

BIOSTRATIGRAPHIC VALUE OF THE TAXA *ZAGRABICA*, *RADIX* AND *MELANOIDES* IDENTIFIED IN THE NEOGENE DEPOSITS FROM THE DACIC BASIN

Rodica MACALEȚ¹

Abstract. In this paper, the biostratigraphical ranges of three genera, *Zagrabica*, *Radix* and *Melanoides*, are described. We focused on two major events, Middle Pontian (Portaferrian) and Lower Dacian (Getian), respectively, when the greatest populational (as biomass) development of those genera (*Zagrabica*, *Radix* and *Melanoides*) occurred. In change, another genus, *Melanoides*, has a restricted range, only during Dacian interval of time (Lower and Upper Dacian).

Keywords: Dacic Basin, Pontian, Dacian, Romanian, Biostratigraphy, Gastropod.

INTRODUCTION

In the detailed biostratigraphy of the Neogene deposits, besides other gastropod genera from the Neogene of the Dacic Basin (*Viviparus*, *Melanoides*, *Bulimus* and *Theodoxus*, important for the Pontian - Romanian deposits), the genera *Zagrabica*, *Radix* and *Melanoides* have a special biostratigraphic significance.

In the Middle Pontian (Portaferrian) the first appearance of the genera *Zagrabica* and *Radix* in the Dacic Basin could be remarked. At this stratigraphic level the specimens of the genera *Zagrabica* and *Radix* are quite numerous; but the statement is true only for the Portaferrian formations, developed in the Getic Depression area. In the Valahian Depression, although the presence of the two genera could be remarked, the number of the specimens is decreasing dramatically.

THE PONTIAN DEPOSITS

In the succession of the Middle Pontian, outcropping on the Prigoria Valley (Prigoria village, district Gorj), in the second lower part of the stratigraphic succession, a packet of silty clays was identified (Fig. 1). From this lithological level a rich fossiliferous assemblage, represented by the gastropod taxa *Zagrabica*, *Radix*, *Bulimus*, *Viviparus*, *Melanopsis* and *Hydrobia* was recovered. These gastropods (*Zagrabica naticina* BRUSINA, *Radix* aff. *lytostomopsis* (BRUSINA), *Radix magnifica* MACALEȚ, *Viviparus moskoni* LUBENESCU, *Melanopsis (Melanopsis) decollata* STOLICZKA) are associated with numerous bivalve species, as: *Limnocardium (Tauricardium) petersi* (HOERNES), *Limnocardium (Euxinocardium) nobile* SABBA, L. (*E.) saccellum* PAPAIANOPOL, *Plagiodacna carinata* (DESHAYES), *P. dacica* PAPAIANOPOL, *Chartoconcha asaphiopsis* (BRUSINA), *Ch. candida* PAPAIANOPOL, *Parvidacna planicostata* STEVANOVIC, *Zamphiridacna portaferria* PAPAIANOPOL, *Pontalmyra (Pontalmyra) dacica* PAPAIANOPOL, *Pseudocatillus pseudocatillus* (BARBOT), *Congeria (Mytilopsis) turgida*

BRUSINA, *Dreissena (Modiolodreissena) simplex* (BARBOT).

The Portaferrian deposits are well exposed also in the basin of the Argeș Valley. On the Gogoreasca Valley (right confluence with the Argeșel Valley), over a coal bed (considered to represent the Coal Bed II from the region), follow sands with sandy clays and sandstones (Fig. 2). In these deposits *Radix* aff. *jaksici* (BRUSINA) was found in association with *Prosodacnomya sabbae* ANDREESCU, *Psilunio (Psilunio) botenicus* PAVNOTESCU, *Dreissena (Modiolodreissena) simplex* (BARBOT), *Congeria (Mytilopsis) argesiensis* PAPAIANOPOL, *Congeria (Mytilopsis) botenica* ANDRUSOV, *C. (M.) muscelensis* PAPAIANOPOL, *Lithoglyphus rumanus* SABBA,

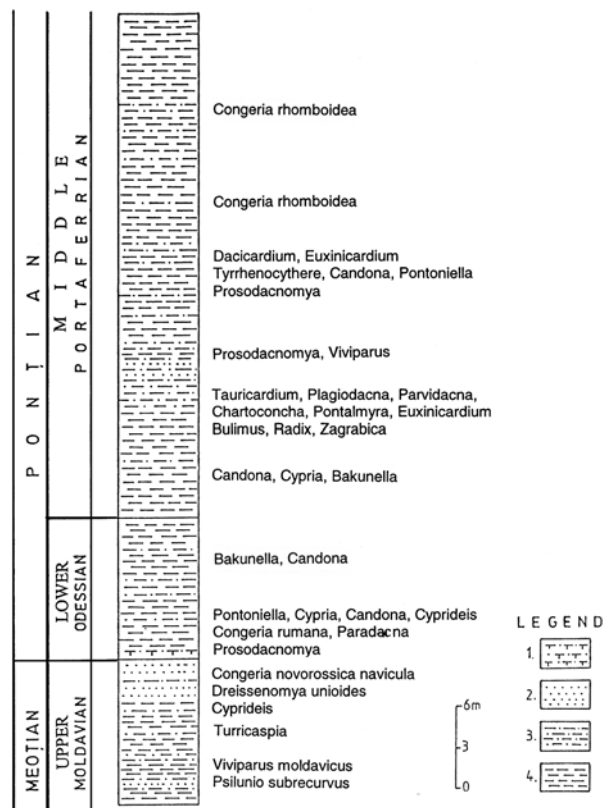


Fig. 1. Stratigraphic column of the Upper Meotian (Moldavian), Lower Pontian (Odessian) and Middle Pontian (Portaferrian) from Prigoria Valley (Prigoria village). Legend: 1 – sandstone, 2 – sand, 3 – sandy clay, 4 – clay.

¹ National Institute of Hydrology and Water Management, Bucuresti-Ploiesti Street 97, Bucharest, Romania

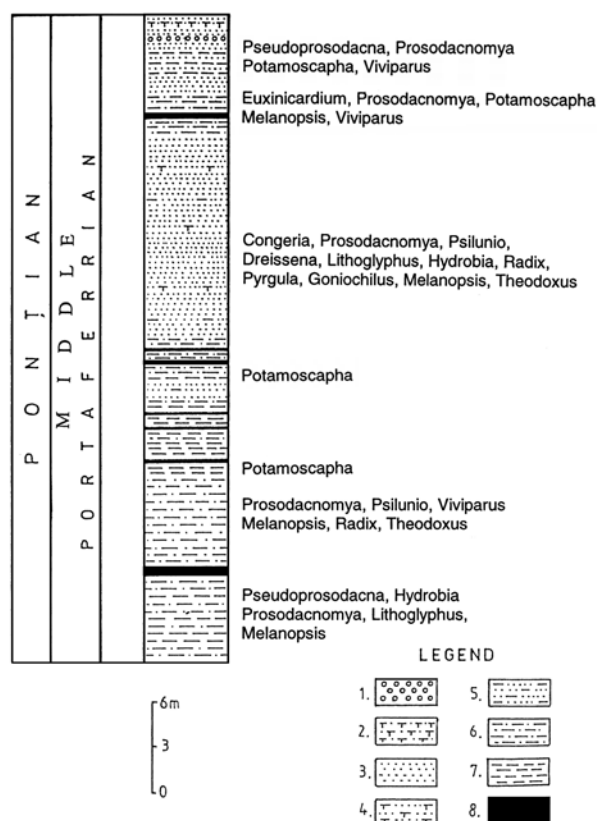


Fig. 2. Stratigraphic column of the Middle Pontian (Portaferrian) from Gogoreasca Valley (Boteni village, Argeș district). Legend: 1 – gravel, 2 – sandstone, 3 – sand, 4 – slightly consolidated gritty sand, 5 – clayey sand, 6 – sandy clay, 7 – clay, 8 – coal.

Hydrobia aff. *spicula* SABBA, *Goniochilus* sp., *Melanopsis* (*Melanopsis*) *decollata* STOLICZKA, *Theodoxus* sp., *Pyrgula boteniensis* WENZ.

One of the most representative sections with outcropping Portaferrian deposits in which specimens of *Zagrabica* and *Radix* genera were identified, is that from the Trăistarului Valley (Marlogea village, Prahova district). Here, the lower part of the Portaferrian is represented by clays with *Caladacna*, *Limnocardium*, *Phyllocardium* and *Viviparus*, overlain by sands with *Zagrabica naticina* BRUSINA and *Radix unica* MACALEȚ existing in association with *Limnocardium* (*Tauricardium*) *petersi* (HÖRNES), *Limnocardium* (*Euxinocardium*) *nobile* SABBA, L.

Table 1. The stratigraphic distribution of *Zagrabica* in the Pontian and Dacian deposits of the Dacic Basin

od = Lower Pontian (Odessian), pf = Middle Pontian (Portaferrian), bf = Upper Pontian (Bosphorian), gt = Lower Dacian (Getian), pv = Upper Dacian (Parscovian)

Nr. crt.	SPECIES	PONTIAN			DACIAN	
		od	pf	bf	gt	pv
1	<i>Zagrabica naticina</i> BRUSINA		+			
2	<i>Zagrabica ampullacea</i> BRUSINA		+			
3	<i>Zagrabica maceki</i> BRUSINA		+			
4	<i>Zagrabica reticulata</i> SABBA			+	+	
5	<i>Zagrabica carinata</i> ANDRUSOV			+	+	
6	<i>Zagrabica magnifica</i> MACALEȚ				+	
7	<i>Zagrabica ornata</i> MACALEȚ				+	
8	<i>Zagrabica unica</i> MACALEȚ				+	

(*E.*) *amicorum* ANDRUSOV, L. (*E.*) *villicum* PAPAIAPOPOL, *Parvidacna planicostata* STEVANOVIC, *Phyllocardium stevanovici* MARINESCU, *Plagiodacna carinata* (DESHAYES), *P. dacica* PAPAIAPOPOL, *Chartoconcha asaphiopsis* (BRUSINA), *Ch. candida* PAPAIAPOPOL, *Pseudocatillus pseudocatillus* (BARBOT), *Ps. morigerus* PAPAIAPOPOL et PAVNOTESCU, *Pontalmyra* (*Pontalmyra*) *concinna* PAPAIAPOPOL, *P. (P.) dacica* PAPAIAPOPOL, *P. (P.) monticola* PAPAIAPOPOL, *Zamphiridacna portaferrica* PAPAIAPOPOL, *Paradacna retowskii* ANDRUSOV, *Congeria* (*Mytilopsis*) *turgida* BRUSINA, *Dreissena* (*Modiolodreissena*) *simplex* (BARBOT), *Lithoglyphus rumanus* SABBA, *Viviparus moskoni* LUBENESCU, *Melanopsis* (*Melanopsis*) *decollata* STOLICZKA, *Pyrgula prahovens* PAPAIAPOPOL et MACALEȚ.

At the level of the Upper Pontian (Bosphorian) the appearance of the genera *Radix* and *Zagrabica* could be identified on several sections, which can be followed in the diapiric fold area from the East Muntenia.

On the Vaca Valley (Sângeru village, Prahova district) the species *Zagrabica carinata* ANDRUSOV is present in the uppermost Pontian, in a sandy clay level, together with a bivalve fauna represented by the genera: *Limnocardium*, *Phyllocardium*, *Pontalmyra*, *Pseudocatillus*, *Caladacna*, *Dreissenomya*.

Rare specimens of *Radix* were observed as a singular appearance, on the Călugărului Valley, in the Upper Pontian.

THE DACIAN DEPOSITS

The two genera (*Radix* and *Zagrabica*) are well represented in the Dacian deposits.

Within the Lower Dacian (Getian) all the morphological types of *Zagrabica* coexist. Besides unornamented forms, as *Zagrabica magnifica* MACALEȚ, there are less ornamented species (*Zagrabica reticulata* SABBA, *Zagrabica ornata* MACALEȚ, *Zagrabica unica* MACALEȚ), as well as strongly ornamented ones (*Zagrabica carinata* ANDRUSOV) (Table 1).

Table 2. The stratigraphic distribution of *Radix* genus in the Pontian, Dacian and Romanian deposits of the Dacic Basin

od = Lower Pontian (Odessian), pf = Middle Pontian (Portaferrian), bf = Upper Pontian (Bosphorian), gt = Lower Dacian (Getian), pv = Upper Dacian (Parscovian), sn = Lower Romanian (Siensian), pd = Upper Romanian (Pelendavian)

Nr. crt.	SPECIES	PONTIAN			DACIAN		ROMANIAN	
		od	pf	bf	gt	pv	sn	pd
1	<i>Radix</i> aff. <i>lytostomopsis</i> (BRUSINA)		+					
2	<i>Radix</i> aff. <i>jaksici</i> (BRUSINA)		+					
3	<i>Radix</i> <i>papaianopoli</i> MACALET		+					
4	<i>Radix</i> <i>altus</i> MACALET		+					
5	<i>Radix</i> <i>socialis</i> MACALET		+	+				
6	<i>Radix</i> <i>amaradicus</i> MACALET				+			
7	<i>Radix</i> <i>berbestiensis</i> MACALET				+			
8	<i>Radix</i> <i>bogdanensis</i> MACALET				+			
9	<i>Radix</i> <i>marinescui</i> MACALET				+	+		
10	<i>Radix</i> <i>podarensis</i> MACALET							+

The Lower Dacian represents an important moment for the evolution of the genus *Radix* (Table 2) in the Dacic Basin. This moment is represented by a high specific radiation. All the *Radix* species from the Lower Dacian are new, different from those known within the Pontian. From the four identified *Radix* species, three are distributed only in the Lower Dacian. Most of the Getian species of *Radix* could be related to the

formations of this age, developed in the Getic Depression area, especially between the Olt Valley (to the east) and the Jiu Valley (to the west).

In the Lower Dacian (Getian) section from the Valea Mare (Bengești village, Gorj district), a reference section of the Getian from the Dacic Basin (Fig. 3), the species *Zagrabica reticulata* SABBA, *Zagrabica carinata* ANDRUSOV, *Zagrabica magnifica* MACALET and *Radix bogdanensis* MACALET were found in a sandy clay level, together with *Pachydacna* (*Pachydacna*) *acuticostata* PAPAIANOPOL, *P. (P.) mirabilis* (TEISSEYRE), *P. (P.) rumana* PAPAIANOPOL, *Limnocardium* (*Tauricardium*) *olteniae* (IONESCU-ARGETOIA), *Dacicardium rumanum* (FONTANNES), *D. dacianum* (PAPAIANOPOL), *Prosodacna* (*Prosodacna*) *longiuscula gilletteae* MOTAS, *Pontalmyra* (*Pontalmyra*) *amaradica* PAPAIANOPOL, *P. (P.) bengestiensis* PAPAIANOPOL, *Dreissena* (*Modiolodreissena*) *rimestiensis* FONTANNES, *Bulimus* (*Tylopoma*) *speciosus* (COBALCESCU), *B. (T.) bengestiensis* (FONTANNES), *Melanoides conicus* MACALET.

It seems that the *Zagrabica* genus disappeared at the end of the Lower Dacian.

Within the Upper Dacian (Parscovian) the single species observed so far is *Radix marinescui* MACALET.

THE ROMANIAN DEPOSITS

In the Lower Romanian (Siensian) deposits, richly fossiliferous in the eastern Muntenia, the species of the *Radix* genus were not recorded so far; in the Upper Romanian formations, the genus *Radix* is a paleontological rarity. Until now I identified the presence of the genus in a single fossiliferous site, at Podari, on the right bank of the Jiu Valley (Dolj district). Here the species *Radix podarensis* MACALET is associated with different species of *Bulimus* (*Bulimus*) *podarensis* PANA,

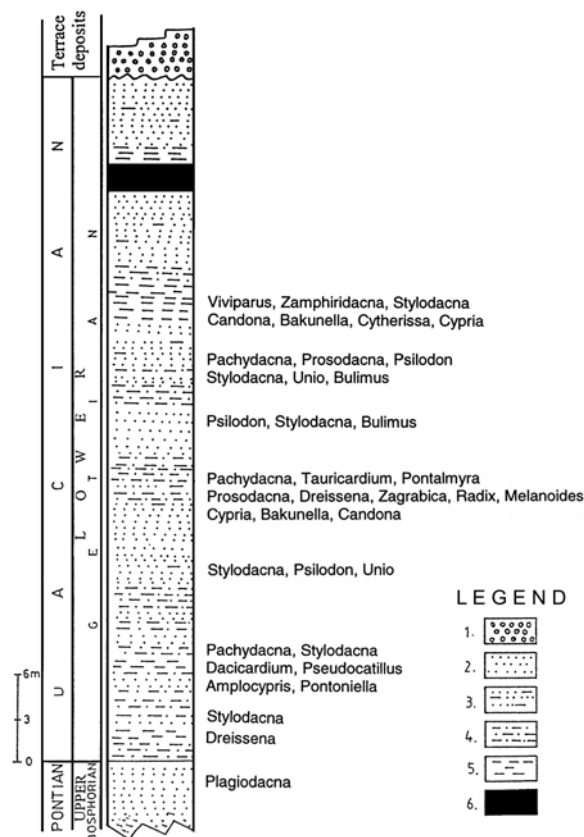


Fig. 3. Stratigraphic column of the Lower Dacian (Getian) from Valea Mare (Bengești village, Gorj district). Legend: 1 – gravel, 2 – sand, 3 – clayey sand, 4 – sandy clay, 5 – clay, 6 – coal.

Viviparus bifarcinatus (BIELZ *V. stricturatus* NEUMAYR, *Melanopsis (Melanopsis) rumana* TOURNOUER *M. (M.) correcta* SABBA, *M. (Lyrcaea) slavonica* NEUMAYR, *Stenothyrella olteniae* PANA, *Emmericia candida* NEUMAYR, *Amphimelania fossariformis* (TOURNOUER), *Theodoxus quadrifasciatus* (BIELZ), *Th. boteani* PORUMBARU.

From the gastropod genera of the Dacian, of a great importance is the genus *Melanoides*, with the first occurrence in the Lower Dacian (Getian), the last one being observed in the Upper Dacian (Parscovian) (Table 3). From the two species of

Melanoides, identified until now, *Melanoides conicus* MACALEȚ was identified in the Lower Dacian as well as in the Upper Dacian. It is necessary to remark that this species is much more abundant in the Lower Dacian (Getian), than in the Upper Dacian. It has been identified in the Getian from the Pericarpathian Avanfossa, as well as in the same interval in the Moesian Platform. As concerning the species *Melanoides abchasica* (SENINSKI), this one has been observed so far only in the Upper Dacian (Parscovian) beds of Eastern Muntenia (between the Cricovul Sărat and the Buzău valleys).

Table 3. The stratigraphic distribution of the genus *Melanoides* in the Dacian deposits of the Dacic Basin

bf = Upper Pontian (Bosphorian), gt = Lower Dacian (Getian), pv = Upper Dacian (Parscovian)

Nr. crt.	SPECIES	PONTIAN bf	DACIAN	
			gt	pv
1	<i>Melanoides conicus</i> MACALEȚ		+	+
2	<i>Melanoides abchasica</i> (SENINSKI)			+

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