

晚古生代海扇类 *Aviculopecten planoradiatus* McCoy, 1851 新材料发现的重要意义

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中文提要 根据最近在大英博物馆发现的燕海扇 (*Aviculopecten*) 模式种的新材料 (Fang and Morris, 1999), 燕海扇的不等壳性终于得到确认。因此, 有必要对 Newell 和 Boyd (1995) 的燕海扇超科 (Aviculopectinacea) 的分类方案作若干修正: 1995 年定义的燕海扇科 (Aviculopectinidae) 无效, 应由本文新提出的早坂海扇科 (Hayasakapectinidae) 取而代之; 埃赛海扇科 (Etheripectinidae) 一名由 Newell (1969) 定义的燕海扇科取代。

关键词 石炭-二叠纪海扇类 燕海扇科 早坂海扇科

THE IMPORTANCE OF RECENTLY REPORTED SPECIMENS OF THE LATE PALEOZOIC BIVALVE *AVICULOPECTEN PLANORADIATUS* MCCOY, 1851

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Abstract Evidence provided by Fang and Morris (1999) requires several changes in the Newell and Boyd (1995) taxonomy of aviculopectinacean bivalves. Availability of *Aviculopecten* as type genus for a family of inequivalve scallops makes our 1995 introduction of the name Etheripectinidae unnecessary. Our 1995 restricted diagnosis of Aviculopectinidae is invalid but is appropriate for Hayasakapectinidae, a name we introduce here.

Key words Permo-Carboniferous scallops, Aviculopectinidae, Hayasakapectinidae

A recent publication by Fang and Morris (1999) provides convincing evidence for abandoning our (Newell and Boyd, 1995) interpretation of the genus *Aviculopecten* and of the family Aviculopectinidae. For more than a century, the genus *Aviculopecten* has been utilized extensively for late Paleozoic pectinoid bivalves with radial ornament and external resilifer. The type species, *A.*

planoradiatus McCoy, 1851 is based on a left valve, so the character of the right valve has been open to speculation.

The presence of a bicovex aviculopectinid in our study collections of Permian silicified pectinoids from western USA posed the question of generic and familial assignments and led to our conclusion that McCoy's *A.*

planoradiatus is probably biconvex like his previously described *Pecten flexuosus* McCoy, 1844. This opinion was strengthened by the resemblance between the right valves of the latter species and *A. americanus*, our American species, so in our resulting publication (Newell and Boyd, 1995) we restricted the genus *Aviculopecten* and the family Aviculopectinidae to biconvex forms.

That decision has been invalidated by the discovery reported by Fang and Morris (1999), and noted previously by Fang (1987)*, of four nearly flat right valves in collections at the British Museum (Natural History). All of them are associated with left valves referable to *A. planoradiatus*, so Fang and Morris have emended the diagnosis of *Aviculopecten* to recognize its inequivalve condition. This excludes our biconvex species from the genus, and negates our argument for restricting the Aviculopectinidae to such forms. We agree with Fang and Morris that our *A. americanus* should be reassigned to the biconvex and plicate *Hayasakapecten* Nakazawa and Newell, 1968, a genus which we (Newell and Boyd, 1995) had placed in synonymy with *Aviculopecten*.

In light of these revisions, we recognize the need for two changes in family nomenclature of our 1995 monograph. First, Hayasakapectinidae (type genus *Hayasakapecten* Nakazawa and Newell, 1968) should replace Aviculopectinidae as the name for our family of biconvex, plicate aviculopectinaceans (Newell and Boyd, 1995, p. 60). Second, *Aviculopecten* McCoy, 1851, emended by Fang and Morris (1999) can resume its historic role as type genus for the Aviculopectinidae, a long-recognized (e.g., Newell, 1969) association of numerous inequiconvex genera including those for which we introduced the name Etheripectinidae. That name, now superfluous, should be replaced by Aviculopectinidae in our monography (Newell and Boyd, 1995, p. 33).

We offer the following comments on genera. First, it is interesting that the type genus for the Aviculopectinidae in our revised classification has one character un-

usual for its family. *Aviculopecten* is plicate whereas most aviculopectinid genera are costate. Second, in our 1995 bulletin we emphasized the variability of costate ornament and the difficulty of using it as a criterion for generic discrimination. With this in mind, we placed Waterhouse's (1963) *Etheripecten* in synonymy with Kegel and Costa's (1951) *Heteropecten*. We recognize that several experts on Paleozoic scallops disagree with that decision. For example, Fang and Morris (1999) retain both genera, distinguishing *Heteropecten* by its bifurcating costae on the right valve, in contrast to *Etheripecten*'s increase of right valve costae by insertion. They also utilize spacing of primary costae as a criterion, with wide-spacing typical of *Etheripecten* and close-spacing characteristic of *Heteropecten*. Nakazawa (1999) concurs in recognizing *Etheripecten* as distinct from *Heteropecten* on the basis of broad and bifurcated radial ribs in *Heteropecten* right valves.

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