIES

1. Completely lacking any tubercles or horns on

either head or thorax; clypeal base consisting of a wide carina which is obsolescent laterally; front not at all concave, but coarsely punctate; side of thorax exceptionally hairy (hairs really extend from beneath thoracic margin); elytra short and very coarsely cribrate; apex of hind tibia slightly irregular but not really toothed; all tarsal segments short and subrectangular in shape; elytra "soldered" at sutures and wings reduced to mere vestiges. ....

..... *Archophileurus cribrerosus* (LeConte)

With tubercles or horns on either head or thorax or both, without transverse clypeal carina; front always strongly concave; elytra longer, depressed; hind tibial apex distinctly spinose, at least at sides; tarsal segments longer, basal segment of mid and hind legs with strong apical spine; elytra not soldered at suture and wings of normal length. (*Phileurus*).....3

2. Size large (29–34 mm); clypeal horn very large, as long as exposed dorsal portion of head, each horn situated right *at* and *on* lateral margin of head; small canthus in front of eye (dorsal view) very obsolescent, not at all conspicuous. . . *Phileurus truncatus* (Beauvois)  
Size much smaller (16–23 mm); clypeal horn small or represented by a tubercle, always much shorter than head length; clypeal horn situated *inside* each lateral margin, and not *at* it; eye canthus moderate to strong. ....3

3. Front tibia distinctly 4-dentate, the subapical and apical external teeth very narrowly separated by a distinctly U-shaped incision; the sides of the "incision" parallel. ....  
..... *Phileurus castaneus* Haldeman  
Front tibia tridentate, at most with the merest suggestion of a fourth tooth (near base if present) apical and subapical external tooth separated by a *wide* non-parallel-sided emargination. .... *Phileurus illatus* LeConte

#### Genus *Archophileurus* Kolbe

*Archophileurus* Kolbe, 1910, p. 334; Casey, 1915, p. 271; Arrow, 1937, p. 38; Cazier, 1399, p. 170.

Arrow in his 1937 catalogue lists a number of American species in this genus, some of these however actually being synonyms, but the group is not well enough known to definitely list them as such at the present time. Our single United States species also occurs in northern Mexico:

#### *Archophileurus cribrerosus* (LeConte)

Fig. 1, b

*Phileurus cribrerosus* LeConte, 1854, p. 80; Bates, 1887, p. 338.

*Archophileurus cribrerosus* (LeConte) Casey, 1915, p. 264; Arrow, 1937, p. 87; Cazier, 1939, p. 170.

Judged from collected specimens apparently the center of distribution of this species is in

northern Mexico (Durango, Coahuila, and Tamaulipas), with further distribution in the southwestern United States (Texas, Arizona, and New Mexico). Nothing is known regarding its habits. The slender vestigial wings are interesting, and owing to this flightless condition we might expect to find local races in such a wide-ranging form.

#### Genus *Phileurus* Latreille

*Phileurus* Latreille, 1807, p. 103; Burmeister, 1947, p. 148; Lacordaire, 1856, p. 456; Kolbe, 1910, p. 336; Casey, 1915, p. 264; Arrow, 1937, p. 89; Cazier, 1939, p. 170.

In his 1937 catalogue Arrow lists 27 species, at least 10 of which are known to me to be synonyms. The species range generally throughout the Americas and the West Indies. The larvae live in decaying wood. Because of the flattened dorsal surface and the black color, these *Phileurus* are often mistaken for passalid beetles, which they do indeed superficially resemble.

#### *Phileurus truncatus* (Beauvois)

Fig. 1, a

*Scarabaeus truncatus* Palisot de Beauvois, 1807, p. 41.

*Phileurus truncatus* (Beauvois) Casey, 1915, p. 265; Bates, 1889, p. 340; Arrow, 1937, p. 90; Cazier, 1939, p. 170.

*Phileurus recurvatus* Casey, 1915, p. 266.

Recorded by Bates and Casey from Mexico and ranging also rather commonly throughout our southeastern United States. Has been recorded as mistaking chimneys for hollow trees and thus falling into fireplaces. The large size and strong cephalic horns readily place the species.

#### *Phileurus illatus* LeConte

Fig. 1, c

*Phileurus illatus* LeConte, 1854, p. 80; Casey, 1915, p. 267; Ritcher, 1944, p. 47 (larvae).

*Phileurus vitulus* LeConte, 1866, p. 80; Cazier, 1939, p. 170.

*Phileurus phoenicis* Casey, 1915, p. 267; Cazier, 1939, p. 170.

*Phileurus puncticollis* Casey, 1915, p. 268; Cazier, 1939, p. 170.

*Goniophileurus femoratus* (Burmeister) Kolbe, 1910, p. 149, p. 344 (pars); Arrow, 1937, p. 86, 90; Blackwelder, 1944, pp. 257-258; Cazier, 1939, p. 170.

There has been a great deal of controversy about and incorrect citations for this species

since Kolbe erected the genus *Goniophileurus* for *femoratus* Burmeister and placed *illatus* LeConte and *vitulus* LeConte as synonyms of it. Burmeister's types of *femoratus* were from French Guiana and this name (the species is unknown to me) should apply to that locality, and *vitulus* and *illatus* should be removed from the synonymy of that species. Kolbe's main character for the genus *Goniophileurus* was the 2- or 3-toothed mandible, whereas my dissections show without doubt that the mandibles of our U. S. species are quite simple. Thus in the catalogues of Arrow (1937) and of Blackwelder (1944) following Arrow, *vitulus* and *illatus* are listed both as synonyms of *Goniophileurus femoratus* (Burmeister) and also as valid species of *Phileurus*; actually, they have nothing to do with *femoratus*, and *vitulus* is a synonym of our common *illatus*.

Ritcher has studied larvae taken in the trunks of trees (*Dasyllirion*) in Arizona. The species occurs fairly commonly in Arizona, very rarely in southern California and in northern Mexico and Lower California (Triunfo, July 7, Ross and Michelbacher). I have also seen a specimen some time ago, apparently of this species, taken from the La Brea tar pits in southern California, probably representing a specimen of the (?) Pleistocene period.

#### *Phileurus castaneus* Haldeman

Fig. 1, d

*Phileurus castaneus* Haldeman, 1843, p. 304; Casey, 1915, p. 270; Arrow, 1937, p. 89; Cazier, 1939, p. 170; Ritcher, 1944, p. 42 (larvae).

*Phileurus valgus* Olivier (nec Linnaeus), 1789, p. 43; Arrow, 1937, p. 89.

*Phileurus texensis* Casey, 1915, p. 268; Cazier, 1939, p. 170.

*Phileurus sulcifer* Casey, 1915, p. 269; Cazier, 1939, p. 170.

*Phileurus floridanus* Casey, 1915, p. 270; Cazier, 1939, p. 170.

*Phileurus carolinae* Casey, 1915, p. 269; Cazier, 1939, p. 170.

Arrow in his 1937 catalogue lists four varieties of this species from the West Indies and South America. It is a fairly common species in the United States, ranging from Virginia through the Southern States and Florida and Texas into Mexico, and supposedly also Guatemala. Ritcher has reared the larva from a specimen collected in a cavity of a dead Basswood tree.



## LITERATURE CITED

- ARROW, G. J. Trans. Amer. Ent. Soc. 1909: 341.  
 ———. Coleop. Catalogus, pars 156: 89. 1937.  
 ———. Trans. Ent. Soc. London (A) **86**: 38. 1937.  
 BATES, H. W. *Biologia Centrali-Americana, Coleoptera* 2(2): 338. 1889.  
 BEAUVOIS, A. M. J. PALISOT DE. *Insectes recueillis en Afrique et en Amerique*: 41. 1807.  
 BLACKWELDER, R. E. U. S. Nat. Mus. Bull. 185, part 2: 257–258. 1944.  
 BRUCH, CARLOS. Rev. Mus. La Plata **4**(2): 73. 1910.  
 BURMEISTER, H. *Handbuch der Entomologie* **5**: 148. 1847.  
 CARTWRIGHT, O. L. Ann. Ent. Soc. Amer. **37**(1): 36. 1944.  
 CASEY, T. L. *Memoirs on the Coleoptera* **6**: 178. 1915; **11**: 334. 1924.  
 CAZIER, M. A. Bull. Southern California Acad. Sci. **38**(3): 170. 1939.  
 CHEVROLAT, L. A. A. In Guerin, Mag. Zool., *Coléoptères du Mexique*, **13**: 33. 1843.  
 DEGEER, CARL. *Mémoires pour servir à l'histoire des insectes* **4**: 322. 1774.  
 DUGÈS, EUGÈNE. Ann. Soc. Ent. Belgique **31**: 137. 1887.  
 HALDEMAN, S. S. Proc. Acad. Nat. Sci. Philadelphia **1**: 304. 1843.  
 HAMILTON, J. Can. Ent. **18**: 112. 1886.  
 HORN, G. H. Trans. Amer. Ent. Soc. **2**: 78. 1870; **10**: 122. 1882.  
 JOHNSON, R. Connecticut Agr. Exp. Stat. Bull. **461**: 79–86. 1942.  
 KIRBY, W. Trans. Linn. Soc. London **14**: 566–568. 1825.  
 KOLBE, T. Ann. Soc. Ent. Belgique **54**: 334. 1910.  
 LACORDAIRE, J. T. *Genera des coléoptères* **3**: 456. 1856.  
 LATREILLE, P. A. *Genera crustaceorum et insectorum* **2**: 103. 1807.  
 LECONTE, J. L. Journ. Acad. Nat. Sci. Philadelphia (2), **1**: 88. 1848.  
 ———. Proc. Acad. Nat. Sci. Philadelphia **6**: 80. 1854; **8**: 21. 1856; **13**: 336. 1861.  
 LECONTE, J. L., and HORN, G. *Classification of the Coleoptera of North America* 259. 1883.  
 LINNAEUS, C. Amoen. Academy **6**: 391. 1763.  
 ———. *Systema naturae* (ed. 12) **1**(2): 549. 1767.  
 MANEE, A. H. Ent. News **26**: 266. 1915.  
 MELSHEIMER, F. E. V. Proc. Acad. Nat. Sci. Philadelphia **2**: 138. 1856.  
 OLIVIER, A. G. *Entomologie ou histoire naturelle des insectes* **1** (pars 5): 43. 1789.  
 RITCHER, P. O. Kentucky Agr. Exp. Stat. Bull. No. 467: 43. 1944.  
 SAY, THOMAS. Proc. Acad. Nat. Sci. Philadelphia **3**: 209. 1823.  
 SAYLOR, L. W. Journ. Washington Acad. Sci. **35**(12): 378–386. 1945; **36**(1): 16–22. 1946; **36**(2): 41–46. 1946.  
 SIMS, ROBERT. U.S. Dept. Agr. Circ. 334. 1934.  
 STERNBERG, R. Stett. Ent. Zeitung **71**: 26. 1910 (1909).