

I. AN ANNOTATED LIST OF THE COPROPHAGOUS SCARABAEIDAE KNOWN TO OCCUR IN OKLAHOMA

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Fifty four species of those beetles known as tumble bugs or dung beetles are included in the following list. Twelve additional species which probably occur within the state are also listed below. Most of the species feed upon the excrement which they bury in the soil. Their distribution within the state is determined largely not by the distribution of their food but by physical characters of the soil in which they burrow. Some prefer sand; others the moist humus of woods; while others live in the dry soil of the prairies. In the notes which follow, the phrase "generally distributed" is used to describe the distribution of those species that are not greatly restricted by the soil factors. The species described as occurring in "moist woods" live in woods where the humus is deep and without sand. The presence or absence of timber is not an important factor to those species which live in the sand.

This paper is based upon material in the collections of the Oklahoma Agricultural and Mechanical College. All determinations were made by the author.

Canthon Hoffmanssegg.

The species form balls of excrement which they roll away and finally bury. Sometimes the buried balls serve as food for the adults; otherwise eggs are deposited in them, and they serve as food for the larvae.

nigricornis Say. Wichita National Forest; June.

ebenus Say. Grady and Payne Counties; April, May, and June; abundant at excrement in very sandy localities.

praticola LeConte. Caddo, Grady, Noble, and Payne Counties, and Wichita National Forest; June, July, and August; common at excrement of horses, cattle, and prairie dogs on the dry prairies.

lecontei Harold. Murray and Payne Counties; April, May, and June; common in very sandy localities. The balls of this species are rabbit droppings. The species is active during the early part of the morning and spends the remainder of the day with its food in vertical burrows.

vigilans LeConte. Payne County, Wichita National Forest; June and July; frequent at the excrement of horses and saddle on soil that contains little or no sand.

laevis Drury. Grady, Murray, Pawnee, and Payne Counties, and Wichita National Forest; April to October; very abundant in the excrement of horses and cattle; generally distributed.

chalcites Haldeman. Recorded from "Ind. Terr." by Blanchard (Trans. Am. Ent. Soc., XII, 16).

viridis Beauvois. Murray and Payne Counties; April, August, and September; uncommon. When collected, the Payne County specimens were constructing and rolling balls of human excrement and rabbit droppings in a pecan woods.

Choeridium Serville.

histeroides Weber. Pawnee and Payne Counties; October to May; common in moist woods where it burrows in the soil beneath excrement and occasionally beneath other decaying matter. The adults hibernate in the soil and beneath dead leaves.

Pinotus Erichson.

carolinus Linnaeus. Bryan and Payne Counties; May, June, and September; common in moist woods where it burrows beneath the excrement of horses and cattle.

Copris Geoffroy.

The species burrow in the soil beneath excrement. They carry some of the excrement into their burrows.

minutus Drury. Payne County; September to June; very common; the adults hibernate in their burrows which are always made in the humus of moist woods.

tullius Olivier. Pawnee and Payne Counties; April to November, common in and near woods.

Phanaeus MacLeay

The species, like those of *Copris*, carry excrement into burrows in the soil.

difformis LeConte. Grady County; June; common; occurs only in sand.

carnifex Linnaeus. Grady, Murray, Pawnee, and Payne Counties, and Wichita National Forest; March to June and September to November; very common; generally distributed, but more common in sandy localities.

Onthophagus Latreille.

These species burrow in the soil beneath their food material.
hecate Panzer. Grady, Murray, and Payne Counties; March to November; common; occurs at excrement and occasionally at decaying vegetable matter; generally distributed.

- guatemalensis** Bates. Murray and Payne Counties; April to June; abundant beneath excrement in very sandy localities.
- orpheus** Panzer. Payne County; October and November; rare; occurs at excrement in moist woods.
- striatulus** Beauvois. Payne County; May; uncommon beneath baits of decaying bananas in moist woods.
- pennsylvanicus** Harold. Caddo, Grady, Murray, and Payne Counties; April to November; very common at excrement; generally distributed.
- cribricollis** Horn. Payne County; March, April, and October; very rare; occurs in moist woods; feeding habits unknown.
- tuberculifrons** Harold. Murray and Payne Counties; April, May, and October; common at excrement in woods in very sandy localities.

Aphodius Illiger.

Except when otherwise noted, the species listed below occur in excrement, and those that occur as adults during the winter hibernate in their food material.

- abusus** Fall. Payne County; April and May; common, especially in sandy localities.
- fimetarius** Linnaeus. Pawnee and Payne Counties; September to July; common; generally distributed.
- rusticola** Melsheimer. Murray, Pawnee, and Payne Counties; April to June, October, and November; common in and near woods.
- granarius** Linnaeus. Murray, Pawnee, and Payne Counties; November to June; common in or near woods.
- vittatus** Say. Pawnee and Payne Counties; May, June, and November; common; generally distributed.
- lividus** Olivier. Payne County; May to October; common.
- lutulentus** Haldeman. Payne County; October to January; common on the prairies.
- rubeolus** Beauvois. Murray and Payne Counties; April to August; common in sandy localities.
- stercorosus** Melsheimer. Pawnee and Payne Counties; April to June, and September; common; especially in sandy localities.
- concavus** Say. Payne County; April to June; scarce.
- bicolor** Say. Payne County; October to January; generally distributed in woods.
- serval** Say. Payne County; October to March; very common; generally distributed in woods; occurs beneath dead leaves.
- distinctus** Muller. Murray, Pawnee, and Payne Counties; October to January and April; very common; generally distributed but less abundant on dry prairies.

terminalis Say. Payne County; October to April; common in and near woods.

longitarsis Fall. Caddo County; June; rare.

walshii Horn. Payne County; May; uncommon; occurs only in very sandy localities.

femoralis Say. Payne County; March to May; very common; generally distributed, but scarce on dry prairies.

tenuistriatus Horn. Murray, Noble, and Payne Counties; April to June; common in very sandy localities.

Ataenius Harold.

abditus Haldeman. Noble and Payne Counties; March to August; common beneath dead wood and excrement on sandy soil.

cognatus LeConte. Murray, Pawnee, and Payne Counties; all months; common beneath excrement and decaying vegetable matter; generally distributed.

Psammobius Heer.

quinqueplicatus Horn. Payne County; May; rare.

Rhyssemus Mulsant.

sonatus LeConte. Payne County; October; uncommon; occurs beneath excrement in very sandy localities.

Ochodaeus Serville.

biarmatus LeConte. Noble and Payne Counties; May and June; taken only at night.

Bolboceras Kirby.

fossatus Haldeman. Grady, Noble, and Payne Counties; May to July; common in vertical burrows from 6 to 14 inches deep; food unknown.

Odontaeus Klug.

filicornis Say. (?) Payne County; October; one specimen taken from a 4 inch vertical burrow in the soil of a moist woods.

Bolbocerosoma Schaeffer.

The species listed below occur in vertical burrows from 4 to 18 inches deep. These are made in pastures and on roadsides where the soil is somewhat sandy. Nothing more is known concerning the habits of these species.

biplagiatum Dawson and McColloch. Noble and Payne Counties; May, June, September, and October; uncommon.

bruneri Dawson and McColloch. Payne County; June and October; rare.

Eucanthus Westwood.

lazarus Fabricius. Noble and Payne Counties; May to July, and October; uncommon; like *B. biplagiatum* in manner of occurrence.

Geotrupes Latreille.

The species listed below construct vertical burrows beneath excrement and sometimes beneath decaying vegetable matter and carrion.

blackburnii Fabricius. Pawnee and Payne Counties; October to June; common in moist woods. The adults hibernate in their burrows.

opacus Haldeman. Payne County; August to May; common in sandy localities.

splendidus Fabricius. Payne County; April to June, and September to October; frequent in moist woods.

Cloeotus Germar.

aphodioides Illiger. Payne County; April; frequent beneath the bark of dead oaks.

The following list includes species which have not been collected in Oklahoma but which, judging from published records, occur within the state.

Canthon depressipennis LeConte.

Canthon perplexus LeConte.

Onthophagus coproides Horn.

Aphodius consentaneus LeConte.

Ataenius imbricatus Melsheimer.

Ataenius gracilis Melsheimer.

Ataenius figurator Harold.

Ataenius strigatus Say.

Ochodaeus kansanus Fall.

Bolboceras serratus LeConte.

Phanaeus triangularis Say.

Cloeotus globosus Say.