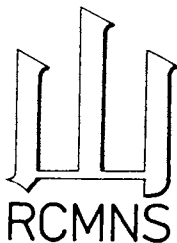


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ECOSTRATIGRAPHIC SUBDIVISION OF THE SARMATIAN AFTER MOLLUSCS

(Fig. 1)



Abstract: The Sarmatian molluscs are dependent of the sediments. Two sequences of molluscan zones are separated — one for the coarse sediments with 6 zones and 2 local subzones, and other for the pelitic sediments with 4 zones and 1 subzone.

Резюме: Сарматские моллюски зависят от осадочных пород: выделяются две секвенции в зонах моллюсков — одна для крупнозернистых осадочных пород, с 6 зонами и 2 локальными субзонами, и вторая для пелитических осадочных пород с 4 зонами и одной субзоной.

The Sarmatian molluscs (bivalvs and gastropods) are considered as a base for stratigraphic subdivision of the Sarmatian Regional Stage and the foraminifers and the ostracods must be correlated with them. But the molluscs demonstrate a strong dependence of the sediments — practically there are no species common both in the coarse and the pelitic sediments. Also the biostratigraphic subdivision of the Sarmatian after molluscs must not be general (Kojumdgieva, 1980) but an ecostratigraphic one.

The Sarmatian molluscan communities and associations from the Fore Carpathians and the Euxino—Caspian Basin (also from the Sarmatian sensu Barbot de Marny) and their sequences have been studied (Belokrys, 1986; Kojumdgieva, 1976; Kojumdgieva—Popov, 1987; Paramonova, 1986). They served as a base for the separation of two facially depending sequences of molluscs zones — one for the coarse and the other for the pelitic sediments (Fig. 1). The correlation between them both is made after observations on the alternation of the coarse and the pelitic sediments.

The phylogenies of the Sarmatian molluscs are well studied and almost identically interpreted from the paleontologists (Belokrys, 1986; Kojumdgieva, 1970, 1987; Muskhelishvili, 1980; Paramonova in Ilin et al., 1976). The rapidly evaluated genera (*Mactra*, *Cryptomactra*, *Plicatiforma*, *Chartocardium*) permitted the separation of phyllozones. All the zones mentioned here are phyllozones though defined after different lineages. The zone are based principally on bivalvs taxa, since they are better studied than the gastropods.

Only a brief list of the zones is given here. Their detailed definition is published in Kojumdgieva et al. (1988).

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Stage	Subst.	Zones in coarse sediments	Zones in pelitic sediments
Sarmatian	Chersonian	Barren-interzone	Barren-interzone
		Mactra bulgarica	Chersonian Mactra
		Mactra balcica	Mactra timida
	Bessarabian	Plicatiforma fittoni	Cryptomactra pesansensis
		Mactra vitaliana pallasi	Cryptomactra pseudotellina
	Volhynian	Mactra eichwaldi Plicatiforma plicata	Abra reflexa Chart. nigrum Abra
		Mactra eichwaldi Plic. praeplicata	reflexa
		Mactra eichwaldi Plic. praeplicata	
		Mactra eichwaldi Plic. praeplicata	
		Mactra eichwaldi Plic. praeplicata	
Konkian Stage			Konkian Stage

Fig. 1. Molluscs zones for the coarse and pelitic sediments.

Zonal sequence from coarse sediments

Mactra eichwaldi — *Plicatiforma praeplicata praeplicata* concurrent-range-zone. The zone corresponds to the Lower Volhynian and is characterized by the presence of konkian relicts — *Plicatiforma praeplicata praeplicata* (HILBER), *Obsoletiforma kokkupica* (ANDRUSSOV) (= *O. ruthenica* auct. non HILBER), *Ervilia trigonula* SOKOLOV and the new Sarmatian species — *Mactra eichwaldi* LASKAREV, *Ervilia dissita* EICHWALD a. o.

Mactra eichwaldi — *Plicatiforma plicata* concurrent-range-zone. The zone corresponds to the Upper Volhynian and is characterized by the predominance of Volhynian species.

Mactra vitaliana pallasi interval-zone. The zone corresponds to the Lower Bessarabian and is characterized by the presence of the Bessarabian species *Mactra vitaliana pallasi* BAILY, *Venerupis ponderosa* (ORBIGNY), *Obsoletiforma nefanda* (KOLESNIKOV).

Plicatiforma fittoni fittoni range-zone. The zone corresponds to the Middle and Upper Bessarabian and to the range of *Plicatiforma fittoni fittoni* (ORBIGNY), *Obsoletiforma desperata* (KOLESNIKOV), *Mactra fabreana* (ORBIGNY), *Gibbula beaumonti* (ORBIGNY), *Calliostoma woronzowi* (ORBIGNY), Genus *Barbotella* a. o.

Mactra balcica — *Mactra bulgarica* range-zone. The zone corresponds to the Lower and Middle Chersonian. In Bulgaria it can be subdivided into two local subzones: lower *Mactra balcica* interval-subzone (from the appearance of *Mactra balcica* MACAROVICI to the appearance of *Mactra bulgarica*

TOULA) and upper *Mactra bulgarica* range-subzone. In the other parts of the Paratethys they couldn't be separated.

Mactra-Ervilia barren-interzone. It corresponds to the Upper Chersonian or to the interval from the last Chersonian *Mactra* to the first Maeotian *Ervilia*, *Dosinia*, *Abra* a. o.

Zonal sequence from pelitic sediments

Abra reflexa interval-zone. The zone corresponds to the entire Volhynian Substage. Its upper part can be separated as *Abra reflexa* — *Chartocardium nigrum* concurrent-acme-subzone. The subzone corresponds in general to the zone *Mactra eichwaldi* — *Plicatiforma plicata* from the other sequence.

Cryptomacra pseudotellina range-zone. In general the zone corresponds to the Lower Bessarabian and to *Mactra vitaliana pallasii* zone from the other sequence, but the exact correlation of their lower and upper boundaries is disputable.

Cryptomacra pesanensis interval-zone. In general the zone corresponds to the Middle and Upper Bessarabian and to the *Plicatiforma fittoni fittoni* zone from the other sequence. Characteristic taxa are *Cryptomacra pesanensis* (MAYER), *Chartocardium barboti* (HOERNES), *Plicatiforma fittoni rustovense* (SULTANOV), *Obsoletiforma michailovi* (TOULA), *O. pseudosemisulcata* (ANDRUSOV).

Mactra timida range-zone. The zone corresponds to the Lower Chersonian and to the *Mactra balcica* interval-subzone from the other sequence.

The pelitic Middle Chersonian sediments lack characteristic zonal molluscs, but only rare Chersonian *Mactra* (principally *Mactra caspia* EICHWALD). The Upper Chersonian corresponds also to a barren-interzone.

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