On terminology in Curculionoidea (Coleoptera)

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One of the problems affecting knowledge of a given taxon, in the present account the superfamily Curculionoidea of the order Coleoptera, already reputed as one of the most difficult beetle groups, is confusing terminology. In Curculionoidea, since Scopoli's times (1763) two terms have been used to name two different groups in the superfamily, even if they are not clearly cut sometimes: Recticornes (on p. 23) and Infracticornes (on p. 29). Scopoli used them for the two main divisions within the genus *Curculio*. As their etymology reveals, they make mention of the kind of antenna the animals show: **Recticornes** (from Latin *rectus*, straight, and *cornu*, horn, or, more exactly in an insect, antenna) for those having a usually short scape and the remainder of the antenna (pedicel plus flagellum, or funiculus plus club) following scape in the same articulatory line, and **Infracticornes** (from Latin *infractus*, broken), for those having usually a long scape and the remainder of the antenna placed at an angle to the scape, usually close to 90º. Later, this primary division was used to separate into two groups the genera in which the old genus *Curculio* had already been divided, so that, v.g. Latreille (1802) used the terms *Recticornes* and *Fracticornes* (a slight modification of the spelling) for the two main divisions of his newly erected family "Charansonites – Curculionites". The first division included the genera *Brentus*, *Cylas, Attelabus* and *Brachycerus*, and the second the genera *Calendra, Rhina, Cossonus, Lixus, Brachyrhinus, Curculio, Cionus, Rhynchaenus* and *Rhamphus*. Schoenherr (1823) translated these terms, keeping their contents (which he amplified adding many new genera), into Greek: **Orthoceri** (on col. 1134, from Greek *orthós*, straight, and *kéras*, horn) and **Gonatoceri** (on col. 1138, from Greek *góny*, genitive *gónatos*, knee). So these terms had jumped from a use within a genus to a use within a broadly considered family Curculionidae, or in our present knowledge, the superfamily Curculionoidea.

Unfortunately enough, these rather clear meanings have slipped through an incorrect terminological use to designate also two different types of male genitalia, as I have pointed elsewhere (Alonso-Zarazaga, 2004, p. 694). The two "orthocerous" and "gonatocerous" types (antennal and genitalic) do not even coincide in the groups. In this work, I coined two new terms to replace the inexact use of "orthocerous" and "gonatocerous" in the male genitalia, but, being my paper written in Spanish, some colleagues have prompted me to explain the new terms in English in order to make the highest number of students of this group aware of them. Other terminology used in the next lines follow M. Wanat (in press, pers. comm.).

The penis structure in the primitive and derived forms of Curculionoidea are characterized, respectively, by the presence or absence of a tectum (tergite XI). Both states are inexplicably termed as "orthocerous" and "gonatocerous", as mentioned before, terms originally applying to the antennal structure. To replace the first term I proposed (Alonso-Zarazaga, *loc. cit.*) the adjective **pedotectal**, i.e., "having at the same time pedon and tectum in the penis" that is almost always linked to a well developed, setiferous tegminal plate (tergite X) and is typical of primitive groups; to replace the second, I proposed **pedal**, i.e., "having only pedon in the penis", a state that is usually linked with a more or less strong reduction (or even a disparition) of the tegminal plate and sometimes also of the basal piece (as in Platypodini). With this terminological differentiation, three evolutive "grades" are discernable in the phylogeny of Curculionoidea: the most primitive taxa are **orthocerous** and **pedotectal** (Nemonychidae, Anthribidae, Belidae [incl. Oxycorynidae], Eccoptarthridae, Rhynchitidae, Attelabidae, Ithyceridae, Brentidae [incl. Microcerinae], Eurhynchidae and Apionidae), the middle grade presents **gonatocerous** and **pedotectal** taxa (Nanophyidae, Brachyceridae, Erirhinidae, Dryophthoridae, Raymondionymidae and Cryptolaryngidae) and the most advanced grade is reduced to a single family-group taxon, Curculionidae, which is basicly **gonatocerous** and **pedal**.

Using the new terminology I propose will result in a higher degree of accuracy in the descriptions and in a better coding of phylogenetically useful characters, as these are. I already proposed several terms to describe more accurately the characters of the tegmen in Apionidae (Alonso-Zarazaga, 1983, 1985, 1989, 1990), that can be also helpful for the description of other Curculionoidea.

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