FOSSIL ROVE BEETLES FROM PLEISTOCENE CALIFORNIA ASPHALT DEPOSITS (COLEOPTERA: STAPHYLINIDAE)

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ABSTRACT

Three species of Staphylinidae are known as fossils from Late Pleistocene asphalt deposits in California: 1 species of *Aleochara* from the Carpinteria asphalt deposit in Santa Barbara County and 2 species of *Philonthus* from the McKittrick asphalt deposit in Kern County. No Staphylinid fragments identifiable to genus have yet been recovered from the Rancho La Brea asphalt deposit in Los Angeles County.

In the course of studies on the fossil insects of the California Pleistocene asphalt deposits, a few fragments of the family Staphylinidae were encountered in the collections of the Natural History Museum of Los Angeles County (LACM). Most of these are elytral and pronotal fragments which are almost impossible to identify below family level, but several identifiable fragments are present. Although these specimens probably represent species still living today, as do most Pleistocene insects (Coope 1970), the condition of the specimens and taxonomic knowledge of the taxa involved do not permit specific identifications. However, it is possible to refer these fragments to species groups within recognizable genera. These specimens came from the Carpinteria and McKittrick deposits, which are of Late Pleistocene age. At present, no identifiable Staphylinids have been recovered from the Rancho La Brea deposit. This deposit, located in Los Angeles, Los Angeles County, is generally recognized as the world's greatest assemblage of Late Pleistocene vertebrates (Stock 1956). A more complete introduction to these deposits and their fossil biotas will be published in a paper treating the fossil Silphidae (Miller and Peck, in preparation).

The Carpinteria asphalt deposit is located on a seaside bluff overlooking the Pacific Ocean about a mile southeast of Carpinteria, Santa Barbara County, California (LACM Invertebrate Paleontology locality 5012, equivalent to California Institute of Technology vertebrate paleontology locality 139). The unanimous opinion of all the reports on the various groups of fossils (especially Chaney and Mason 1933) is that the Late Pleistocene environment at Carpinteria was very similar to the present environment of the Monterey Peninsula (200 miles northwest). Hence, the paleoclimate at Carpinteria was generally cooler and more humid, but there were probably considerable fluctuations of conditions at the site during the time it was active. This activity probably took place 20,000-40,000 years before present. Unfortunately, the deposit was used as a refuse dump after it was abandoned as a mine, so it is no longer accessible for study.

A single well-preserved specimen of the genus *Aleochara* has been recovered from the Carpinteria asphalt deposit. It belongs to that section of the genus in which the puncturation of the disc of the pronotum is irregular. In the United States today, this section of the genus includes 2 common, widely distributed species, *A. bimaculata* Gravenhorst and *A. bipustulata* Linné. Both are found in the manure of domestic animals. They are common in field manure (pasture, range) but rare in accumulated manure (dairies, poultry ranches, etc.). The larvae are ectoparasites on the pupa of flies within the puparium. They probably parasitized the pupae of flies in manure of large mammals or other decaying organic matter which was available at the time. Many large mammals not present in the region today have been recorded from the Pleistocene (Wilson 1933). For *A. bimaculata,* Moore and Legner (1971) listed the known hosts as *Orthellia* sp., *Musca autumnalis* DeGeer, and *Sarcophaga* sp. For *A. bipustulata,* Moore and Legner (1971, 1973) listed the known hosts as *Hylemya brassicae* (Bouche), *H. platura* (Meigen), *H. floralis* Fallen, and *Ravenia derelictum* (Walker). No remains of any species of Diptera that may have been associated with this beetle have been recognized in the Carpinteria material. *A. bimaculata* currently is restricted to North America, whereas *A. bipustulata* is known also from Europe, Japan, and Africa.

The McKittrick asphalt deposit occurs about a mile south of McKittrick, Kern County, in the southern part of the San Joaquin Valley of California (LACM Invertebrate Paleontology locality 260). The Pleistocene climate and environment at McKittrick were very similar to that of the region today, except that there was probably more rainfall and perhaps a nearby lake or marsh (DeMay 1941). The biota is considered Late Pleistocene, although there is some "admixture of a later (Recent, but not present-day) assemblage" (DeMay 1941). One species of staphylinid has been identified in material collected by Leonard Bessom in 1947 from a road cut at a depth of 4 feet. This material was processed by W. Dwight Pierce, who designated the locality as "Site 4" (Pierce 1947). A second identifiable staphylinid species is represented in miscellaneous material from Pierce's excavations. Unfortunately, many difficulties exist with locality and age data for Pierce's McKittrick material (Miller and Peck, in preparation). The fossil flora reported by Mason (1944) has been given a radiocarbon date of 3800 ± 2500 years before present (UCLA-728 in Berger and Libby 1966), but Pierce's material may be considerably younger.

Head and pronota of 2 species of *Philonthus* are present in the McKittrick material. A *Philonthus* species belonging to that section of the genus in which the disc of the pronotum has a double longitudinal row of 4 punctures is represented by a head and pronotum (LACM Invertebrate Paleontology hypotype 5719) collected from Pierce's "Site 4" in 1947 by Leonard Bessom. Another species of *Philonthus* is also represented by a single head and pronotum (LACM Invertebrate Paleontology hypotype 5720). The latter species is one of the larger members of that section of the genus in which the pronotal punctures are irregularly placed throughout the disc. The specimen lacks exact locality data, but is known to have come from Pierce's McKittrick material.

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LITERATURE NOTICE

Tiger beetles of the genus *Cicindela* in the Sulphur Springs Valley, Arizona, with descriptions of three new subspecies (Cicindelidae—Coleoptera), by Norman L. Rumpp. Proc. Calif. Acad. Sci., 4th Ser. 41:169-182, May 1977.

This informative paper includes keys to and a classification of the Sulphur Springs Valley *Cicindela*, descriptions of their ecological associations, and a discussion of their historical derivations.

—D. R. W.