Metacope, platycope and podocope ostracodes

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The metacope, platycope and podocope ostracodes (subsequently referred to loosely as "nonpalaeocope" ostracodes) form a large and diversified fauna in the Silurian rocks of Gotland. Since the work of Jones (1888, 1889), studies of these ostracodes have been limited to detailed morphological analyses of a few interesting species (e.g. Martinsson 1956; Adamczak 1966a, b). In fact, no comprehensive faunal analysis of Gotland "nonpalaeocopes" has ever been done. For that reason the author is now engaged in this long term project. A monographic publication of this study is anticipated. Accordingly, open nomenclature is commonly used herein for species reported from the section at Vattenfallet. For the same reason no species are described or illustrated herein. Familial classification of many "nonpalaeocope" genera is in question. Therefore, in the faunal list only those genera whose familial placement is reasonably stable are referred to familial categories among the Metacopa, Podocopa and Platycopa. Others are listed as "family uncertain". For a few species morphological analysis is so inadequate that subordinal classification is provisional. Accordingly, when detailed morphological analysis is complete the suprageneric (and for that matter, the generic) classification of some of the species listed here will be changed.

The data presented in the log are based upon two different kinds of material: marls from which specimens have been washed, and limestone chips in which ostracodes are embedded. Ostracodes had been removed from the marl samples by G. Liljevall who also had sorted out many of the limestone chips with "nonpalaeocope" ostracodes. Additional marl samples were prepared for "nonpalaeocopes" by Mrs. Meit Lindell at the Department of Palaeobiology in Uppsala. Many of the remaining limestone chips were assembled by Dalip Sethi. Virtually all of the specimens from the washed marls could be identified (a few were too poorly preserved for identification). Relatively large numbers of the specimens embedded in the limestones could not be identified because they were too poorly exposed for verification of critical morphological features. This problem is not considered significant because, (1) less than 10 % of the specimens on the rock chips were unidentifiable, (2) the total number of specimens on the rock chips was small compared to the total number of all specimens identified and (3) the ostracodes in the limestone chips are not apparently different from those in the washed marls. Therefore, it is doubtful that more complete identification of the specimens in the limestone chips would significantly alter the log showing the stratigraphical occurrences of "nonpalaeocope" ostracodes at Vattenfallet.

Annotated faunal list

Metacopa

Thlipsuridae

Longiscella oblonga (Jones), Silenis longus Abushik, S. mawii (Jones), S. divergens (Jones), S. cf. proteus Pranskevicius, Thlipsura cf. jonesii Krandijevsky, T. n. sp. a, Thlipsuridae n. gen. a, n. sp. a.

Family uncertain

"Bythocypris" cf. phaseolus Jones, "B." elongatus Jones, "B." n. sp. a, Healdianella cf. decliva Pranskevicius, Longiscula? smithii (Jones), L? sp. a, Steusloffina sp. a.

Podocopa

Beecherellidae

Medianella? sp. a, Pseudorayella cf. scala Neckaja, P. cf. arta Abushik, P. sp. a, Scaphina sp. a, S. sp. b.

Bairdiidae Bairdiacypris cf. venustus Abushik.

Pachydomellidae

The Silurian rocks of Gotland including those exposed at Vattenfallet contain a large complex of pachydomellid and pachydomellid-like ostracodes. Monographic study of the entire complex is necessary to sort out and understand the various taxa which are included. Therefore, on the log showing the stratigraphic occurrences of "nonpalaeocope" ostracodes, this complex of species has been lumped under Pachydomellidae spp. It can be said that species which have traditionally been placed in *Tubulibairdia* and *Microcheilinella* are included in this group. These species are very poorly defined in the literature, but the section at Vattenfallet contains at least four species.

Family uncertain Daleiella sp. a, Cadmea cf. inexplorata Pranskevicius, Podocopa gen. b, sp. a.

Platycopa

Cytherellidae Birdsallella cornuta Neckaja, Gotlandella martinssoni Adamczak.



Fig. 53.

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Kloedenellidae Nyhamnella musculimonstrans Adamczak.

Family uncertain

Altha modesta Neckaja, Kloedenellacea? n. gen. a bassleri (Kummerow).

The species here referred to as Kloedenellacea? n. gen. *a bassleri* (Kummerow) has been examined by Valdar Jaanusson. According to him, in this unisulcate species a curved dorsal margin appears to be associated with a long but relatively narrow anterior stragulum on the left valve, but details are unclear because all available specimens are separate valves in the rock. In the heteromorphs the domicilium is distinctly inflated posteroventrally. Both dimorphs have a prominent velar ridge. The particular combination of characters is unique, and the species is therefore difficult to classify; morphology of the hinge-line seems to indicate kloedenellacean affinities. Kummerow's (1924) syntypes (Paläontologisches Museum, Berlin) have been available for comparison.

Taxonomic remarks

The identification and classification of the "nonpalaeocopes" from Vattenfallet is complicated by the following:

(1) Ontogeny is poorly known for many species. Although this is not a serious problem for some species for which juveniles are distinctive, the recognition of immature specimens of some species is difficult.

(2) Dimorphism has not been adequately analysed for the thlipsuracean ostracodes. I doubt that this has caused problems in identification of the Vattenfallet ostracodes but the possibility of "splitting" dimorphs of one species exists.

(3) Recognition of many "nonpalaeocope" species is based upon a clear understanding and evaluation of valve relationships and hinge and contact margin structures. Ideally this requires well preserved, clean isolated valves as well as complete carapaces. All Vattenfallet specimens and species are not represented by this kind of material. Accordingly, identifications of some specimens have been based on characteristics of secondary significance.

(4) Many Vattenfallet species are known previously only from the eastern Baltic Silurian. Some of these are inadequately illustrated and described. Furthermore, satisfactory comparative material has not been available for all of these species.

(5) Many of Jones' (1888, 1889) species and varieties are based upon deformed specimens. It has been difficult in some cases to relate these types to the material from Vattenfallet. These problems further justify the use of open and questioned nomenclature shown on the log (Fig. 53). More intensive study of these and related species will stabilize and clarify the taxonomy of the Vattenfallet species.

"Nonpalaeocope" succession

The log of stratigraphical occurrences (Fig. 53) shows a more or less continuous appearance (eight species are known to occur in the Lower Visby Beds) and disappearance (seven species occur in beds younger than those analysed at Vattenfallet) of "nonpalaeocope" species. Primary faunal changes occur within the Upper Visby Beds and within the Högklint Beds, especially between 19 and 20 m above seal-level. The latter change is perhaps in part a reflection of the availability of large collections in this interval.

Abundance of "nonpalaeocope" ostracodes is highly variable in the samples analysed. For example, a marl sample from level 19.25 m contains many more specimens than any other sample. Likewise, that sample contains almost 50 % of all species which are listed in the log. In short, the statistical significance of the appearance and disappearance of species at Vattenfallet as indicated by the log is subject to question. I believe, however, that the log presents a good general picture of the "nonpalaeocope" faunal succession at Vattenfallet within the limits of restrictions posed by general taxonomic problems (discussed above).

The thlipsurids strongly dominate the "nonpalaeocope" fauna especially in the lower part of the section (Upper Visby Beds). Silenis longus, Longiscella oblonga and Thlipsura cf. jonesii are especially common. Pachydomellids, particularly species of Tubulibairdia, are common throughout the section. Platycopes, especially Nyhamnella musculimonstrans and Gotlandella martinssoni are more common in the upper part (Högklint b and c) than in the lower part of the section, although the former species is known to occur commonly in the Lower Visby Beds at Nyhamn. Medianella? sp. a is a common species in the upper parts of the Högklint Beds.

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