NOTES ON FOSSIL CLEONINAE (COLEOPTERA: CURCULIONIDAE)[1]

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Dr. Samuel H. Scudder probably described more species of North American fossil Rhynchophora than any other worker, yet he was not a specialist in the weevils. His monograph of the fossil Rhynchophora found in the middle Oligocene beds of Florissant, Colorado, however, is one of the most extensive treatments of any group from that site.[2] Whereas most fossil beetle species have been described on the basis of elytra, a high percentage of the Florissant weevils are preserved so that the dorsal or the lateral aspect of the whole specimen is visible. In most examples from this site, according to the illustrations, the rostrum is well preserved, and even antennal and tarsal segments are intact but the body is usually compressed and distorted and parts are often disarranged. Details of the mouthparts are obliterated and the ventral surface of the body is seldom visible. In these latter two areas lie some of the critical characters needed for subfamilial and tribal differentiation in existing keys to extant forms of the Rhynchophora.

There is a basis for comparison of the fossils with extant forms where the modern classifications of groups are based on the characters that happen to be well preserved in the fossil specimen. Fossil beetles, however, are seldom preserved in enough detail to be of much value at the specific level and in many cases at the generic level, except in amber. Unless some diagnostic structure is particularly well preserved in a specimen, most fossil beetles have not been of much value in taxonomic studies.

Workers in the Rhynchophora should use caution in interpreting Scudder's illustrations. If reference to any of his fossil species is contemplated, the type specimen or specimens should be checked, and decisions should be based upon this examination instead of upon the original description and illustration.

Through the kindness of Dr. F. M. Carpenter, I was recently privileged to examine the type specimens of fossil species of Cleoninae

[1]This study was made possible by a travel grant from the Society of Sigma Xi.

Manuscript received by the editor January 4, 1962.

[2]Tertiary Rhynchophorus Coleoptera of the United States. U. S. Geological Survey Monographs, Vol. 21, 206 pp., 12 pls., Washington, 1893.

which had been described by Scudder in 1893. The types are part of the collection at the Museum of Comparative Zoology, Harvard University, and were all collected at Florissant. This type study was in conjunction with a survey being made to circumscribe the weevil subfamily Cleoninae and to revise the included genus *Lixus*.

The characters which separate the Cleoninae from other subfamilies of the Curculionidae are: (1) antennal scrobes originating on the sides of the beak and curving abruptly downward to terminate beneath the base of the beak, (2) tarsal claws connate at the base, (3) labial palpi short and positioned on the ventral face of the labium at either end of the ligular suture, (4) ligula attached to the terminal margin of the prementum, (5) tegmen of the male lacking posterior dorsal lobes, (6) anal veins 2dA2 and 2dA3 usually entire in the hind wings, (7) eyes either vertically elongated, ovate or reniform. Obviously, dissection of a specimen would be required to examine the genitalia and the wings. The other five characters in order to be visible would require a precise orientation of the beak and tarsal claws, yet the combination of all these characters is necessary for inclusion of a weevil in the Cleoninae.

In none of the six cotype specimens of *Cleonus exterraneus* Scudder, the two of *Cleonus degeneratus* Scudder, or in the genotype of *Eocleonus subjectus* Scudder are the labium or the tarsal claws visible. Neither are the eyes nor the antennal scrobes sufficiently well preserved or correctly positioned to permit accurate determination except in the genotype specimen of *Eocleonus subjectus*. Two characters in this latter specimen rule out the probability of its inclusion in the Cleoninae. First, the visible eye is elongated horizontally instead of dorso-ventrally as is the case in every modern, narrow-eyed Cleonine weevil I have seen. Second, the antennal scrobe is directed toward the eye as in some of the broad-nosed weevils. Not only are the characters that are preserved in all of the examined specimens insufficient to permit the species to be placed in the Cleoninae, but they are also too vague to allow accurate placement in any other subfamily. There is simply not enough detail preserved to give any substantial clues to the correct taxonomic status of the specimens.

In his 1893 report, Scudder also described *Cleonus foersteri* and *Cleonus primoris,* each based on a single specimen. The illustration of *foersteri* indicates that this species most nearly approaches a true *Cleonus* in the shape of the beak and eye, but other Cleonine characters are not apparent. The location of the type specimen is not known.

The illustration of *Cleonus primoris* indicates that the specimen is badly distorted and that it probably will yield few clues to its correct placement in the Curculionidae. The type was stated by Scudder to be in the Princeton University collections, but Dr. A. G. Fischer assures me that the type is not presently in that collection and that its whereabouts is unknown.

On the basis of my examination of the types, I suggest that the three fossil species, *Cleonus exterraneus, Cleonus degeneratus* and *Eocleonus subjectus* be relegated to *incertae sedis* status in the Curculionidae until such time as their true position can be determined, if that is possible. Likewise, *Cleonus foersteri* and *Cleonus primoris* should be placed in *incertae sedis* in the Curculionidae until the types can be located and examined.