



Miocene biostratigraphy and paleoecology of the Mistelbach Halfgraben in the northwestern Vienna Basin (Lower Austria)

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7 Text-Figures, 4 Tables, 3 Plates

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24 Mistelbach / NM 33-12-14 Mistelbach

25 Poysdorf / NM 33-12-08 Laa an der Thaya

26 Hohenau an der March / NM 33-12-09 Hohenau an der March

42 Gänserndorf

Vienna Basin
Mistelbach Block
Neogene
Miocene
Micropaleontology

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Abstract

We present an updated biostratigraphy of the Neogene of the Mistelbach Halfgraben in the northwestern Vienna Basin. Foraminiferal assemblages from 15 boreholes were analyzed in terms of biostratigraphy and paleoecological significance. All samples were integrated in a 3D seismic survey provided by the OMV-AG. This allowed also the stratigraphic interpretation of biostratigraphically insignificant assemblages. In addition, macrofossils (molluscs, bryozoans, fish otoliths) were identified to strengthen paleoecological interpretations.

Two major erosional features were detected in seismic data within the investigation area and are herein termed "Ginzersdorf Channel" and "Mistelbach Canyon". Both structures represent submarine drainage systems into the North Alpine-Carpathian Foreland Basin, which developed during the late Karpatian (Ginzersdorf Channel) and the early Badenian (Mistelbach Canyon). Statistical analyses of the foraminiferal assemblages reveal considerable differences between Ottnangian, Karpatian, early Badenian, middle/upper Badenian and Sarmatian assemblages. These are mainly related to different paleoenvironments, which range in the Mistelbach Halfgraben from outer neritic-upper bathyal settings of the Ottnangian to hypersaline lagoons and mudflats of the Sarmatian.

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Miozäne Biostratigrafie und Paläoökologie des Mistelbach-Halbgrabens im nordwestlichen Wiener Becken (Niederösterreich)

Zusammenfassung

Wir präsentieren eine überarbeitete Biostratigrafie des Neogens des Mistelbach Halbgrabens am Nordwestrand des Wiener Beckens. Foraminiferen-Vergesellschaftungen von 15 Bohrungen wurden biostratigrafisch und paläoökologisch analysiert. Alle Proben wurden in eine 3D-Seismik des Untersuchungsgebietes integriert, die von der OMV-AG bereitgestellt wurde. Dadurch konnten auch jene Proben stratigrafisch interpretiert werden, deren biostratigrafische Signifikanz gering war. Zusätzlich wurden alle Makrofossilien (Mollusken, Bryozoen, Fisch-Otolithen) identifiziert, um die paläoökologischen Interpretationen zu unterstützen.

Zwei große erosive Strukturen konnten in der Seismik identifiziert werden, die hier als „Ginzersdorf Channel“ und „Mistelbach Canyon“ bezeichnet werden. Beide Einheiten werden als submarine Entwässerungssysteme interpretiert, die im späten Karpatium (Ginzersdorf Channel) und dem frühen Badenium (Mistelbach Canyon) in die Nordalpin-Karpatische Vortiefe reichten.

Statistische Analysen zeigen deutliche Unterschiede der Foraminiferen-Vergesellschaftungen aus dem Otnangium, Karpatium, frühen Badenium, mittleren/späten Badenium und Sarmatium. Diese Unterschiede sind in erster Linie durch unterschiedliche Ablagerungsräume erklärbar, die im Bereich des Mistelbach-Halbgrabens vom äußeren Neritikum und oberen Bathyal des Otnangiums bis zu hypersalinen Lagunen und Schlammküsten des Sarmatiums reichten.

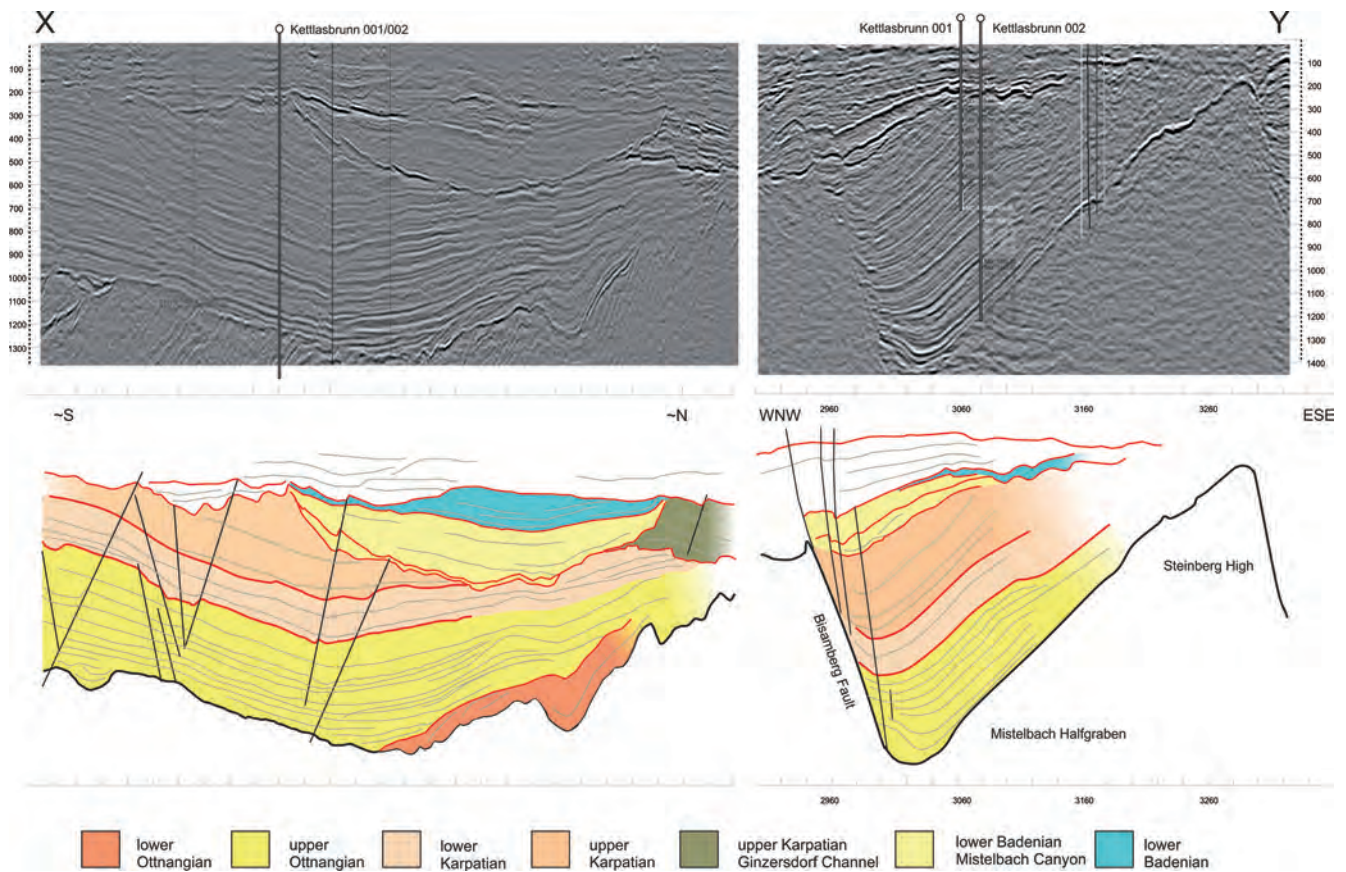
Introduction

Within a joint project between OMV-AG, Natural History Museum Vienna and University of Graz, the biostratigraphy and marine paleoenvironments of the Miocene deposits in the Mistelbach area were analyzed. The Mistelbach Block is a SW-NE oriented tectonic element along the northwestern margin of the Vienna Basin (Text-Fig. 1). Tectonically, it is a halfgraben, delimited from the Waschberg-Zdánice Unit by the Schratzenberg Fault in the west. The

Bisamberg Fault represents its southwestern boundary to the Rhenodanubian Flysch Unit. The huge Steinberg Fault forms its eastern boundary towards the deeper parts of the Vienna Basin (JANOSCHEK, 1951; WESSELY, 2006). The Mistelbach Block is an important area for the understanding of the stratigraphic and paleogeographic development of the Vienna Basin during the Miocene. The area formed a junction between the Vienna Basin and the Alpine-Carpathian Foreland Basin and acted variously as gate for marine connections and riverine discharge throughout the



Text-Fig. 1.
A: Geographic position of the investigation area (red square). B: position of the boreholes (red) superimposed on the geological map after GRILL (1968). X and Y represent seismic lines shown in Text-Figure 2.



Text-Fig. 2. Two seismic lines crossing the investigation area roughly in S–N direction (X) and WNW–ESE direction (Y); the position of the seismic lines is given in Text-Figure 1.

Miocene (JIŘÍČEK & SEIFERT, 1990). Moreover, the biostratigraphic zonation for the Vienna Basin introduced by GRILL (1941, 1943) was largely based on boreholes situated on the Mistelbach Block. Therefore, an updated biostratigraphy of the area is proposed herein based on micropaleontological investigations of cores drilled during hydrocarbon exploration. The main aim was to integrate the biostratigraphic and paleoecologic data from the cores into the 3D seismic survey provided by the OMV.

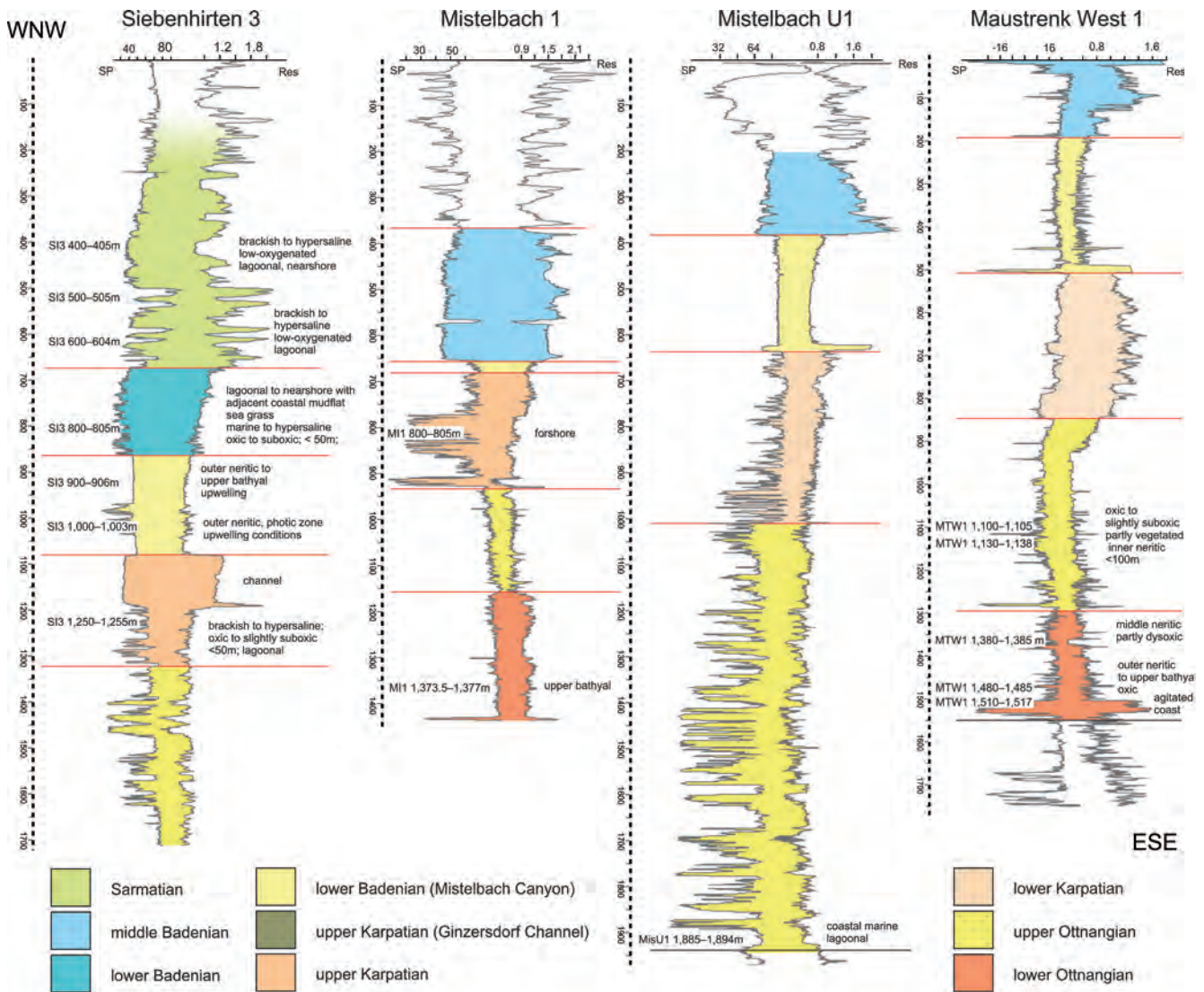
For this purpose, 15 boreholes were selected covering an area of roughly 225 km² from Hohenruppersdorf/Bad Pirawarth in the south to Poysdorf/Walterskirchen in the north and from Siebenhirten in the west to Maustrenk in the east (Text-Fig. 1).

Material and Methods

Altogether, 90 samples from 15 boreholes were processed yielding in total 21.055 foraminiferal specimens (Tab. 1); 149 additional samples turned out to be micro-sterile. The sample codes, e.g. AH1 (100–105 m) 4/1, are composed of the borehole code as used by the OMV-AG (e.g. AH1 for Althöflein 1) followed by the drilling depth of the cored interval, the core number and the core meter (both counted top down). Thus, although the sample code might suggest an interval of 5 meters, the actual sample was taken from an about 5 cm-thick sediment sample. Each sample was treated with diluted H₂O₂ for several hours and afterwards

washed with tap water and sieved through a set of standard sieves. The oven-dried samples were then split using a splitter as described in RUPP (1986). The specimens were picked and counted. Even broken and poorly preserved specimens were counted. When determination to specific or generic level was impossible, the three categories of benthic foraminifera “Hyaline”, “Miliolid and “Agglutinated” were used according to the test composition. Additionally, all occurring gastropods, bivalves, serpulids, scaphopods, polychaetes, otoliths, bryozoans and coral fragments were collected for supplementary paleoecological information (Tab. 2). The foraminifera were identified based on CICHA et al. (1998, 2003), DIDKOVSKIJ & SATANOVSKAJA (1970), GEBHARDT et al. (2009), GÖRÖG (1992), HAUNOLD (1995), JONES (1994), KENNETT & SRINIVASAN (1983), LOEBLICH & TAPPAN (1987), ŁUCZKOWSKA (1974), PAPP (1963), PAPP & SCHMID (1985), PAPP & TURNOVSKY (1953), POPESCU & CRIHAN (2004), RÖGL (1985, 1994, 1998), RÖGL & SPEZZAFERRI (2003), RUPP (1986), SCHÜTZ et al. (2007) and WENGER (1987). WoRMS database has been crosschecked for the taxonomical updates of the most common species (WoRMS EDITORIAL BOARD, 2017).

Screenshots from numerous seismic lines (x-, i-, random-lines) throughout the Mistelbach Block 3D seismic survey were provided by OMV as well as 3D-maps. Two of these are presented and interpreted in Text-Figure 2. Digitized spontaneous potential measurements (SP) and resistivity data (RES) from Althöflein 1, Ginzersdorf 1 + 2, Kettlasbrunn 1 + 2, Maustrenk West 1, Mistelbach 1, Mistelbach U1, Poysdorf 1, Siebenhirten 3, and Walterskirchen 1 were available. In addition, OMV provided scans of ana-



Text-Fig. 3. Wire logs (Spontaneous potential and resistivity) of four representative boreholes (Siebenhirten 3, Mistelbach 1, Mistelbach U1, Maustrenk West 1). The position of the samples is indicated to the left; general paleoenvironmental information is provided on the right.

logue wire-logs for Hohenruppersdorf 19 + 24 + 25 and Pirawarth U3. Ten of these are presented in Text-Figures 3 and 4.

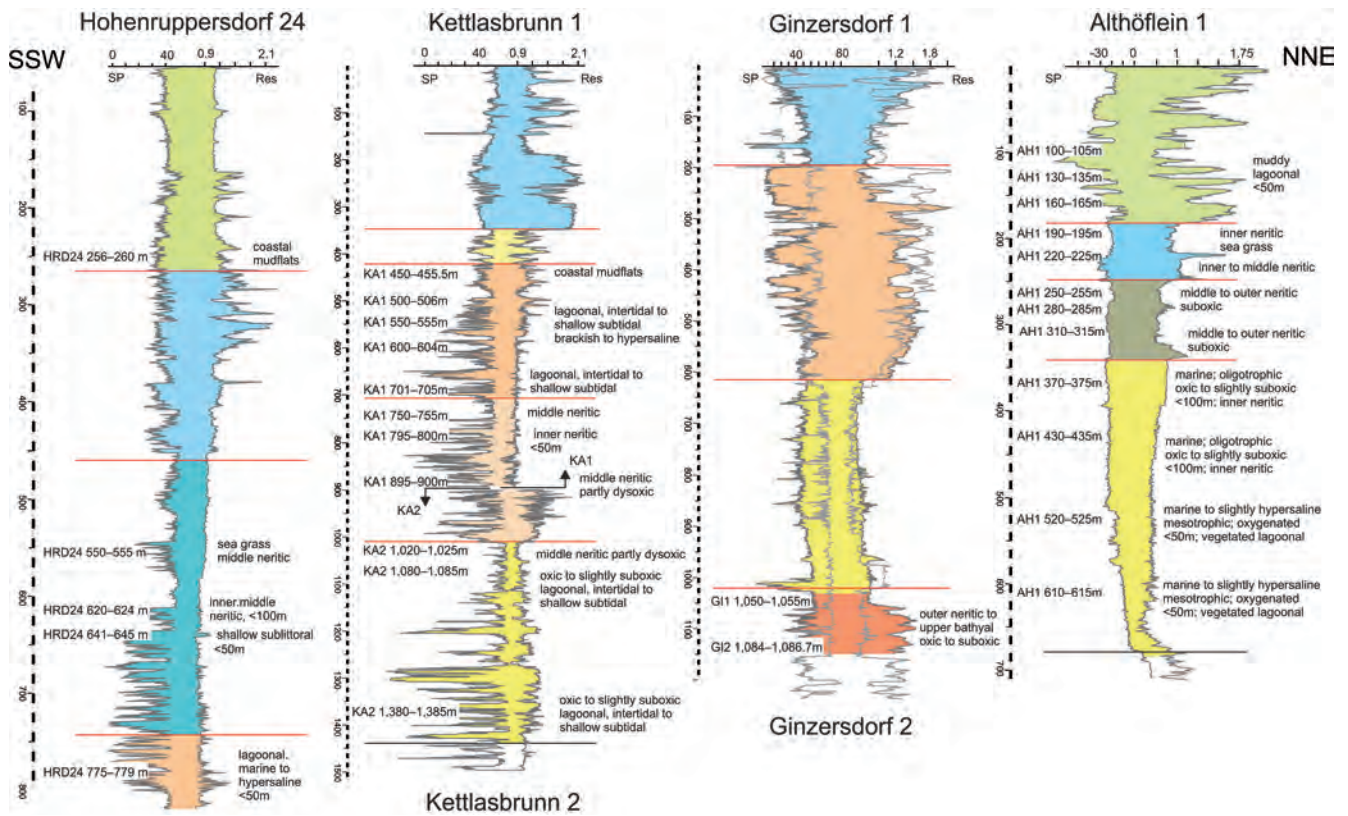
The statistical analyses were computed with the software PAST (Paleontological Statistics, version 2.17, HAMMER et al., 2001; Tab. 3). All material is stored in the paleontological collection of the Natural History Museum Vienna.

Biostratigraphic framework

The marine biostratigraphy of the Miocene of the Paratethys Sea is mainly based on foraminifera and calcareous nannoplankton (Text-Fig. 5). Due to the poor preservation and the huge amount of reworked specimens, nannoplankton turned out to be of little value in all test samples. Therefore, we focus on foraminifera, which were used to establish biostratigraphic zonations within the Paratethys since the early 20th century (see CÍCHA et al., 1998, PILLER et al., 2007 and HARZHAUSER & PILLER, 2007 for refer-

ences). For the Eggenburgian, Otnangian and Karpatian no regional zonations were proposed so far, and the existing correlations either adopt international biostratigraphic schemes and/or try to define First Appearance Datums (FADs) and Last Appearance Datums (LADs) of certain endemic taxa (e.g.: WENGER, 1987; CÍCHA et al., 1998; PIP-PÉRR, 2011; GRUNERT et al., 2013). For the Badenian and Sarmatian, a regional biostratigraphic (or better ecostratigraphic) zonation is well established and used herein as well. In the following, assemblages and marker species typical for the regional Central Paratethys stages and especially for the successions of the Vienna Basin are briefly discussed.

Late Eggenburgian–Otnangian biostratigraphy is primarily based on endemic benthic foraminiferal and mollusc species (CÍCHA & RÖGL, 1973; STEININGER et al., 1973). Traditionally, a threefold subdivision of the Otnangian exists in the North Alpine Foreland Basin and in the Vienna Basin, based on typical foraminiferal assemblages. Although CÍCHA & RÖGL (1973) and RÖGL (1985) suggest a possible correlation to the Burdigalian *Globigerinoides trilobus* Zone of the Mediterranean (sensu IACCARINO, 1985), planktic fo-



Text-Fig. 4.

Wire logs (Spontaneous potential and resistivity) of six representative boreholes (Hohenruppersdorf 24, Kettlasbrunn 1 und 2, Ginzersdorf 1 und 2, Althöflein 1). The position of the samples is indicated to the left; general paleoenvironmental information is provided on the right (same legend as in Text-Figure 3).

raminiferous assemblages of the Ottnangian are generally of little significance for biostratigraphy (RÖGL, 1985). Only the base of the Ottnangian seems to coincide with the FAD of the endemic species *Cassigerinella spinata* (CICHA et al., 1998). Among the benthic species, *Amphicoryna ottnangensis* is a well-established marker for the early Ottnangian (CICHA & RÖGL, 1973; WENGER, 1987; CICHA et al., 1998; RUPP & HAUNOLD-JENKE, 2003). It has its FAD at the Eggenburgian/Ottnangian boundary and lasts until the earliest middle Ottnangian. Another species often used in Ottnangian biostratigraphy is *Sigmoilopsis ottnangensis*. Based on records from the North Alpine Foreland Basin, it has its FAD during the late Eggenburgian and its LAD at the end of the early Ottnangian (WENGER, 1987). The FAD of *Uvigerina breviformis* has been suggested as a marker for the base of the middle Ottnangian (WENGER, 1987; CICHA et al., 1998).

Early Ottnangian offshore assemblages are characterized by *Bathysiphon taurinensis*, *Cyclammmina praecancellata*, *Haplophragmoides vasiceki*, along with *Uvigerina posthantkeni*, *Globigerinoides trilobus* and *Globigerina praebulloides* (CICHA & RÖGL, 1973; CICHA et al., 1998). *Ammonia*-dominated assemblages are reported from deltaic and estuarine, nearshore environments (KOVÁČ et al., 2004).

The separation of the late Ottnangian was originally based on a marked shift in assemblage composition towards shallow-water faunas of the so-called “*Cibicides-Elphidium-Schlier*” (GRILL, 1941, 1943, 1968). *Cibicidoides budayi*, *Lenticulina inornata*, *Cibicidoides lobatulus*, *Amphicoryna ottnangensis*, *Uvigerina breviformis*, *Bolivina fastigia* and *Bolivina tumida* along with various elphidiids are also typical in this zone (CICHA & RÖGL, 1973; CICHA et al., 1998). The microfauna of the latest part

of the Ottnangian of the northern Vienna Basin is strongly impoverished, small and dominated by *Ammonia* and in the literature referred to as “impoverished Schlier” or “Fish-Schlier” due to frequent occurrences of fish scales and bones (CICHA et al., 1998; KOVÁČ et al., 2004). Additionally, typical species of the late Ottnangian are *Sigmoilopsis ottnangensis*, *Lenticulina melvilli*, partly *Semivulvulina pectinata*, *Spirorutilus carinatus*, *Textularia gramen*, *Quinqueloculina buchiana*, *Spirosigmoilina tenuis*, *Triloculina* sp., *Ammonia viennensis*, *Amphimorphina haueriana*, *Bolivina hebes*, *Bolivina dilatata*, *Bolivina scitula*, *Bulimina elongata*, *Caucasina schischkinskayae*, *Elphidium angulatum*, *Elphidium macellum*, *Elphidium subtypicum*, *Elphidium ungeri*, *Fontbotia wuellerstorfi*, *Globulina gibba*, *Guttulina communis*, *Heterolepa dutemplei*, *Laevidentalina communis*, *Lagena striata*, *Melonis affinis*, *Melonis pompilioides*, *Porosonion granosum*, *Reussella spinulosa*, *Sphaeroidina bulloides* (CICHA et al., 1971, 1998; GRUNERT et al., 2012, 2013) along with planktonic foraminifera, such as *Globigerina ottnangiensis* (CICHA & RÖGL, 1973). Obviously, this shift in assemblages reflects mainly a change in regional paleoenvironment and its biostratigraphic significance on a larger scale might be doubtful.

The Karpatian assemblages display a transitional composition between the Ottnangian and early Badenian (CICHA et al., 2003). Since many typical Ottnangian species persist into the Karpatian (e.g. *Reticulophragmium karpaticum*, *Semivulvulina pectinata*, *Elphidium subtypicum*, *Fontbotia wuellerstorfi*; WENGER, 1987), it is difficult to differentiate between the two stages. Higher individual numbers and increased diversity of benthic foraminiferal species distinguish Karpatian from Ottnangian samples (CICHA & ZAPLETALOVÁ, 1967). Separating Karpatian assemblages from early Badenian ones may also be difficult. A reliable separation is based on

	Chronostratigr.		Central Paratethys	Eco/bio-zones	Lithostratigraphy
	Series	Stage	Stage	Foraminifera	
Middle Miocene	11.62	Serravallian	Sarmatian	<i>Parasononion granosum</i>	Skalica Fm.
				<i>Elphid. hauerinum</i> <i>Elphid. reginum</i> <i>Anomalinoidea</i>	Holič Fm.
	13.82	Langhian	Badenian	upper <i>Bulimina-Bolivina</i>	Studienka Fm.
				middle <i>Spirorutilus</i>	Jakubov Fm.
15	Langhian	Badenian	lower Upper Lagenidae	Lanzhot Fm.	
			Lower Lagenidae		
Lower Miocene	15.97	Burdigalian	Karpatian	<i>Uvigerina graciliformis</i>	Závod Fm.
			Ottnangian	<i>Cibicides-Elphidium</i> <i>Bathysiphon</i>	Lakšary Fm.
					Lužice Fm.

Text-Fig. 5.

Lower and Middle Miocene chronostratigraphy and biostratigraphy of the Central Paratethys and major lithostratigraphic units of the Vienna Basin; modified from HARZHAUSER & PILLER (2004a), KOVÁČ et al. (2004), PILLER et al. (2007) and PEZELJ et al. (2013) (note that stratigraphic gaps between the lithostratigraphic units are not shown).

the first appearance of the planktonic genus *Praeorbulina* at the base of the Badenian (CICHA et al., 2003, but see HOHENEGGER et al., 2014). In addition, higher percentages of planktonic species in general and a strong increase in diversity characterize early Badenian assemblages (CICHA & ZAPLETALOVÁ, 1967; CICHA et al., 2003). Benthic species are often larger than their Karpatian representatives (CICHA et al., 2003). *Uvigerina graciliformis* is considered to be a marker for the base of the Karpatian (CICHA & ZAPLETALOVÁ, 1967; CICHA et al., 2003; KOVÁČ et al., 2004; PETROVÁ, 2004; RÖGL et al., 2003; SPEZZAFERRI et al., 2002). Assemblages containing *Bulimina elongata*, *Caucasina schischkinskayae*, *Globigerina ottnangiensis*, *Globorotalia scitula*, *Uvigerina acuminata*, *U. graciliformis*, *U. breviformis* and *U. primiformis* together with elphidiids and agglutinated species are characteristic for the neritic early Karpatian. The appearance of *Globigerinoides bisphericus* is used as marker for the late Karpatian (SENEŠ, 1971; SPEZZAFERRI et al., 2002; RÖGL et al. 2003). Late Karpatian shallow-water faunas as reported from the Austrian Korneuburg Basin by RÖGL (1998) contain *Ammonia*, *Porosonion*, and *Elphidiella* in more hypersaline inner neritic assemblages and *Ammonia*, *Elphidium*, *Nonion*, *Reussella*, *Caucasina*, *Hanzawaia* as well as small globigerinids in fully marine, inner neritic environments.

Typical assemblages for this interval comprise *Reticulophragmium karpaticum*, *Uvigerina primiformis*, *Uvigerina breviformis*, *Uvigerina graciliformis*, *Elphidium macellum* and *Elphidium fichtelianum* (CICHA & ZAPLETALOVÁ, 1967; RÖGL, 1998; CICHA et al., 2003) co-occurring with the ubiquitous species *Bathysiphon taurinensis*, *Cyclammina karpatica*, *Semivulvulina pectinata*, *Textularia gramen*, *Ammonia viennensis*, *Biasterigerina planorbis*, *Bolivina dilatata*, *Bolivina hebes*, *Bulimina buchiana*, *Bulimina elongata*, *Caucasina schischkinskayae*, *Cibicoides lopjanicus*, *Cibicoides ungerianus*,

Globulina gibba, *Globigerinoides bisphericus*, *Globigerina praebulloides*, *Globigerina tarchanensis*, *Globigerinoides trilobus*, *Hansenisca soldanii*, *Heterolepa dutemplei*, *Laevidentalina elegans*, *Lenticulina inornata*, *Lenticulina melvilli*, *Lenticulina orbicularis*, *Marginulina hirsuta*, *Pullenia bulloides*, *Siphonina reticulata*, *Siphonodosaria consobrina*, *Uvigerina acuminata*, *Uvigerina semiornata* and *Valvulinera complanata*.

For the Badenian of the Vienna Basin a threefold ecostratigraphic subdivision was developed by GRILL (1941, 1943), which was refined later by numerous authors (see CICHA et al., 1998, 2003). The three biozones are: the Lagenidae Zone, the *Spirorutilus* Zone (= *Spiroplectammina* and Sandschaller Zone in older literature) and the *Bulimina-Bolivina* Zone, respectively. The fauna of the Lower Lagenidae Zone is related to the Karpatian one but more diverse. *Uvigerina macrocarinata* and *Praeorbulina glomerata circularis* are markers for the Lower Lagenidae Zone (PAPP, 1963; PAPP et al., 1978). Typical assemblages of this biozone contain members of the Nodosariacea (such as the genera *Lenticulina*, *Dentalina*, *Laevidentalina*, *Nodosaria*, *Neugeborina*, *Plectofrondicularia*, *Amphimorphina*, *Amphicoryna*, *Vaginulina*, *Plectofrondicularia*, *Lagena*, *Glandulina*, *Globulina*, *Fissurina*, *Guttulina* and others) and Buliminacea (genera: *Bulimina*, *Praeglobobulimina*, *Uvigerina*, *Reussella*) together with different bolivinids, *Elphidium flexuosum* and often planktonic foraminifera like *Praeorbulina glomerata circularis*, *Globigerina praebulloides*, *Globigerinella obesa* and small globorotaliids (PAPP et al., 1978; CICHA et al., 1998; RÖGL & SPEZZAFERRI, 2003).

The Upper Lagenidae Zone is characterized by an optimum of the foraminiferal fauna and a rich plankton assemblage with *Orbulina suturalis*, *Globigerina bulloides*, *Globigerina diplostoma*, *Globigerina concinna*, *Globigerinella regularis* and many others (PAPP et al., 1978; CICHA et al., 1998; BÁLDI & HOHENEGGER, 2008; RUPP & HOHENEGGER, 2008). In more marginal de-

posits Miliolacea are also frequent (e.g. *Quinqueloculina haidingeri*, *Qu. buchiana*, *Qu. laevigata*, *Pyrgo simplex*, *Triloculina* spp., *Spiroloculina* spp., *Peneroplis* spp., *Borelis melo*). Especially the occurrence of *Orbulina* is an important tie point because its FAD is dated at 15.1 Ma (WADE et al., 2011) in the Caribbean. Note, however, that in the Mediterranean its FOD is recorded distinctly later at 14.56 Ma (IACCARINO et al., 2012).

The *Spirorutilus* Zone is characterized by several species of the genera *Amphistegina*, *Heterostegina*, *Elphidium*, *Cibicidoides*, *Bulimina*, *Bolivina*, *Uvigerina* (esp. *U. venusta*), *Spirorutilus carinatus*, *Textularia*, *Martinottiella*, *Cyclammina*, *Haplophragmoides* (RUPP, 1986). The planktonic foraminifera are represented by species persisting from the Lagenidae Zone along with *Globigerinoides quadrilobatus* (PAPP et al., 1978; CÍCHA et al., 1998). This ecozone seems to be slightly diachronous and it might reflect the progradation of marginal-deltaic facies during the middle Badenian in the Vienna Basin (own observations, MICHAL KOVÁČ pers. comm., 2014).

The *Bulimina-Bolivina* Zone shows a comparatively impoverished, less diverse fauna. Along with the name-giving genera, smaller individuals of *Cibicidoides*, *Quinqueloculina*, *Elphidium*, *Uvigerina*, *Pavonitina* and *Globigerina* are typical. Nodosariacea are rare. Often only assemblages with *Ammonia* and *Elphidium*, sometimes together with *Porosonion granosum*, *Cibicidoides* and *Quinqueloculina* occur (PAPP et al., 1978; CÍCHA et al., 1998). Among the molluscs, *Vitta tuberculata* is an important marker of the upper Badenian (ŠVAGROVSKÝ, 1964, 1982) and frequently detected in core samples.

The Sarmatian assemblages show significant changes in their composition due to the extinction event at the Badenian/Sarmatian boundary (HARZHAUSER & PILLER, 2007). The early Sarmatian spans the *Elphidium reginum* and *hauerinum* Zones and the late Sarmatian *Porosonion granosum* Zone of the foraminiferal zonation (GRILL, 1941; HARZHAUSER & PILLER, 2004a, b). New sculptured elphidiids developed, like *Elphidium reginum*, *E. aculeatum*, *E. josephinum*, *E. grilli*, *E. subumbilicatum*, *E. fichtelianum* and *E. koberi*. In general, the Sarmatian assemblages are composed of elphidiid and miliolid representatives as well as *Ammonia* spp. Typical assemblages for this stage are shown in GÖRÖG (1992), SCHÜTZ et al. (2007) and GEBHARDT et al. (2009). In addition, the endemic evolution of molluscs allows a biozonation of the Sarmatian (HARZHAUSER & PILLER, 2004b). Of these, only the *Mohrensternia* Zone (= *Elphidium reginum* Zone) and maybe the *Ervilia* Zone (= *E. hauerinum* and lower *Porosonion granosum* zones) are represented in the cores.

Paleoecological framework

For the paleoenvironmental analysis benthic foraminifera were grouped (Tab. 4 and references therein) according to their bathymetric distribution, dependency of bottom water oxygenation and microhabitat preferences. Taxa, which can be used as markers for environmental stress and organic matter flux, were also evaluated. Planktonic foraminifera were used as paleoclimatic indicators.

Referring to KAIHO (1994) the following nomenclature for dissolved-oxygen levels is used: oxic (> 1.5 ml/l), suboxic (0.3–1.5 ml/l), dysoxic (0.1–0.3 ml/l). Numerous papers focus on benthic foraminiferal microhabitats and possible

factors limiting the vertical depth distribution of meiobenthos in the sediment profile (JORISSEN et al., 1995; KAIHO, 1994; VAN DER ZWAAN et al., 1999; numerous references therein). According to these authors, the assemblages are mainly controlled by two antagonizing parameters: oxygen and food availability. In well-oxygenated but food-limited systems, foraminiferal communities are restricted to the surficial sediments. Hence, the communities consist of mainly epifaunal or surface dwelling taxa adapted to oligotrophic environments. In eutrophic environments, the vertical occurrence of most taxa depends on the critical level of oxygen present within the sediment. Nutrients are not limiting, as the amount of organic matter in subsurface sediment layers is high. The foraminiferal assemblage is dominated by infaunal taxa. In the intermediate mesotrophic situation, enough organic matter is available and the oxygen penetration depth is moderate.

Planktonic foraminifera can be used to evaluate paleoclimatic conditions regarding surface water temperature (BICCHI et al., 2003; KENNETT & SRINIVASAN, 1983; LI et al., 1999; RUPP & HOHENEGGER, 2008; SPEZZAFERRI, 2004). Typical indicators for cool waters are *Globigerina* and *Turborotalita*; *Globorotalia* and *Globoturbotalita* indicate temperate waters; warm-temperate waters are often associated with *Globigerinella*. Warm surface waters are reflected by the occurrences of *Globigerinoides*, *Globoquadrina* and *Orbulina*. Planktonic foraminifera are sensible to productivity and nutrient input. Thus, *Globigerina bulloides*, *G. praebulloides* and the small, 5-chambered *G. tarchanensis* are reported to prefer environments with higher productivity and may therefore indicate an increased input of nutrients (HEMLEBEN et al., 1989; HILBRECHT, 1996; RÖGL & SPEZZAFERRI, 2003; SPEZZAFERRI, 2004; RUPP & HOHENEGGER, 2008). *Globigerinella obesa* is an element of deeper water layers (HILBRECHT, 1996; NIKOLAEV et al., 1998) under warm-temperate conditions. Since *Globorotalia scitula* is known to dwell in deeper water layers (HILBRECHT, 1996; ITOU et al., 2001) the *Globorotalia* group might generally reflect deeper water habitats. Similarly, *Globoturbotalita* might prefer deeper water layers (NIKOLAEV et al., 1998). Cancellated relatives of *Globoquadrina altispira* are typical warm water elements found in more tropical oceans (BÉ & HUTSON, 1977) and generally, *Globoquadrina* is associated with intermediate water depths (NIKOLAEV et al., 1998).

Results

Based on the data on biostratigraphy and paleoecology as outlined above, the samples were analyzed according to their composition and paleoenvironmental parameters. For most samples, this allows an evaluation of the depositional environment and a biostratigraphic correlation. Since some samples contained few and/or only ubiquitous species it was ambiguous to determine their age. In these cases, the assumptions were counter-checked with the associated mollusc assemblages. In addition, several major seismic units have been identified within the Mistelbach area, which are bound by erosional surfaces and strong seismic reflectors (Text-Figs. 2–4). All these sedimentary units have been drilled by at least one borehole and covered by several samples. Therefore, all samples can be integrated into the seismic survey, which allows correlation

of biostratigraphically insignificant but paleoecologically important samples.

An update of the lithostratigraphy of the area is beyond the scope of this paper and will be presented elsewhere. Herein, we adopt the lithostratigraphic scheme of KOVÁČ et al. (2004) with some modifications: lower and upper Ottnangian = lower and upper Lužice Formation, lower Karpatian = Lakšary Formation, upper Karpatian = Závod Formation (both corresponding to the Laa Formation in the North Alpine Foreland Basin, NAFB), lower/middle/upper Badenian = Lanžhot, Jakubov and Studienka Formations, lower Sarmatian = Holič Formation, upper Sarmatian = Skalica Formation. Two additional lithostratigraphic units are recorded for the first time in the Mistelbach area, which lack formal descriptions so far. An upper Karpatian unit represents the infill of a channel, detected mainly in the Ginzersdorf/Althöflein region. The structure is termed Ginzersdorf Channel herein (Text-Fig. 2). The second, lower Badenian unit represents the infill of an up to 500 m-deep canyon structure, detected especially in the Mistelbach area (Text-Fig. 2). Seismic data reveal it as tributary linked to the Iván Canyon at the junction from the North Alpine Foredeep to the Carpathian Foredeep (DELLMOUR & HARZHAUSER, 2012). Herein, we term this structure Mistelbach Canyon.

In the following, the paleoecological and paleoenvironmental interpretations of the assemblages as listed in Table 3 are summarized for representative samples and the stratigraphic correlations are outlined for each sample. In some cases, the age assignment is based on the relative stratigraphic position of the sample within the seismic units. Plates 1 and 2 illustrate several characteristic foraminiferal species and Plate 3 presents typical macrofossils, discussed in the following.

The following sequence of samples is based on their position within the 3D seismic survey and the boreholes (Text-Figs. 3–4), starting with the stratigraphically lowest sample.

Maustrenk West 1 MTW1 (1,510–1,517 m) 13/213/7: poorly sorted sand and gravel with pectinids (*Pecten hornensis*) and cellemorphid bryozoans. The composition is highly reminiscent of the Retz and Zogelsdorf Formations along the Bohemian Massif (ROETZEL & SCHNABEL, 2002) and the Chropov Member in the NE part of the Vienna Basin in Slovakia (BUDAY et al., 1965; KOVÁČ et al., 2004). The depositional environment was a highly agitated shallow marine setting with numerous cellemorphids that formed during the initial transgression of the area.

Age: latest Eggenburgian or early Ottnangian based on the occurrence of *Pecten hornensis* (see MANDIĆ & STEININGER, 2003).

Lithostratigraphy: lower Lužice Formation.

Maustrenk West 1 MTW1 (1,480–1,485 m) 12/4: the 15 species found in this sample are mainly epifaunal preferring oxic bottom water conditions. *Heterolepa dutemplei* (38.1 %), *Spirorutilus carinatus* (15.5 %), *Elphidium subtypicum* (11.9 %), *Cibicidoides lopjanicus* (10.7 %) and *Semivulvulina depressa* (10.7 %) are most frequent. Infaunal species are rare and are adapted to suboxic conditions (*Fursenkoina subacuta* and *Amphicoryna ottnangensis*). The assemblage suggests an outer neritic to upper bathyal setting.

Age: late Eggenburgian/early Ottnangian based on the co-occurrence of *Cibicidoides* spp. and *Elphidium* spp., *Cyclammina bradyi* and the relative stratigraphic position.

Lithostratigraphy: lower Lužice Formation.

Ginzersdorf 1 GI1 (1,050–1,055 m) 17/1: the sample contains mainly agglutinated species, such as *Cribrostomoides subglobosus* (44.7 %), *Reticulophragmium karpaticum* (38.4 %), *Ammodiscus miocenicus* (11.7 %) and *Bathysiphon taurinensis* (3.0 %). Accessory taxa are *Scallopstoma ovicula* and *Spirosigmollina tenuis*. Most of the species are epifaunal to shallow infaunal. The infaunal species *Bathysiphon* hints at an increase of organic matter flux. The assemblage points to an outer neritic to upper bathyal setting.

Age: late Eggenburgian/early Ottnangian, based on *Bathysiphon taurinensis* and relative stratigraphic position.

Lithostratigraphy: lower Lužice Formation.

Foraminifers: Plate 1, Fig. 2: *Cribrostomoides subglobosus*, Plate 1, Fig. 3: *Reticulophragmium karpaticum*.

Ginzersdorf 2 GI2 (1,084–1,086.7 m) 10/2: the foraminiferal assemblage comprises only seven epifaunal and shallow infaunal species, preferring oxic to suboxic bottom water conditions. *Reticulophragmium karpaticum* (41.0 %), *Heterolepa dutemplei* (35.9 %) and *Lenticulina inornata* (10.3 %) are most frequent along with rare *Elphidium crispum*, *Semivulvulina pectinata* and *Spirorutilus carinatus*. Infaunal species are missing. The assemblage suggests an outer neritic to upper bathyal setting.

Age: late Eggenburgian/early Ottnangian, based on general composition and relative stratigraphic position.

Lithostratigraphy: lower Lužice Formation.

Mistelbach 1 MI1 (1,373.5–1,377 m) 7/4: the occurrence of *Bathysiphon filiformis* (100 %) suggests an upper bathyal setting.

Age: late Eggenburgian/early Ottnangian, based on occurrence of *Bathysiphon filiformis*.

Lithostratigraphy: lower Lužice Formation.

Foraminifers: Plate 1, Fig. 5: *Bathysiphon filiformis*.

Maustrenk West 1 MTW1 (1,380–1,385 m) 9/1: the foraminiferal assemblage of 26 species with *Cibicidoides lopjanicus* (39.6 %), *Ammonia pseudobeccarii* (22.5 %) along with keeled elphidiids, *Heterolepa dutemplei*, *Blasterigerina planorbis*, *Lenticulina inornata*, *Textularia gramen*, *Spirosigmollina tenuis*, *Nonion commune* and *Cibicidoides lobatulus* points to a deeper inner neritic setting. Most taxa are epifaunal adapted to oxic conditions. Infaunal species, such as *Nonion commune*, prefer suboxic conditions.

Age: Ottnangian, based on the relative stratigraphic position.

Lithostratigraphy: lower Lužice Formation.

Mistelbach U1 MisU1 (1,885–1,894 m) 3/1 and MisU1 (1,885–1,894 m) 3/4: an inner neritic shelf setting is indicated by the low diverse benthic assemblage of six species (*Ammonia viennensis* (67.2 %), elphidiids and *Porosonion granosum*). Well defined patches of shell fragments floating in the core sample MisU1 (1,885–1,894 m) 3/1 are reminiscent of filled decapod burrows. Along with many frag-

ments, shells of *Corbula gibba*, cardiids, and *Anomia* predominate. Gastropods are represented by a small sized naticid and the batillariid *Granulolabium plicatum*. Small fragments of fish bones are frequent as well. The depositional environment was a very shallow marine lagoonal setting close to the shore. MisU1 (1,885–1,894 m) 3/4 yields a low diverse assemblage with *Anadara diluvia* and *Ostrea digitalina* in a silt-clay matrix. *Ostrea digitalina* might have preferred shallow littoral areas down to 10 m water depth (MANDIĆ & HARZHAUSER, 2003). Only the free right valve of *Ostrea* was found, suggesting that it was separated from the left valve, which is attached to hard substrate. The depositional environment of the basal samples was a shallow marine lagoonal setting with oxygen poor soft bottoms, bioturbated by decapod crustaceans, and close-by mudflats, settled by batillariid gastropods.

These core samples are lithologically and paleontologically highly reminiscent of the regressive phase at the Eggenburgian/Ottnangian boundary as described by ROETZEL in SCHUBERT et al. (1999) from the northeastern margin of the North Alpine Foreland Basin. There, lagoonal conditions, partly with low oxygenation became established (e.g. well Pulkau S1) before the Ottnangian transgression resulted in the deposition of the Schlier facies of the Zellerndorf Formation.

Age: Ottnangian, based on relative stratigraphic position and impoverished foraminiferal assemblage.

Lithostratigraphy: upper Lužice Formation.

Maustrenk West 1 MTW1 (1,130–1,138 m) 4/2, MTW1 (1,130–1,138 m) 4/7 and MTW1 (1,100–1,105 m) 3/5: foraminiferal assemblages with up to 20 species, comprising *Cibicidoides lopjanicus* (45.6 %), keeled elphidiids, *Ammonia* spp., *Lenticulina* spp., *Heterolepa dutemplei*, *Textularia gramen*, *Pullenia bulloides*, *Spirosigmollina tenuis*, *Triloculina gibba* and *Blasterigerina planorbis*. Infaunal to deep infaunal species are rare. The high abundances of epifaunal taxa suggest oxic to slightly suboxic bottom-water conditions. The assemblage indicates an inner neritic setting with water depths down to 100 m. Fish remains are frequent.

Age: Ottnangian, based the “*Cibicides-Elphidium*” assemblages, typical for the Ottnangian of the Vienna Basin (see ČIČHA et al., 1998; KOVÁČ et al., 2004).

Lithostratigraphy: upper Lužice Formation.

Althöflein 1 AH1 (520–525 m) 18/3 (15 species) and AH1 (610–615 m) 21/2 (18 species): the assemblages with *Reticulophragmium karpaticum* (16.0–33.3 %), keeled elphidiids, *Blasterigerina planorbis*, unkeeled elphidiids, *Ammonia* spp., *Porosonion granosum*, *Heterolepa dutemplei* and *Quinqueloculina* spp. are largely composed of epifaunal taxa preferring oxygenated bottom waters. Infaunal species from oxic environments occur in a smaller amount. Marine vegetation and hard substrates are reflected by the abundance of taxa with a clinging mode of life or dwelling in vegetated habitats like keeled elphidiids or *Quinqueloculina*. *Protoglobobulimina pupoides* and *Bolivina dilatata* hint at slightly increased flux of organic material and environmental stress. The foraminiferal assemblage points to a shallow, inner neritic environment down to 50 m water depth.

Age: Ottnangian based on occurrence of the assemblage type and the stratigraphic position.

Lithostratigraphy: upper Lužice Formation.

Althöflein 1 AH1 (370–375 m) 13/3 (26 species) and AH1 (430–435 m) 15/3 (34 species): the assemblages are dominated by *Reticulophragmium karpaticum* (30.0–37.6 %), keeled elphidiids, *Ammonia* spp., *Blasterigerina planorbis*, *Heterolepa dutemplei*, *Quinqueloculina* spp., *Lenticulina* spp. and *Cibicidoides lobatulus*. Epifaunal taxa preferring oxic to slightly suboxic bottom waters and oligotrophic conditions prevail. Infaunal species are rare. They are adapted to more suboxic conditions. The samples indicate an inner neritic environment.

Age: Ottnangian, based on occurrence of the assemblage type and the stratigraphic position.

Lithostratigraphy: upper Lužice Formation.

Kettlasbrunn 2 KA2 (1,080–1,085 m) 4/3 and KA2 (1,380–1,385 m) 9/3: the assemblages are mainly composed of *Ammonia viennensis* (98.3 %). This epifaunal to shallow infaunal species prefers oxic to slightly suboxic bottom water conditions and dwells in intertidal to shallow subtidal, lagoonal settings. The specimens are small sized, pointing to suboptimal conditions. A stressed environment is also indicated by the monospecific occurrence of the bivalve *Gouldia minima*.

Age: Ottnangian, based on the *Ammonia*-dominated, impoverished and small-sized fauna, which is typical for the latest Ottnangian of the Vienna Basin (see ČIČHA et al., 1998; KOVÁČ et al., 2004).

Lithostratigraphy: upper Lužice Formation.

Kettlasbrunn 2 KA2 (1,020–1,025 m) 3/1 (seven species) and KA2 (1,020–1,025 m) 3/4 (10 species): a middle neritic environment is indicated by the foraminiferal assemblage with *Heterolepa dutemplei* (41.6–55.0 %), *Textularia gramen*, *Semivulvulina pectinata*, *Quinqueloculina buchiana*, *Globulina gibba*, *Ammonia viennensis* and *Porosonion granosum*. These epifaunal species are adapted to oxygenated bottom waters. The monospecific occurrence of the bivalve *Corbula gibba* indicates instable and dysoxic bottom conditions (TALMAN & KEOUGH, 2001).

Age: Ottnangian, based on the impoverished fauna and small size.

Lithostratigraphy: upper Lužice Formation.

Foraminifers: Plate 1, Fig. 1: *Textularia gramen*.

Kettlasbrunn 1 KA1 (895–900 m) 15/2: a low diverse foraminiferal assemblage of seven species with *Ammonia viennensis* (89.2 %), *Porosonion granosum* (5.4 %) and rare *Nonion commune*, *Heterolepa dutemplei*, *Elphidium ortenburgense* and *Cibicidoides lopjanicus* suggesting a deeper inner neritic setting. Molluscs are represented by a near monospecific occurrence of the bivalve *Gouldia minima*, often preserved with articulated shells. The dominance by the infaunal *Gouldia* suggests a rather unstable environment and low oxygen conditions (POVCHUN & SUBBOTIN, 1991).

Age: Karpatian, based on relative stratigraphic position.

Lithostratigraphy: Lakšary Formation.

Kettlasbrunn 1 KA1 (795–800 m) 14/2 and KA1 (750–755 m) 13/1: low diverse assemblages of only six and two species, being dominated by *Ammonia viennensis* (91.6–

96.9 %) along with rare *Quinqueloculina akneriana*, *Cibicidoides lopjanicus*, *Hoeglundina elegans*, *Elphidium ortenburgense* and *Elphidium subtypicum* suggesting an intertidal to shallow subtidal, lagoonal setting.

Age: Karpatian, based on relative stratigraphic position.

Lithostratigraphy: Lakšary Formation.

Mistelbach 1 MI1 (800–805 m) 1/2: the sample contained no foraminifers but a low diverse mollusc assemblage with *Ervilia pusilla*, *Vitta* sp. and *Stenothyroides schwartzi*. Nearly monospecific occurrences of *Ervilia pusilla* are typical for stressed environments, e.g. at the onset of the Badenian salinity crisis in the Carpathian Foredeep with restricted circulation and elevated salinity in few meters water depth (BABEL, 1999). Assemblages with *Stenothyroides schwartzi*, *Vitta* and *Ervilia* are also known from the Karpatian of the Korneuburg Basin.

Age: Karpatian, based on mollusc assemblage.

Lithostratigraphy: Závod Formation.

Macrofauna: Plate 3, Fig. 6: *Stenothyroides schwartzi*.

Siebenhirten 3 SI3 (1,250–1,255 m) 11/1: the assemblage comprises 12 epifaunal to shallow infaunal species preferring oxic to suboxic bottom water condition. *Ammonia viennensis* (94.8 %) predominates accompanied by rare *Nonion commune*, *Cibicidoides lopjanicus*, *Bulimina elongata*, *Cassidulina laevigata* and *Bolivina dilatata*, suggesting a lagoonal setting.

Age: Karpatian, based on assemblage type with *Cibicidoides lopjanicus*, *Globigerina praebulloides*, *G. ottnangiensis* and high amount of *Ammonia viennensis* (see CÍCHA & ZAPLETALOVÁ, 1967; RÖGL, 1998; CÍCHA et al., 2003).

Lithostratigraphy: Závod Formation.

Kettlasbrunn 1 KA1 (600–604 m) 10/4, KA1 (701–705 m) 12/2: the foraminiferal assemblages of nine species are dominated by *Ammonia viennensis* (67.1–86.1 %) and *Ammonia pseudobeccarii* (11.0–18.3 %) accompanied by *Nonion commune*, *Elphidium ortenburgense* and *Porosonion granosum*, suggesting an intertidal to shallow subtidal, lagoonal setting.

Age: Karpatian (older than Badenian based on occurrence of *Elphidium ortenburgense*) and relative stratigraphic position.

Lithostratigraphy: Závod Formation.

Kettlasbrunn 1 KA1 (500–506 m) 8/1 and KA1 (550–555 m) 9/2: the foraminiferal assemblages of five species consist almost entirely of *Ammonia* spp. (98.0–99.1 %) and represent an intertidal to shallow subtidal, lagoonal setting.

Age: Karpatian, based on relative stratigraphic position.

Lithostratigraphy: Závod Formation.

Kettlasbrunn 1 KA1 (450–455.5 m) 7/4: a low diverse foraminiferal assemblage predominated by *Ammonia pseudobeccarii* (86.4 %) accompanied by *Biasterigerina planorbis* (9.1 %) and *Elphidium ortenburgense* (4.6 %). The low diverse mollusc assemblage is strongly fragmented and indicates a coastal marine, probably intertidal estuarine setting in which *Vitta* flourished.

Age: Karpatian, based on mollusc assemblage; especially the keeled *Vitta pachii* is a typical element of the late Karpatian coastal mudflats (HARZHAUSER, 2002; ZUSCHIN et al., 2014).

Lithostratigraphy: Závod Formation.

Hohenrappersdorf 25 HRD25 (740–745 m) 10/1: this sample contains moderately preserved specimens of *Lenticulina inornata* and *Cyclammina karpatica*. The genus *Lenticulina* is epifaunal, adapted to suboxic conditions. The community displays a suboxic environment in the outer neritic to upper bathyal.

Age: Karpatian, based on rare occurrence of *Cyclammina karpatica*.

Lithostratigraphy: Závod Formation.

Hohenrappersdorf 24 HRD24 (775–779.5 m) 9/1: only 10 species, which are mainly epifaunal to shallow infaunal preferring oxic to suboxic bottom water conditions. *Ammonia viennensis* (61.1 %) and *Cycloforina gracilis* (31.6 %) predominate, accompanied by *Nonion commune*, *Lenticulina inornata*, *Quinqueloculina hauerina* and *Bulimina elongata*. Infaunal species are rare (*Nonion commune*, 2.8 %). The moderately to well-preserved assemblage suggests a marine to hypersaline lagoonal setting. Especially the tests of *Ammonia* show moderate preservation. Molluscs are mainly represented by *Corbula gibba*, which is a specialist for instable bottom conditions, being able to withstand dysoxic conditions (TALMAN & KEOUGH, 2001).

Age: Karpatian, based on the absence of Badenian index species and the stratigraphic position.

Lithostratigraphy: Závod Formation.

Hohenrappersdorf 19 HRD19 (819–820 m) 12/1: low diverse assemblage with only eight moderately preserved species like *Ammonia viennensis* (55.8 %), *Ammonia pseudobeccarii* (20.8 %), *Lenticulina inornata* (13.0 %) predominate accompanied by *Porosonion granosum*, *Quinqueloculina* sp., *Cibicidoides* sp. and keeled elphidiids. Only epifaunal species adapted to oxic to slightly suboxic bottom water conditions are present; infaunal species are absent. The fauna indicates a shallow inner neritic environment.

Age: Karpatian, based on relative stratigraphic position.

Lithostratigraphy: Závod Formation.

Hohenrappersdorf 25 HRD25 (665–670 m) 8/1: this low diverse assemblage of only six species is composed of *Ammonia viennensis* (75.2 %), *Ammonia pseudobeccarii* (11.5 %) and *Cycloforina gracilis* (8.0 %) along with keeled elphidiids and *Quinqueloculina seminulum*. These epifaunal to shallow infaunal taxa prefer oxic to slightly suboxic bottom water conditions and dwell in an inner neritic setting. The tests are poorly to moderately preserved and show signs of corrosion, abrasion and breakage.

Age: Karpatian, based on relative stratigraphic position.

Lithostratigraphy: Závod Formation.

Althöflein 1 AH1 (310–315 m) 11/1: a diverse fauna with 40 species. *Lenticulina orbicularis* (22.5 %), *Globigerina bulloides* (16.0 %) and *Globigerina praebulloides* (15.4 %) are the most frequent species along with *Heterolepa dutemplei*, *Nonion commune*, *Melonis pompilioides*, *Biasterigerina planorbis*, *Bolivina dilatata*, *Siphonina reticulata*, *Siphonodosaria consobrina* and keeled elphidiids. Epifaunal and infaunal taxa with suboxic preferences predominate. *Uvigerina* spp., *Melonis pompilioides*, *Bolivina dilatata*, *Pappina primiformis* and *Valvulineria complanata* indicate organic

matter flux and high environmental stress. A middle to outer neritic environment of 100–200 m water depth is indicated by the assemblage. The high abundance of planktonic taxa preferring cool temperatures (84 %) indicates cool surface water conditions. *Globigerina bulloides* and *G. praebulloides* additionally hint at increased productivity (79 % of planktonic content).

Age: Karpatian, based on co-occurrences of *Uvigerina graciliformis*, *Uvigerina semiornata*, *Uvigerina pygmaoides*, *Pappina primiformis*, *Lenticulina melvilli* and *Globigerinoides bisphericus*.

Lithostratigraphy: unnamed formation in Ginzersdorf Channel.

Foraminifers: Plate 2, Fig. 7: *Siphonina reticulata*.

Althöflein 1 AH1 (280–285 m) 10/2: the diverse foraminiferal assemblage of 48 species is dominated by *Globigerina bulloides* (16.8 %), *Globigerina ottangiensis* (10.8 %), *Elphidium crispum* (10.8 %) *Heterolepa dutemplei* (6.7 %), *Biasterigerina planorbis* (5.6 %) and *Uvigerina breviformis* (5.2 %). Epifaunal taxa with mainly oxic preferences account for two-thirds of the assemblage. Slightly increased flux of organic matter and environmental stress are documented by *Bulimina* spp., *Uvigerina* spp., *Bolivina dilatata*, *Fursenkoina subacuta*, *Melonis pompilioides* and *Praeglobbulimina pyrula*, which are adapted to suboxic and dysoxic environments. The composition is characteristic for a middle to outer neritic environment. The proportion of planktonic foraminifera preferring cool temperature conditions (97 %) hints at cool surface waters. The increased contribution of planktonic taxa preferring productive environments (*Globigerina bulloides*, *G. tarchanensis*; 60 % of planktonic content) indicate an increased input of nutrients.

Age: Karpatian, based on co-occurrences of *Uvigerina graciliformis*, *Uvigerina breviformis*, and *Pappina primiformis*.

Lithostratigraphy: unnamed formation in Ginzersdorf Channel.

Foraminifers: Plate 1, Fig. 23: *Uvigerina breviformis*.

Althöflein 1 AH1 (250–255 m) 9/4: a low diverse, moderately preserved foraminiferal assemblage of 11 species with *Lenticulina inornata*, *Textularia gramen*, *Vaginulinopsis haueriana* and *Ammonia viennensis*. The sample is largely composed of epifaunal species adapted to oxic to slightly low-oxygenated bottom water conditions. The infaunal species are mainly adapted to suboxic environments. The assemblage represents a middle to outer neritic environment. The mollusc fauna is small sized and low diverse, dominated by carnivores, such as *Polinices* cf. *cerovaensis* and *Profundinassa fuchsi*. Comparable assemblages are known from the upper bathyal of the Vienna Basin during the Karpatian (HARZHAUSER et al., 2011) and from the early Badenian of the Carpathian Foredeep (KITTL, 1887). Open marine conditions are also indicated by the common occurrence of otoliths of the meso- to bathypelagic lanternfish *Diaphus*.

Age: Karpatian, based on stratigraphic position and correlation with AH1 (280–285 m) 10/2.

Lithostratigraphy: unnamed formation in Ginzersdorf Channel.

Siebenhirten 3 SI3 (1,000–1,003 m) 8/2: a diverse foraminiferal assemblage of 49 species; *Heterolepa dutemplei* (10.3 %), *Nonion commune* (8.9 %), *Pullenia bulloides* (7.7 %) and

Globorotalia bykovae (6.9 %) are the most frequent species. The foraminiferal assemblage is similar to SI3 (900–906 m) 7/3 and points to the same outer neritic to upper bathyal environment. The mollusc assemblage is dominated by pyramidellids. The nassariid *Profundinassa fuchsi* is characteristic for outer neritic and upper bathyal settings in the Paratethys Sea (HARZHAUSER & KOWALKE, 2004). Similarly, extant *Saccella commutata* is a typical element of shelf communities (MARTINS et al., 2013) and the epifaunal suspension feeder *Limopsis* dwells in sands and fine gravels, from shallow waters down to several hundred meters water depth (OLIVER, 1992; LA PERNA, 2000). The otolith assemblage comprises two species of the lanternfish *Diaphus* and the codlet *Gadiculus argenteus*. The latter is a pelagic extant species, which lives in schools over mud, muddy sand, gravel and rock bottoms with a depth range from 100–1,000 m (COHEN et al., 1990).

Macrofauna: Plate 3, Fig. 14: *Profundinassa* cf. *fuchsi*, Plate 3, Fig. 17: *Odostomia* sp., Plate 3, Fig. 20: *Turbonilla* sp. 3, Plate 3, Figs. 30–31: *Gadiculus argenteus*.

Age: Badenian (Lower Lagenidae Zone), based on the occurrence of *U. macrocarinata*, *Lenticulina americana* and numerous globigerinids.

Lithostratigraphy: unnamed formation in Mistelbach Canyon.

Foraminifers: Plate 1, Fig. 4: *Martinottiella communis*, Plate 1, Fig. 19: *Protoglobbulimina pupoides*, Plate 2, Fig. 3: *Sphaeroidina bulloides*, Plate 2, Fig. 13: *Heterolepa dutemplei*, Plate 2, Fig. 14: *Hansenisca soldanii*.

Siebenhirten 3 SI3 (900–906 m) 7/3: a diverse and well-preserved benthic assemblage with 59 species including *Globorotalia bykovae* (28.3 %), *Bulimina subulata* (8.7 %), *Globigerina bulloides* (7.2 %), *Bulimina elongata* (5.6 %), *Heterolepa dutemplei* (4.6 %) and many others. Increased organic matter flux and environmental stress are documented by the high abundances of infaunal and deep infaunal species adapted to suboxic to dysoxic conditions, such as *Uvigerina* spp., *Bulimina* spp., *Melonis pompilioides*, *Bolivina* spp., *Cassidulina laevigata* and *Hoeglundina elegans*. This assemblage indicates an outer neritic to upper bathyal environment. The high percentage of *Globorotalia* and *Globigerina* suggests temperate to cool water and the abundance of *Globigerina bulloides* and *G. praebulloides* indicates increased nutrient flux.

Age: Badenian (Lower Lagenidae Zone), based on the occurrence of *Uvigerina macrocarinata*, *Orbulina suturalis*, *Lenticulina americana* and numerous globigerinids.

Lithostratigraphy: unnamed formation in Mistelbach Canyon.

Foraminifers: Plate 1, Fig. 7: *Spirorutilus carinatus*, Plate 1, Fig. 16: *Scallopstoma ovicula*, Plate 1, Fig. 20: *Bolivina dilatata*, Plate 1, Fig. 22: *Bulimina elongata*, Plate 1, Fig. 24: *Uvigerina macrocarinata*, Plate 1, Fig. 27: *Bulimina subulata*, Plate 2, Fig. 5: *Valvulineria complanata*, Plate 2, Fig. 6: *Nonion commune*, Plate 2, Fig. 11: *Melonis pompilioides*, Plate 2, Fig. 12: *Pullenia bulloides*.

Pirawarth U3 PWU3 (1,123–1,128 m) 1/1 and PWU3 (1,123–1,128 m) 1/3: only *Ammonia viennensis* and *Reticulophragmium* sp. were found in sample PWU3 (1,123–1,128 m) 1/1 pointing to shallow inner neritic conditions. The assemblage of PWU3 (1,123–1,128 m) 1/3 is largely composed of *Ammonia viennensis* (62.5 %), *Cycloforina gracilis* (17 %), *Adelosina*

longirostra (15.0 %) along with rare *Cibicidoides pachyderma* and *Lenticulina inornata*. These epifaunal to shallow infaunal taxa prefer oxic to slightly suboxic bottom water conditions in inner neritic settings.

Age: Badenian (Lagenidae Zone), based on occurrence of *Adelosina longirostra* and *Adelosina schreibersi*.

Lithostratigraphy: Lanžhot Formation.

Siebenhirten 3 SI3 (800–805 m) 6/3: the benthic foraminifera of this assemblage comprise *Ammonia viennensis* (33.7 %), *Borelis melo* (30.2 %), *Ammonia pseudobeccarii* (12.8 %), *Elphidium crispum* (10.5 %) along with *Cycloforina badenensis*, *Quinqueloculina triangularis*, *Pyrgo simplex* and *Triloculina* spp. Submarine vegetation is indicated by most of the taxa except for *Ammonia* and *Cycloforina badenensis*. All included genera are epifaunal and adapted to oxic to suboxic bottom water conditions. The assemblage indicates a nearshore, lagoonal environment in 0–50 m water depth. The mollusc assemblage consists of few species of *Vitula picta*, *Tritia schoenni*, *Terebralia lignitarum* and *Potamides theodiscus* and comprises only extremely corroded specimens. All species are bound to the intertidal zone, preferring mudflats. Comparable assemblages are widespread along the Karpatian coasts of the Korneuburg Basin (ZUSCHIN et al., 2014) but are also found along the Badenian coasts as documented by the assemblages of the Grund Formation in Lower Austria (LATAL et al., 2006). Although the assemblage is ecologically uniform, lacking species from other environments, the extreme corrosion suggests transport or even reworking.

Age: Badenian (Lagenidae Zone), based on occurrence of *Borelis melo*, *Quinqueloculina triangularis*, *Cycloforina badenensis* and *Triloculina scapha*.

Lithostratigraphy: Lanžhot Formation.

Hohenruppersdorf 25 HRD25 (645–650 m) 7/1: a moderately diverse assemblage of 18 species with *Lenticulina austriaca* (40.9 %), *Ammonia viennensis* (40.1 %) as most frequent species along with *Porosonion granosum* (5.2 %) and rare *Nonion commune*, *Sigmoilopsis schlumbergeri*, *Biasterigerina planorbis* and keeled elphidiids. The sample is mainly composed of epifaunal species adapted to oxic to suboxic bottom conditions. The infaunal species prefer suboxic conditions. *Ammonia* and *Lenticulina* are poorly preserved due to abrasion, whereas the remaining species are moderately preserved. The assemblage indicates the outer part of the inner neritic zone. Similarly, the rather diverse mollusc assemblage with *Bittium reticulatum*, *Ptychidia* cf. *vindobonensis*, *Polinices* cf. *cerovaensis*, *Tritia subasperata* and large amounts of parasitic pyramidellids point to a medium deep soft bottom environment. *Bittium reticulatum* indicates some phytal cover (BERNASCONI & STANLEY, 1997).

Age: Badenian (Lagenidae Zone), based on occurrence of *Amphistegina radiata*, *Cycloforina badenensis* and *Adelosina longirostra*.

Lithostratigraphy: Lanžhot Formation.

Macrofauna: Plate 3, Fig. 16: *Tritia subasperata*, Plate 3, Fig. 18: *Turbonilla* sp. 1, Plate 3, Fig. 19: *Turbonilla* sp.

Hohenruppersdorf 24 HRD24 (641–645 m) 7/1: moderately diverse with 10 species, such as *Elphidium crispum* (40.6 %), *Borelis melo* (15.6 %), *Ammonia pseudobeccarii* (9.4 %),

Triloculina inflata (9.4 %) and *Porosonion granosum* (9.4 %) as most frequent species. Almost all taxa are epifaunal and adapted to oxic conditions. Only *Nonion commune* is an infaunal species. The moderately preserved community suggests a lagoonal nearshore environment. Additionally, *Elphidium crispum*, *Borelis melo* and *Triloculina inflata* point to vegetation (e.g. seagrass) due to epiphytic or clinging mode of life.

Age: Badenian (Lagenidae Zone), based on *Borelis melo* and the general composition.

Lithostratigraphy: Lanžhot Formation.

Hohenruppersdorf 24 HRD24 (620–624 m) 6/1: a diverse assemblage with 22 species including *Nonion commune* (38.8 %), *Ammonia pseudobeccarii* (9.0 %), *Fursenkoina subacuta* (7.9 %), *Ammonia viennensis* (7.9 %), *Lenticulina inornata* (7.3 %) and *Bullimina elongata* (6.4 %) as most frequent species. The sample is mainly composed of infaunal species adapted to suboxic bottom conditions. The epifaunal species prefer oxic to suboxic conditions. *Fursenkoina subacuta*, *Bullimina elongata* and *Uvigerina pygmaoides* hint at slightly increased flux of organic material and environmental stress. The assemblage is suggesting a slightly shallower setting than HRD24 (550–555 m) 5/1 in the middle inner neritic zone around 100 m.

Age: Badenian (Lagenidae Zone), based on *Uvigerina pygmaoides*, the frequent lagenids and the general composition, which agrees with coeval assemblages described by PAPP et al. (1978).

Lithostratigraphy: Lanžhot Formation.

Hohenruppersdorf 25 HRD25 (490–495 m) 4/1 (18 species) and HRD25 (550–557 m) 5/1 (20 species): the samples are dominated by *Lenticulina austriaca* (34.8–51.1 %), *Quinqueloculina hauerina* (7.2–13.8 %) and *Semivulvulina pectinata* (6.5–11.6 %) along with *Nonion commune*, keeled elphidiids, *Sigmoilopsis schlumbergeri*, *Biasterigerina planorbis* and *Cibicidoides austriaca*. The benthos is largely composed of epifaunal species adapted to oxic to suboxic conditions. The infaunal species *Nonion commune* points to suboxic conditions. The foraminiferal assemblage indicates the outer part of the inner neritic zone. This interpretation is supported by the mollusc fauna with *Polinices* cf. *cerovaensis*, numerous pyramidellids, *Tritia* sp., *Chrysallida* sp., and *Turbonilla* sp. The absence of herbivores and the presence of the lantern fish *Diaphus acutirostrum* points to a deeper offshore environment with soft bottom.

Age: Badenian (Lagenidae Zone), based on occurrence of *Amphistegina radiata*, *Quinqueloculina haidingeri* and *Cibicidoides austriacus*.

Lithostratigraphy: Lanžhot Formation.

Macrofauna: Plate 3, Figs. 32–33: *Diaphus acutirostrum*.

Hohenruppersdorf 19 HRD19 (650–656 m) 7/1: a moderately diverse and poorly preserved foraminiferal assemblage of 10 species with *Lenticulina inornata* (50 %), *Nonion commune* (28.1 %), *Lenticulina melvilli* (9.4 %) along with *Ammonia viennensis*, *Semivulvulina pectinata*, *Quinqueloculina buchiana* and *Pararotalia aculeata*. The low diverse mollusc assemblage consists mainly of *Chrysallida* species. The inner neritic depositional environment seems to be similar to that of HRD19 (590–595 m) 3/1.

Age: Badenian, based on *Quinqueloculina buchiana* and the relative stratigraphic position.

Lithostratigraphy: Lanžhot Formation.

Foraminifers: Plate 2, Fig. 2: *Lenticulina inornata*.

Hohenrappersdorf 19 HRD19 (630–635 m) 6/1: the assemblage contains 22 species, such as *Nonion commune* (41.6 %), *Fursenkoina subacuta* (34.1 %), *Bolivina dilatata* (10.9 %) along with *Lenticulina* spp., *Sigmoilopsis schlumbergeri*, *Bulimina elongata*, *Cibicidoides* spp., *Laevidentalina* spp., *Textularia gramen*, *Valvulineria complanata* and *Reussella spinulosa*. Most of these are infaunal or deep infaunal taxa, adapted to sub- or even dysoxic bottom water conditions (e.g. *Nonion commune*, *Fursenkoina subacuta* and *Bolivina dilatata*). The rare epifaunal species hint at oxic to suboxic conditions. Environmental stress is indicated by the abundance of infaunal *Fursenkoina subacuta* and *Bolivina dilatata*. Preservation is moderate, partly even poor due to strong abrasion and corrosion of the tests. The composition indicates an inner neritic setting.

Age: Badenian, based on the relative stratigraphic position.

Lithostratigraphy: Lanžhot Formation.

Foraminifers: Plate 1, Fig. 26: *Fursenkoina subacuta*.

Hohenrappersdorf 24 HRD24 (550–555 m) 5/1: a diverse foraminiferal assemblage of 21 species with *Nonion commune* (35.3 %), *Valvulineria complanata* (11.5 %), *Globigerina* sp. (9.2 %), *Fursenkoina subacuta* (8.5 %) and *Quinqueloculina haidingeri* (8.1 %) as most frequent species. The community is largely composed of infaunal taxa preferring suboxic bottom waters. Epifaunal species occur in a smaller amount. They are adapted to more oxic conditions. Environmental stress is indicated by *Valvulineria complanata*, *Fursenkoina subacuta* and *Bulimina elongata*. Tests are poorly to moderately preserved; especially the miliolids show a poor preservation due to strong corrosion and abrasion. This assemblage points to a middle to outer neritic environment between 100–200 m water depth.

Molluscs are represented mainly by well preserved shells of *Manzonina scalaris*; the presence of this rissoid suggests shallow marine settings within the photic zone as this genus is commonly associated with algae (CORDEIRO & ÁVILA, 2015). Otoliths of the meso- to bathypelagic lanternfish *Diaphus acutirostrum* support the interpretation of an open marine environment (BRZOBOHATÝ & NOLF, 2000).

Age: Badenian (Lagenidae Zone), based on frequent lagenids, *Quinqueloculina haidingeri*, *Lagena haidingeri* and others.

Lithostratigraphy: Lanžhot Formation.

Foraminifers: Plate 1, Fig. 12: *Spirosigmolina tenuis*.

Macrofauna: Plate 3, Fig. 8: *Manzonina scalaris*.

Hohenrappersdorf 19 HRD19 (590–595 m) 4/1 (22 species): the foraminiferal assemblage comprises *Nonion commune* (41.5 %), *Bulimina elongata* (20.6 %), *Lenticulina inornata* (19.3 %) and *Quinqueloculina triangularis* (6.2 %) along with rare *Semivulvulina pectinata*, *Ammonia* spp., *Cycloforina contorta*, *Heterolepa dutemplei* and others. The assemblage is mainly composed of infaunal species adapted to suboxic bottom water conditions. The epifaunal species indicate low oxygenated conditions. Almost all tests are abraded and corroded. The low diverse mollusc assemblage consists mainly of *Chrysallida* species. These ectoparasites inhabit

it sublittoral marine environments; the presence of the meso- to bathypelagic lantern fish of the genus *Diaphus* also points to deeper water. Similarly, the foraminiferal assemblage suggests a deeper inner neritic setting.

Age: Badenian (Lagenidae Zone), based on high number of lagenids, occurrence of *Quinqueloculina triangularis* and *Sigmoilinita tschokrakensis*.

Lithostratigraphy: Lanžhot Formation.

Hohenrappersdorf 19 HRD19 (495–500 m) 2/1: a moderately to well-preserved foraminiferal assemblage of 15 species with numerous *Bulimina elongata* (79.1 %) and *Nonion commune* (8.8 %) along with rare *Textularia gramen*, *Ammonia* spp., *Cibicidoides* spp. and *Quinqueloculina* spp. Increased organic matter flux is clearly documented by benthic foraminifera, which are largely composed of infaunal species adapted to suboxic environments. The abundance of infaunal species and epifaunal indicators for oxic conditions suggests a mesotrophic, suboxic environment for this assemblage in a middle neritic setting.

Age: Badenian (Lagenidae Zone), based on the general composition, which agrees with coeval assemblages reported by PAPP et al. (1978).

Lithostratigraphy: Lanžhot Formation.

Walterskirchen 1 WA1 (500–505 m) 7/4: the moderately diverse foraminiferal assemblage with 14 species including *Lenticulina inornata* (53.2 %), *Heterolepa dutemplei* (28.8 %) along with *Elphidium fichtelianum*, *Ceratocancri haueri*, *Semivulvulina pectinata*, *Melonis pompilioides* and *Globulina gibba*. The assemblage is largely composed of epifaunal species adapted to both oxic and low-oxygenated bottom water conditions. The documented infaunal species are suboxic. The assemblage indicates an outer neritic to upper bathyal setting.

Age: Badenian (Lagenidae Zone), based on relative stratigraphic position.

Lithostratigraphy: Lanžhot Formation.

Walterskirchen 1 WA1 (400–403 m) 5/1: a diverse benthic assemblage of 42 species with *Valvulineria complanata* (21.5 %), *Bulimina elongata* (14.4 %), *Ammonia viennensis* (12.0 %) and *Porosonion granosum* (12.0 %) along with *Quinqueloculina* spp., *Nonion commune*, *Cibicidoides* sp., *Cycloforina* spp., *Protoglobobulimina pupoides*, *Heterolepa dutemplei* and *Melonis pompilioides*. Increased organic matter flux and environmental stress are documented by the high abundances of infaunal and deep infaunal indicators like *Valvulineria complanata*, *Bulimina elongata*, *Protoglobobulimina pupoides*, *Melonis pompilioides* and *Bolivina dilatata* preferring suboxic to dysoxic conditions. Epifaunal foraminifers point to oxygenated bottom waters. An outer neritic marine environment is indicated by this assemblage. Molluscs are represented by few turritellids and nuculanids, which are typical for sandy-muddy bottoms. *Tritia striatula* is very common in medium deep sublittoral offshore environments of the Vienna Basin. The most conspicuous element is the frequently occurring bryozoan *Cupuladria*. This genus forms small free-living and semi-vagile colonies and shuns pure clay bottoms. It prefers muddy sand and sand below wave base (BAŁUK & RADWAŃSKI, 1984).

Age: Badenian (*Spirorutilus* Zone), based on co-occurrence of *Adelosina longirostra*, *Quinqueloculina triangularis*, *Quinqueloculi-*

na haidingeri, *Cycloforina badenensis*, *Textularia mariae*, *Quinqueloculina foeda* and general similarity with assemblages from that biozone as described by RUPP (1986).

Lithostratigraphy: Jakubov Formation.

Macrofauna: Plate 3, Fig. 29: *Cupuladria* sp.

Hohenrappersdorf 25 HRD25 (310–315 m) 2/1: a diverse foraminiferal assemblage of 22 species with *Protoglobobulimina pupoides* (20.5 %), *Triloculina inflata* (12.1 %), *Valvulineria complanata* (10.8 %) and less frequent *Quinqueloculina* spp., *Karrerella chilostoma*, *Heterolepa dutemplei*, *Ammonia* spp., keeled elphidiids, *Bulimina elongata*, *Porosonion granosum*, *Nonion commune*, *Neugeborina longiscata* and *Pyrgo simplex*. Oxidic bottom waters are preferred by the epifaunal species (accounting for c. 50 %), whereas the infaunal and deep infaunal taxa are solely adapted to suboxic and dysoxic bottom water conditions. Increased organic matter flux and environmental stress is indicated by *Protoglobobulimina pupoides*, *Valvulineria complanata* and *Bulimina elongata*. The tests are moderately to well-preserved, some are strongly corroded and pyritized. The assemblage indicates an inner neritic setting down to 100 m water depth.

Age: Badenian (*Spirorutilus* Zone), based on the occurrences of *Quinqueloculina foeda* and *Globigerinoides quadrilobatus*.

Lithostratigraphy: Jakubov Formation.

Hohenrappersdorf 25 HRD25 (290–298 m) 1/1: a diverse foraminiferal assemblage of 47 species with *Valvulineria complanata* (22.5 %), *Porosonion granosum* (12.6 %), *Ammonia viennensis* (12.2 %) as most frequent species associated with *Textularia* spp., *Nonion commune*, *Cycloforina contorta*, *Sigmoilopsis* spp., *Bulimina* spp., *Praeglobobulimina* spp., *Cancri auriculus*, *Heterolepa dutemplei*, *Quinqueloculina* spp., *Pseudogaudryina mayeriana*, *Cibicidoides* spp. and many others. Most of the epifaunal species, which account for about 50 % of the total assemblage, depend on oxidic bottom waters, whereas the infaunal taxa are solely adapted to suboxic or even dysoxic bottom water conditions. The latter comprise several species pointing to increased organic matter flux and environmental stress, such as *Valvulineria complanata*, *Bulimina elongata*, *Praeglobobulimina* spp., *Fursenkoina subacuta*, *Melonis* spp., *Cancri auriculus*, *Cassidulina laevigata* and *Hoeglundina elegans*. The assemblage points to the middle neritic zone.

The increased contribution of planktonic foraminifera preferring warm temperature conditions hints at warmer surface waters. *Globigerinella obesa*, known as a deeper water element, indicates deeper warm-temperate layers. The proportion of planktonic taxa preferring productive environments (*Globigerina bulloides*, *G. praebulloides*; 29 % of planktonic content) may indicate a slightly increased input of nutrients.

Age: Badenian (*Spirorutilus* Zone), based on the occurrences of *Quinqueloculina foeda*, *Bitubulogenerina reticulata*, *Cibicidoides austriacus*, *Globigerina falconensis*, *Globigerinoides quadrilobatus* and the general composition, which agrees with coeval assemblages reported by PAPP et al. (1978) and RUPP (1986).

Lithostratigraphy: Jakubov Formation.

Poysdorf 1 PO1 (520–525 m) 17/2: the very diverse assemblage contains 71 species. *Biasterigerina planorbis* (12.7 %), *Cibicidoides austriacus* (10.8 %) and *Porosonion granosum* (7.6 %) are the most frequent species. Almost all spe-

cies are epifaunal taxa adapted to oxygenated or low-oxygenated bottom water conditions in nearshore and inner neritic settings. Genera, such as *Borelis*, *Spirolina*, *Quinqueloculina*, *Cibicidoides* and *Elphidium*, indicate submarine vegetation, such as seagrass, and/or hard substrates due to their clinging and epiphytic mode of life. The macrofauna is well-preserved and very diverse containing 28 mollusc species, 8 bryozoan species and the polychaet *Ditrupe*. The bryozoan assemblage is dominated by the bryozoan *Biflustra* along with *Cerriopora* sp., *Myriapora truncata*, *Cellepora* sp. and *Adeonellopsis* sp.

The mollusc fauna contains abundant *Bittium reticulatum*, *Bittium spina*, *Cerithidium multiliratum*, *C. schwartzi* and several risoids, such as *Alvania ampulla*. These taxa mainly occur in vegetated marine environments (BERNASCONI & STANLEY, 1997; WEBER & ZUSCHIN, 2013). Similarly, the imprints on the epifaunal *Biflustra*-colonies point to the presence of sea grass. Thus, the assemblage is very indicative for a very shallow sublittoral setting with sea grass.

Age: Badenian (*Spirorutilus* Zone) based on co-occurrence of *Cibicidoides austriacus*, *Cornuspira plicata*, *Quinqueloculina foeda*, *Adelosina longirostra*, *Pyrgoella ventruosa*, *Paravulvulina serrata*, *Cycloforina lucida*, *C. badenensis*, *Quinqueloculina haidingeri*, *Spirolina austriaca*, *Borelis melo*.

Lithostratigraphy: Jakubov Formation.

Foraminifers: Plate 1, Fig. 6: *Paravulvulina serrata*, Plate 1, Fig. 9: *Quinqueloculina akneriana*, Plate 1, Fig. 10: *Borelis melo*, Plate 1, Fig. 14: *Quinqueloculina boueana*, Plate 1, Fig. 29: *Globulina punctata*, Plate 2, Fig. 1: *Guttulina communis*, Plate 2, Fig. 8: *Amphistegina radiata*, Plate 2, Fig. 15: *Conorbella imperatoria*, Plate 2, Fig. 16: *Biasterigerina planorbis*.

Macrofauna: Plate 3, Fig. 3: *Cerithidium multiliratum*, Plate 3, Fig. 4: *Cerithidium schwartzi*, Plate 3, Fig. 9: *Alvania ampulla*, Plate 3, Fig. 24: *Cerriopora* sp., Plate 3, Fig. 25: *Myriapora truncata*, Plate 3, Fig. 26: *Cellepora* sp., Plate 3, Fig. 27: *Adeonellopsis* sp., Plate 3, Fig. 28: *Biflustra* sp.

Poysdorf 1 PO1 (490–495 m) 16/1: a lagoonal, inner neritic setting with water depths down to 50 m is indicated by the assemblage of 16 species with *Ammonia viennensis* (34.1 %), *Porosonion granosum* (22.5 %), *Quinqueloculina buchiana* (9.3 %) along with *Globigerina bulloides*, *Globorotalia bykovaevae*, *Nonion commune* and *Bulimina elongata*. Most of the taxa are epifaunal to shallow infaunal and prefer oxidic to slightly suboxic environments. *Nonion commune*, *Aubignyna* sp. and *Bulimina elongata* are infaunal species preferring suboxic conditions. The nearly monospecific mollusc assemblage, comprising mainly the bivalve *Gouldia minima*, suggests an unstable environment and maybe also low oxygen conditions (POVC-HUN & SUBBOTIN, 1991).

Age: Badenian (*Spirorutilus* Zone), based on *Quinqueloculina foeda* and similarity with coeval assemblages described by RUPP (1986) and correlation with PO1 (520–525 m) 17/2.

Lithostratigraphy: Jakubov Formation.

Althöflein 1 AH1 (220–225 m) 8/2: moderately preserved, slightly abraded benthic assemblage, containing 44 species. *Porosonion granosum* (15.0 %), *Nonion commune* (14.5 %) and *Ammonia viennensis* (11.9 %) predominate. *Quinqueloculina boueana*, *Bitubulogenerina reticulata*, *Reussella spinulosa*, *Bolivina dilatata* and *Cycloforina contorta* contribute with 5.4 to 3.5 % to the assemblage.

Increased organic matter flux and environmental stress are documented by *Bolivina dilatata*, *Fursenkoina subacuta*, *Melonis pompilioides*, *Valvulineria complanata*, *Praeglobobulimina pyrula*, *Cancris auriculus*, and *Bulimina elongata*. These are also infaunal to deep infaunal species. The assemblage suggests a shallow marine, inner neritic setting down to 100 m water depth.

Molluscs are represented by a diverse and well-preserved turritellid-dominated assemblage. The abundance of *Ptychidia vindobonensis* and other infaunal taxa, such as *Corbula gibba*, *Saccula commutata* and *Gadilina jani* document soft bottom conditions. Carnivorous turrids and parasitic pyramidellids feeding on polychaets and echinoderms are also typical. Preservation and composition point to within-habitat preservation; no indications for transport or reworking were found. Fish remains include otoliths of the benthic goby *Lesueurigobius vinalis*. Extant Mediterranean representatives of the genus *Lesueurigobius* typically occur at depths between 10 to 230 m (MILLER, 1986). This points to a medium deep sublittoral soft-bottom environment within the photic zone.

Age: Badenian (*Spirorutilus* Zone), based on co-occurrence of *Cycloforina contorta*, *Bitubulogenerina reticulata*, *Quinqueloculina foeda*.

Lithostratigraphy: Jakubov Formation.

Foraminifers: Plate 1, Fig. 13: *Quinqueloculina foeda*, Plate 1, Fig. 21: *Bitubulogenerina reticulata*, Plate 1, Fig. 25: *Reussella spinulosa*.

Macrofauna: Plate 3, Fig. 5: *Ptychidia vindobonensis*, Plate 3, Fig. 12: *Pseudonoba striata*, Plate 3, Fig. 23: *Gadilina jani*, Plate 3, Figs. 36–37: *Lesueurigobius vinalis*.

Althöflein 1 AH1 (190–195 m) 7/4: a diverse foraminiferal assemblage of 37 species with *Ammonia viennensis* (33.9 %), *Elphidium crispum* (19.2 %), *Quinqueloculina akneriana* (6.9 %), *Pseudotriloculina consobrina* and rare *Cycloforina* spp., *Borelis melo*, *Textularia gramen*, *Biasterigerina planorbis* and *Spirolina austriaca*. Seagrass or macro-algae are indicated by species with a clinging or epiphytic mode of life, such as *Quinqueloculina* spp., *Spirolina austriaca*, *Borelis melo*, *Textularia gramen*, *Cibicidoides* spp. and *Cibicidoides lobatulus*. Infaunal species are rare. This assemblage represents a shallow marine, inner neritic environment. The mollusc assemblage is diverse and gastropod-dominated. The abundant and well preserved *Sandbergeria perpusilla* and *Bittium spina* along with rissoids and nassariids point to a shallow sublittoral setting as well. Intertidal taxa, such as *Vitta picta*, *Granulolabium bicinctum* and *Tritia dujardini* are fragmented, abraded and display black coloring. These elements are probably transported from the adjacent littoral zone. Some of the larger shells show typical peeling of the apertures by crabs. Concluding, the assemblage indicates a shallow marine, inner neritic to lagoonal setting probably with seagrass patches; close-by coastal mudflats are indicated by rare *Granulolabium bicinctum*.

Age: Badenian (*Spirorutilus* Zone), based on co-occurrence of *Quinqueloculina* spp. *Cycloforina contorta*, *Elphidium* spp., *Ammonia* spp., *Borelis melo*, *Spirolina austriaca* and the high similarity with coeval assemblages described by RUPP (1986).

Lithostratigraphy: Jakubov Formation.

Foraminifers: Plate 1, Fig. 8: *Cycloforina contorta*, Plate 1, Fig. 11: *Pseudotriloculina consobrina*, Plate 1, Fig. 15: *Spirolina austriaca*, Plate 2, Fig. 25: *Elphidium flexuosum*.

Macrofauna: Plate 3, Fig. 1: *Bittium spina*, Plate 3, Fig. 2: *Sandbergeria perpusilla*, Plate 3, Fig. 13: *Caecum* cf. *trachea*, Plate 3, Fig. 15: *Tritia styriaca*, Plate 3, Fig. 21: *Anisocyclus* cf. *nitidissima*, Plate 3, Figs. 34–35: *Diaphus austriacus*.

Poysdorf 1 PO1 (460–465 m) 15/1: low diverse foraminiferal assemblage with *Ammonia pseudobeccarii* (86.7 %) along with rare *Ammonia viennensis*, *Quinqueloculina triangularis*, keeled elphidiids, *Aubignyna* sp., *Heterolepa dutemplei* and *Siphonina reticulata*. The fauna is largely composed of epifaunal to shallow infaunal species depending on oxic to slightly suboxic bottom water conditions in lagoonal and intertidal settings. Similarly, Paratethyan *Vitta* species are restricted to intertidal settings, often associated with mudflats (HARZHAUSER & KOWALKE, 2001).

Age: Badenian (*Bulimina-Bolivina* Zone), based on the similarity with coeval foraminiferal assemblages reported by PAPP et al. (1978) and on the presence of the gastropod *Vitta tuberculata*, which is known so far only from the late Badenian (ŠVAGROVSKÝ, 1964, 1982).

Lithostratigraphy: Studienka Formation.

Siebenhirten 3 SI3 (600–604 m) 4/2, SI3 (500–505 m) 3/1 and SI3 (400–405 m) 2/2: the samples contain numerous reworked Badenian foraminifera. The autochthonous taxa are keeled and unkeeled elphidiids (e.g. *Elphidium grilli*, *E. antoninum*), *Ammonia* spp., *Bolivina* spp., *Bulimina* spp., *Cibicidoides lobatulus*, *Bulimina subulata*, *Biasterigerina planorbis*, *Nonion commune*, *Fissurina marginata* and *Quinqueloculina* spp. These are epi- and infaunal/deep infaunal species, partly tolerating low-oxygenated bottom water conditions. The high abundance of infaunal *Bulimina elongata* in sample SI3 (600–604 m) 4/2 hints at environmental stress. The assemblage suggests a vegetated, probably lagoonal, nearshore environment with slightly increased flux and environmental stress.

Age: Sarmatian (*Elphidium reginum* Zone), based on occurrence of Sarmatian elphidiids, such as *Elphidium grilli*, *E. hauerinum*, *E. josephinum* and *E. antoninum*.

Lithostratigraphy: Holič Formation.

Foraminifers: Plate 1, Fig. 18: *Amphicoryna badenensis* (reworked), Plate 1, Fig. 28: *Lagena gracilicosta* (reworked).

Hohenruppersdorf 24 HRD24 (256–260.5 m) 2/1: a low diverse mollusc assemblage with few, strongly fragmented specimens of *Vitta picta* and *Pseudamnicola* cf. *tholosa* point to a coastal mudflat environment.

Age: Sarmatian, based on mollusc fauna and seismic correlation.

Lithostratigraphy: Holič Formation.

Walterskirchen 1 WA1 (300–305 m) 3/1: a low diverse assemblage dominated by *Aubignyna* sp. 1 (61.5 %), *Elphidium grilli* (22.3 %) and *Porosonion granosum* (6.9 %). The mollusc fauna contains numerous endemic Sarmatian gastropods, such as *Mohrensternia styriaca*, *M. inflata*, *Hydrobia* cf. *andrusowi* and *Hydrobia subsuturata* along with *Acteocina lajonkaireana* and the bivalve *Abra reflexa*. The assemblage indicates shallow marine coastal environments with algae and muddy bottoms (LUKENEDER et al., 2011).

Age: Sarmatian (*Elphidium reginum* Zone, *Mohrensternia* Zone), based on the frequent occurrence of *Elphidium grilli* and the gastropod genus *Mohrensternia*.

Lithostratigraphy: Holič Formation.

Macrofauna: Plate 3, Fig. 10: *Mohrensternia styriaca*, Plate 3, Fig. 11: *Mohrensternia inflata*, Plate 3, Fig. 22: *Acteocina lajonkaireana*.

Walterskirchen 1 WA1 (200–205 m) 1/1 and WA1 (300–305 m) 3/1: a well-preserved foraminiferal assemblage of 10 to 16 species with keeled elphidiids, *Porosonion granosum*, *Aubignyna* sp., *Ammonia* spp., *Amphicoryna hispida*, and *Conorbella imperatoria*. Almost all benthic foraminifera are epifaunal adapted to oxic bottom water conditions. The assemblage indicates a vegetated, shallow subtidal, inner neritic environment of 0–50 m. Similarly, the rich and well preserved mollusc assemblage with numerous small risoid and hydrobiid gastropods (*Mohrensternia styriaca*, *Mohrensternia inflata*, *Hydrobia subsuturata*) suggests a shallow marine settings with muddy shores and foreshores with algae or seagrass (MANDIC et al., 2008; LUKENEDER et al., 2011).

Age: Sarmatian (*Elphidium reginum* Zone, *Mohrensternia* Zone), based on the presence of *Aubignyna* sp., *Elphidium grilli*, *Elphidium koberi*, *Conorbella imperatoria* and the occurrence of the gastropod genus *Mohrensternia*.

Lithostratigraphy: Holič Formation.

Foraminifers: Plate 2, Figs. 17–18: *Aubignyna* sp., Plate 2, Figs. 19–20: *Ammonia pseudobeccarii*, Plate 2, Fig. 26: *Elphidium grilli*.

Poysdorf 1 PO1 (220–225 m) 7/2 and PO1 (250–255 m) 8/1 (11 species): the infaunal and deep infaunal, suboxic to dysoxic species *Bolivina dilatata* (20.5 %) and *Bulimina elongata* (4.9 %) point at increased stress and organic matter flux. The remaining epifaunal taxa prefer oxic to slightly suboxic bottom water conditions. The foraminiferal assemblage indicates an inner neritic environment down to 50 m water depths. The low diverse mollusc assemblage with *Mohrensternia styriaca*, *Hydrobia frauenfeldi*, *Hydrobia subsuturata* and *Acteocina lajonkaireana* is widespread in the Sarmatian Sea where it was restricted to shallow marine settings with muddy shores and foreshores with algae or seagrass (MANDIC et al., 2008; LUKENEDER et al., 2011).

Age: Sarmatian (*Elphidium reginum* Zone, *Mohrensternia* Zone), based on the occurrence of the gastropod genus *Mohrensternia*.

Lithostratigraphy: Holič Formation.

Macrofauna: Plate 3, Fig. 7: *Hydrobia subsuturata*.

Althöflein 1 AH1 (160–165 m) 6/2: the assemblage is dominated by *Ammonia viennensis* (42 %), *Porosonion granosum* (37.3 %), *Cibicidoides lobatulus* (5.5 %), along with several elphidiids. The autochthonous Sarmatian foraminifers are moderately preserved, showing signs of corrosion and abrasion. The assemblage comprises mainly epi- to infaunal species, pointing to slightly suboxic conditions. Epifaunal species with oxic preferences are underrepresented (elphidiids) and infaunal species absent. The assemblage indicates an inner neritic, shallow subtidal environment of 0–50 m water depth.

Age: Sarmatian, based on the assemblage type with high amount of *Porosonion granosum* co-occurring with *Elphidium aculeatum*.

Lithostratigraphy: Holič Formation.

Foraminifers: Plate 2, Figs. 21–22: *Ammonia viennensis*, Plate 2, Figs. 23–24: *Porosonion granosum*.

Poysdorf 1 PO1 (160–165 m) 5/2 (12 species) and PO1 (130–135 m) 4/2 (15 species): a large number of elphidiids (*E. fichtelianum*, *E. grilli*, *E. hauerinum*, *E. obtusum*, *E. reussi*) along with *Ammonia* spp., *Biasterigerina planorbis*, *Bulimina elongata*, *Nonion commune* and *Porosonion granosum* comprise the autochthonous fauna, which is mixed with large numbers of reworked Badenian taxa. The Sarmatian assemblage indicates an inner neritic setting of 0–50 m water depth with seagrass or macroalgae.

Age: Sarmatian (*Elphidium reginum* or *E. hauerinum* Zone), based on occurrence of *Elphidium grilli* and *E. hauerinum*.

Lithostratigraphy: Holič Formation.

Foraminifers: Plate 2, Fig. 9: *Globigerina bulloides* (reworked).

Althöflein 1 AH1 (130–135 m) 5/1: low diverse well-preserved Sarmatian assemblage comprising 10 species, such as *Aubignyna* sp., *Elphidium aculeatum*, *Elphidium antoninum*, *Elphidium crispum*, *Elphidium hauerinum*, *Cibicidoides lobatulus*, *Biasterigerina planorbis*, *Ammonia* spp. and *Porosonion granosum*. The majority of species has an epifaunal mode of life under oxygenated bottom water conditions (*Biasterigerina planorbis*, most elphidiids, *Cibicidoides lobatulus*).

Age: Sarmatian (*Elphidium reginum* Zone), based on occurrence of typical Sarmatian taxa, such as *Elphidium hauerinum* and *Elphidium aculeatum*.

Lithostratigraphy: Holič Formation.

Foraminifers: Plate 1, Fig. 17: *Plectofrondicularia digitalis*, Plate 2, Fig. 4: *Cibicidoides lobatulus*, Plate 2, Fig. 10: *Globigerina noides trilobus*, Plate 2, Figs. 27–28: *Elphidium aculeatum*.

Althöflein 1 AH1 (100–105 m) 4/1: an *Ammonia*-dominated assemblage (79.8 %) with well-preserved Sarmatian species, such as *Elphidium grilli*, *E. antoninum*, *E. crispum*, *E. aculeatum*, *Nonion bogdanowiczii* and *Biasterigerina planorbis* along with reworked Badenian foraminifera, such as *Quinqueloculina buchiana*, *Fursenkoina subacuta* and *Globorotalia bykovae*. Small sized and fragmented specimens of a low diverse and poorly preserved mollusc assemblage containing *Granulolabium bicinctum* and *Pseudamnicola tholosa* indicate a Sarmatian age as well. The foraminiferal assemblage consists mainly of epifaunal to slightly infaunal taxa with oxic to suboxic preferences (*Ammonia* spp.) as well as epifaunal taxa representing oxygenated bottom waters (elphidiids), pointing to a coastal marine to lagoonal environment in 0–50 m water depth.

Age: Sarmatian (*Elphidium reginum* Zone, *Mohrensternia* Zone), based on occurrence of *Elphidium grilli*, *E. aculeatum*, *Aubignyna* sp.

Lithostratigraphy: Holič Formation.

Poysdorf 1 PO1 (40–45 m) 1/1, PO1 (99.5–105 m) 3/1: a shallow marine, vegetated nearshore to intertidal setting with slightly increased values for organic matter flux and environmental stress is indicated in this sample. The Sarmatian fauna is largely composed of epifaunal and oxic to slightly suboxic taxa. Reworked Badenian species are frequent. Molluscs are rare and strongly corroded. Like its extant relatives *Granulolabium* lived in intertidal sandy mudflats and estuaries (HEALY & WELLS, 1998; LOZOUET et al., 2001;

LUKENEDER et al., 2011); the preservation, however, might point to some transport or reworking. The carnivore gastropod *Mitrella sarmatica* is always rare but is usually found in the *Ervilia* Zone, e.g. at Nexing (HARZHAUSER & PILLER, 2010).

Age: Sarmatian (*Ervilia* Zone?).

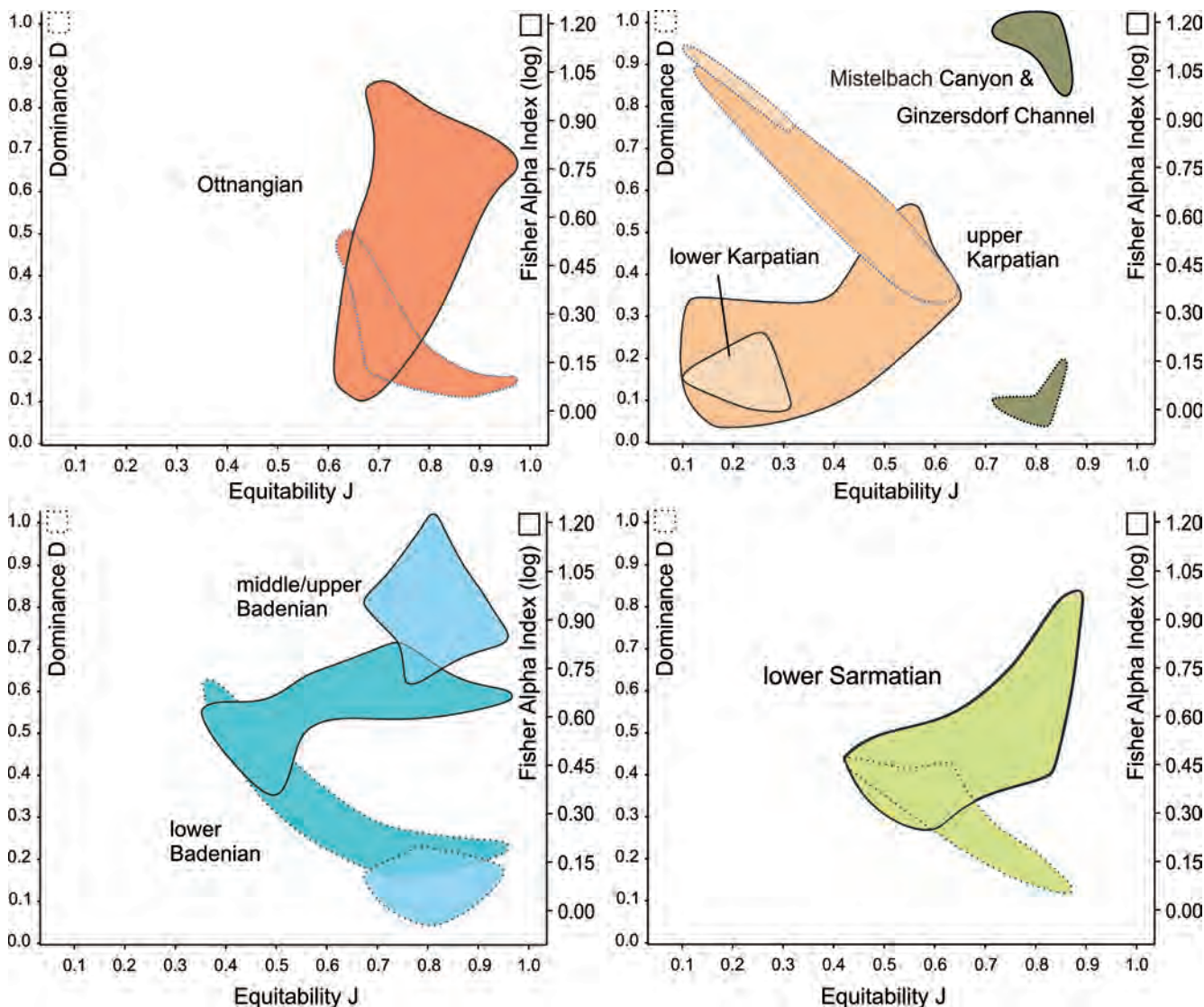
Lithostratigraphy: Skalica Formation?

Discussion

To define sample groups and to check the paleoecological interpretations, the quantitative data were used to calculate diversity indices (with the software PAST, HAMMER et al., 2001; Tab. 3). The total number of taxa (S) and Fisher Alpha Index (α) express diversity of the microfossil assemblages. The Fisher alpha diversity index is calculated with the formula $S = \alpha \cdot \ln(1 + n/\alpha)$, where S is the number of taxa, n the number of individuals and α the Fisher Alpha (HAMMER & HARPER, 2006). This formula reduces the influence of the sample size (MURRAY, 1991) and high values indicate high species richness. The distribution of species within

an assemblage is reflected by Dominance (D) and Equitability (J) (HAMMER & HARPER, 2006). Dominance expresses the authority of single species within a sample. When D is 0 all taxa are equally present in the assemblage, whereas at its maximum at 1 the assemblage is dominated by a single taxon and diversity is therefore low. Equitability describes the similarity between species contributions (HAMMER & HARPER, 2006; MURRAY, 1991, 2006). The smaller J the bigger is the uneven distribution of the involved individuals among the present taxa.

The Fisher Alpha index of the 16 Ottnangian samples ranges around a mean of 5.3 ($\sigma = 3.0$), $J = 0.75$ ($\sigma = 0.09$), $D = 0.26$ ($\sigma = 0.13$). For the 11 Karpatian samples (excluding those from the Ginzersdorf Channel) α has a mean of 1.87 ($\sigma = 0.95$), $J = 0.37$ ($\sigma = 0.18$) and $D = 0.65$ ($\sigma = 0.22$). The 11 lower Badenian samples (excluding those from the Mistelbach Canyon) have a mean α of 4.62 ($\sigma = 1.11$), $J = 0.67$ ($\sigma = 0.17$) and $D = 0.28$ ($\sigma = 0.14$). The nine middle to upper Badenian samples have a mean α of 9.78 ($\sigma = 3.12$), $J = 0.80$ ($\sigma = 0.09$) and $D = 0.12$ ($\sigma = 0.05$). The 13 Sarmatian samples have a mean α of 3.20 ($\sigma = 1.93$), $J = 0.68$ ($\sigma = 0.17$) and $D = 0.29$ ($\sigma = 0.16$). Thus, the investigated Karpatian samples within the Mistelbach Halfgraben are



Text-Fig. 6. Cross-plots of diversity indices (Fisher Alpha, Equitability, Dominance) based on the quantitative foraminiferal data in Table 3; outlines encircle all data points.

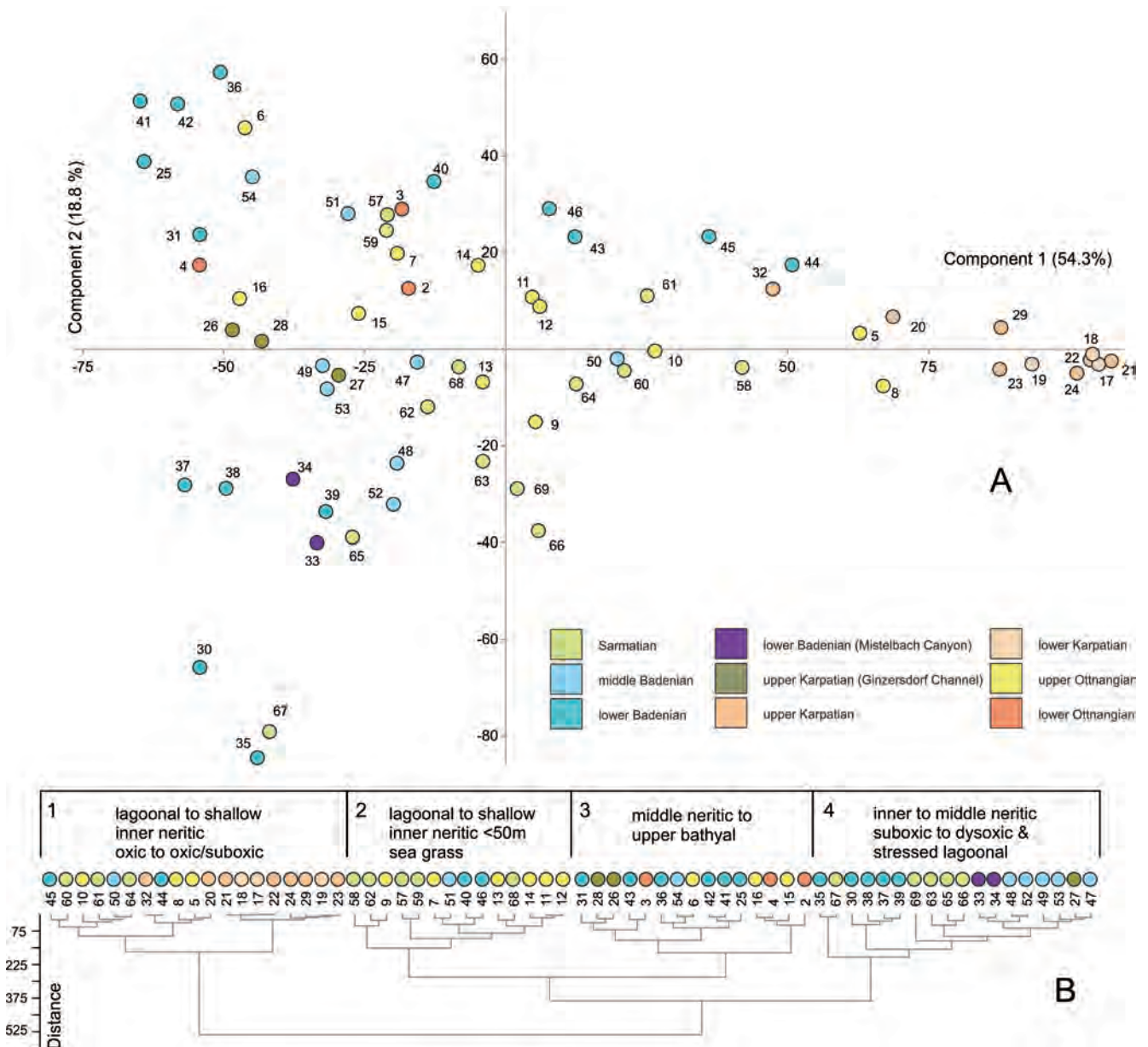
clearly separated from the Ottnangian ones by the distinctly lower α . Similarly, the lower Badenian samples display generally lower α values than the middle-upper Badenian ones. Sarmatian assemblages are also only moderately diverse and have rather low α . Equitability and dominance values are rather uniform across the stratigraphic sample groups except for the Karpatian samples, which display low J and high D values.

These general patterns are also present in cross-plots (Text-Fig. 6) revealing balanced assemblages with low to moderate species richness in the Ottnangian opposed by rather unbalanced assemblages from more stressed environments of the Karpatian. Nevertheless, a slight shift from low diverse and unbalanced assemblages towards of more diverse and balanced assemblages occurred during

the Karpatian. The range seen in Badenian and Sarmatian samples is caused by the presence of lagoonal environments (higher D, smaller J) and inner neritic environments partly with seagrass cover (lower D, higher J).

Interestingly, the samples from the Karpatian Ginzersdorf Channel and the Badenian Mistelbach Canyon plot close together, being characterized by highest α and J values and lowest D values, suggesting optimal conditions for foraminiferal assemblages.

A Principal Component Analysis (PCA) (Text-Fig. 7A) and Cluster Analysis (CA) (Text-Fig. 7B) of paleoenvironmental and bathymetric indices presented in Table 3 supports the patterns seen in the diversity indices. Karpatian samples are strongly separated from other samples in the PCA.



Text-Fig. 7. Principal Component Analysis (A) and Cluster Analysis (B) of the foraminiferal assemblages per sample based on paleoenvironmental and bathymetric indices (%): epifaunal, epifaunal to shallow infaunal, infaunal, deep infaunal, inner neritic, inner-middle neritic, inner-outer neritic, middle-outer neritic, inner neritic-bathyal, middle neritic-bathyal, outer neritic-bathyal, bathyal taxa. Numbers: 2–4: lower Ottnangian, 5–15: upper Ottnangian, 15–16: uppermost Ottnangian, 17–19: lower Karpatian, 20–25, 29, 32: upper Karpatian, 26–28: uppermost Karpatian (Ginzersdorf Channel), 33–34: lower Badenian (Mistelbach Canyon), 30, 35–45: lower Badenian, 46–53: middle/upper Badenian, 54–69: lower Sarmatian (see Table 3 for full data set and numbering of samples and sample codes).

In the CA, these samples cluster with Ottnangian, Badenian and Sarmatian samples from lagoonal environments, mudflats and inner neritic settings characterized by a mean percentage of 67.9 % ($\sigma = 26.0$ %) of epifaunal to shallow infaunal taxa suggesting oxic/suboxic conditions (71.0 %, $\sigma = 23.3$ %). Stress indicating taxa account for 29.0 % ($\sigma = 22.6$ %) of the assemblages.

The second cluster groups Ottnangian, Badenian and Sarmatian samples from lagoonal to shallow inner neritic settings partly with seagrass. The assemblages are characterized especially by high amount of epifaunal taxa (47.1 %, $\sigma = 20.2$ %) and 62.0 % ($\sigma = 16.9$) of indicators for oxic to slightly suboxic environments. In the PCA, these samples appear close to the lagoonal and shallow inner neritic Karpatian assemblages. The third cluster unites mainly Ottnangian and Badenian assemblages from middle neritic to upper bathyal settings partly with suboxic bottom conditions.

Samples from inner to middle neritic settings with suboxic and dysoxic bottom conditions form a fourth cluster, comprising Badenian and Sarmatian samples along with three samples from the Mistelbach Canyon and the Ginzersdorf Channel. In addition, Sarmatian samples from stressed lagoonal environments plot in this cluster, which is characterized by a mean of 55.2 % ($\sigma = 19.8$ %) of shallow infaunal and infaunal taxa.

Hence, in terms of stratigraphy, lower Ottnangian samples appear only in the third cluster with middle neritic to upper bathyal assemblages. Upper Ottnangian samples reflect a broader spectrum of paleoenvironments but deeper inner neritic to middle neritic assemblages are rare. Most samples comprise shallow neritic and lagoonal assemblages. The Karpatian samples all range within cluster 1. The deepest conditions are recorded by the inner to middle neritic assemblages from the lower Karpatian sample KA 1 (895–900 m) 15/2, whereas all higher samples reflect lagoonal to inner neritic environments. The uppermost Karpatian samples from the Ginzersdorf Channel and the lower Badenian ones from the Mistelbach Canyon appear in clusters three and four, suggesting comparatively deep marine conditions again. Inner to middle neritic settings are typical for lower and middle/upper Badenian assemblages, whereas shallow inner neritic and lagoonal assemblages are less characteristic. Sarmatian samples reflect mainly coastal and lagoonal assemblages as united in clusters one and two. The outliers in the “deep-water-cluster” represent stressed lagoonal environments. Middle to outer neritic conditions did not establish in the investigation area during the Sarmatian.

Conclusions

The oldest deposits in the Mistelbach Halfgraben area are of late Eggenburgian/early Ottnangian age and capture the major transgression of the early Ottnangian. Agitated coastal environments with bryozoan carpets and numerous pectinids developed, comparable to the bryozoan facies of the Zogelsdorf Formation in the Eggenburg area, which developed during the early Ottnangian transgression (ROETZEL & SCHNABEL, 2002; PILLER et al., 2007). During the early Ottnangian, the rapid deepening peaked in

upper bathyal conditions with characteristic *Bathysiphon* assemblages. During the late Ottnangian, a gradual shallowing trend led to the establishment of outer to inner neritic environments terminating in eutrophic, lagoonal conditions. Muddy, slightly suboxic bottoms were often settled by the bivalves *Corbula gibba* and *Gouldia minima*. Throughout the Ottnangian, the micro- and macrofaunas of the Mistelbach Halfgraben reflect marine conditions.

The onset of the Karpatian coincides with a renewed flooding of the area and moderate deepening. Again, middle neritic conditions became established. Upwelling caused rather cool surface waters and frequent phases of dysoxic bottom conditions. Soon, the open marine faunas disappeared and were replaced by shallow water assemblages. The sporadic molluscs found in the cores are similar to those from the Korneuburg Basin and indicate shallow sublittoral to littoral conditions. Like during the Ottnangian, muddy, slightly suboxic bottoms were settled by the bivalves *Corbula gibba* and *Gouldia minima*.

A submarine channel system developed during the late Karpatian, indicated by the Ginzersdorf Channel. The infill is dated as Karpatian based on the presence of *Uvigerina graciliformis* and the foraminiferal assemblages suggest a deeper marine environment with cool and nutrient-rich surface waters. The low diverse mollusc fauna is dominated by carnivore naticids and scavenging nassariids, probably suggesting a position below the photic zone, which is fully consistent with the presence of lanternfishes. This unit can be traced also into the Mistelbach Canyon, where it forms an older but largely destroyed erosive feature in the base and parts of the slopes of the younger Mistelbach Canyon. A comparable channel structure with late Karpatian fauna was described by DELLMOUR & HARZHAUSER (2012) from surface outcrops at Laa and termed “Laa Channel”. Therefore, we interpret these structures as channels that formed on the shallow Karpatian shelf during the terminal early Miocene.

The Mistelbach Canyon is the second major erosional feature in the area. It is filled with lower Badenian deposits and formed in an outer neritic to upper bathyal environment. Based on the presence of *Orbulina* this flooding is younger than 15.12 Ma (WADE et al., 2011). As this unit is genetically related to the Iván Canyon in the adjacent NAFB, this new dating suggests also an early Badenian age for the infill of the Iván Canyon. The early Badenian flooding sealed the Mistelbach Canyon and middle neritic to upper bathyal water depths partly with suboxic bottom conditions established. The foraminiferal assemblages were characterized by Lagenidae. Seagrass meadows developed down to the middle neritic zone and meso- to bathypelagic fish, such as *Diaphus* and *Gadiculus* flourished. Deeper mud bottoms were settled by numerous pyramidellid gastropods and small naticids. Slightly shallower conditions are typical for the middle Badenian of the Mistelbach Halfgraben. Optimal conditions are reflected by high Fisher Alpha values among the foraminiferal assemblages and a diverse mollusc fauna, which dwelled in widespread seagrass meadows. Deeper mud bottoms were settled by large populations of turritellid gastropods, infaunal bivalves such as *Corbula gibba* and *Saccella commutata* and the free-living and semi-vagile bryozoan *Cupuladria*. Inner neritic conditions are indicated not only by the majority

of the foraminiferal assemblages but also by the fish fauna with the benthic gobiid *Lesueurigobius*.

The low number of available samples from the upper Badenian may not be representative for a paleoecological interpretation. The detected assemblages, however, indicate lagoonal to intertidal marine environments in which the neritic gastropod *Vitta tuberculata* dwelled. This gastropod is restricted to the late Badenian of the Paratethys and is an excellent biostratigraphic marker (ŠVAGROVSKÝ, 1964, 1982). It was recently also detected in several boreholes from the northern Vienna Basin (own data).

Shallow inner neritic and lagoonal environments predominated in the area during the early Sarmatian. Various species of the endemic gastropod genus *Mohrensternia* characterize the coastal mollusc fauna; seagrass patches developed in some of the lagoons, which were settled by a moderately diverse foraminiferal assemblage with numerous elphidiids. Despite the endemic character of the Sarmatian assemblage, which allow a clear separation from Badenian ones, the Badenian/Sarmatian boundary was frequently misinterpreted in internal OMV reports. The reason for this misconception is the abundance of reworked Badenian foraminiferal specimens, which can outnumber the autochthonous Sarmatian assemblage in specimen numbers.

Based on the diversity indices Fisher Alpha, Equitability and Dominance, Ottnangian samples from the boreholes of the Mistelbach Halfgraben can be separated easily from the Karpatian ones based on the lower diversity of the comparatively unbalanced Karpatian assemblages. Similarly, the lower and middle Badenian samples are separated by the high Fisher Alpha values of the middle Badenian assemblages. This might allow a stratigraphic interpretation of otherwise biostratigraphically insignificant samples in future studies in the area.

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Plate 1

Typical benthic foraminiferal taxa from the Mistelbach Halfgraben; Figs. 1–7: agglutinated, Figs. 8–15: porcelaneous, Figs. 16–29: hyaline.

- Fig. 1: *Textularia gramen* D'ORBIGNY, 1846, KA2 (1,020–1,025 m) 3/4.
Fig. 2: *Cribrostomoides subglobosus* (CUSHMAN, 1910), GI1 (1,050–1,055 m) 17/1.
Fig. 3: *Reticulophragmium karpaticum* CÍCHA & ZAPLETALOVÁ, 1963, GI1 (1,050–1,055 m) 17/1.
Fig. 4: *Martinottiella communis* (D'ORBIGNY, 1846), SI3 (1,000–1,003 m) 8/2.
Fig. 5: *Bathysiphon filiformis* SARS, 1872, MI1 (1,373.5–1,377 m) 7/4.
Fig. 6: *Paravulvulina serrata* (REUSS, 1867), PO1 (520–525 m) 17/2.
Fig. 7: *Spirorutilus carinatus* (D'ORBIGNY, 1846), SI3 (900–906 m) 7/3.
Fig. 8: *Cycloforina contorta* (D'ORBIGNY, 1846), AH1 (190–195 m) 7/4.
Fig. 9: *Quinqueloculina akneriana* D'ORBIGNY, 1846, PO1 (520–525 m) 17/2.
Fig. 10: *Borelis melo* (FICHEL & MOLL, 1798), PO1 (520–525 m) 17/2.
Fig. 11: *Pseudotriloculina consobrina* (D'ORBIGNY, 1846), AH1 (190–195 m) 7/4.
Fig. 12: *Spirosigmollina tenuis* (CŽJŽEK, 1848), HRD24 (550–555 m) 5/1.
Fig. 13: *Quinqueloculina foeda* REUSS, 1850, AH1 (220–225 m) 8/2.
Fig. 14: *Quinqueloculina boueana* D'ORBIGNY, 1846, PO1 (520–525 m) 17/2.
Fig. 15: *Spirolina austriaca* D'ORBIGNY, 1846, AH1 (190–195 m) 7/4.
Fig. 16: *Scallopstoma ovicula* (D'ORBIGNY, 1826), SI3 (900–906 m) 7/3.
Fig. 17: *Plectofrondicularia digitalis* (NEUGEBOREN, 1850), AH1 (130–135 m) 5/1.
Fig. 18: *Amphicoryna badenensis* (D'ORBIGNY, 1846), SI3 (500–505 m) 3/1.
Fig. 19: *Protoglobbulimina pupoides* (D'ORBIGNY, 1846), SI3 (1,000–1,003 m) 8/2.
Fig. 20: *Bolivina dilatata* REUSS, 1850, SI3 (900–906 m) 7/3.
Fig. 21: *Bitubulogenerina reticulata* CUSHMAN, 1936, AH1 (220–225 m) 8/2.
Fig. 22: *Bulimina elongata* D'ORBIGNY, 1846, SI3 (900–906 m) 7/3.
Fig. 23: *Uvigerina breviformis* PAPP & TURNOVSKY, 1953, AH1 (280–285 m) 10/2.
Fig. 24: *Uvigerina macrocarinata* PAPP & TURNOVSKY, 1953, SI3 (900–906 m) 7/3.
Fig. 25: *Reussella spinulosa* (REUSS, 1850), AH1 (220–225 m) 8/2.
Fig. 26: *Fursenkoina subacuta* (D'ORBIGNY, 1852), HRD19 (630–635 m) 6/1.
Fig. 27: *Bulimina subulata* CUSHMAN & PARKER, 1947, SI3 (900–906 m) 7/3.
Fig. 28: *Lagena gracilicosta* REUSS, 1863, SI3 (400–405 m) 2/2.
Fig. 29: *Globulina punctata* D'ORBIGNY, 1846, PO1 (520–525 m) 17/2.

Scale bar = 100 µm.

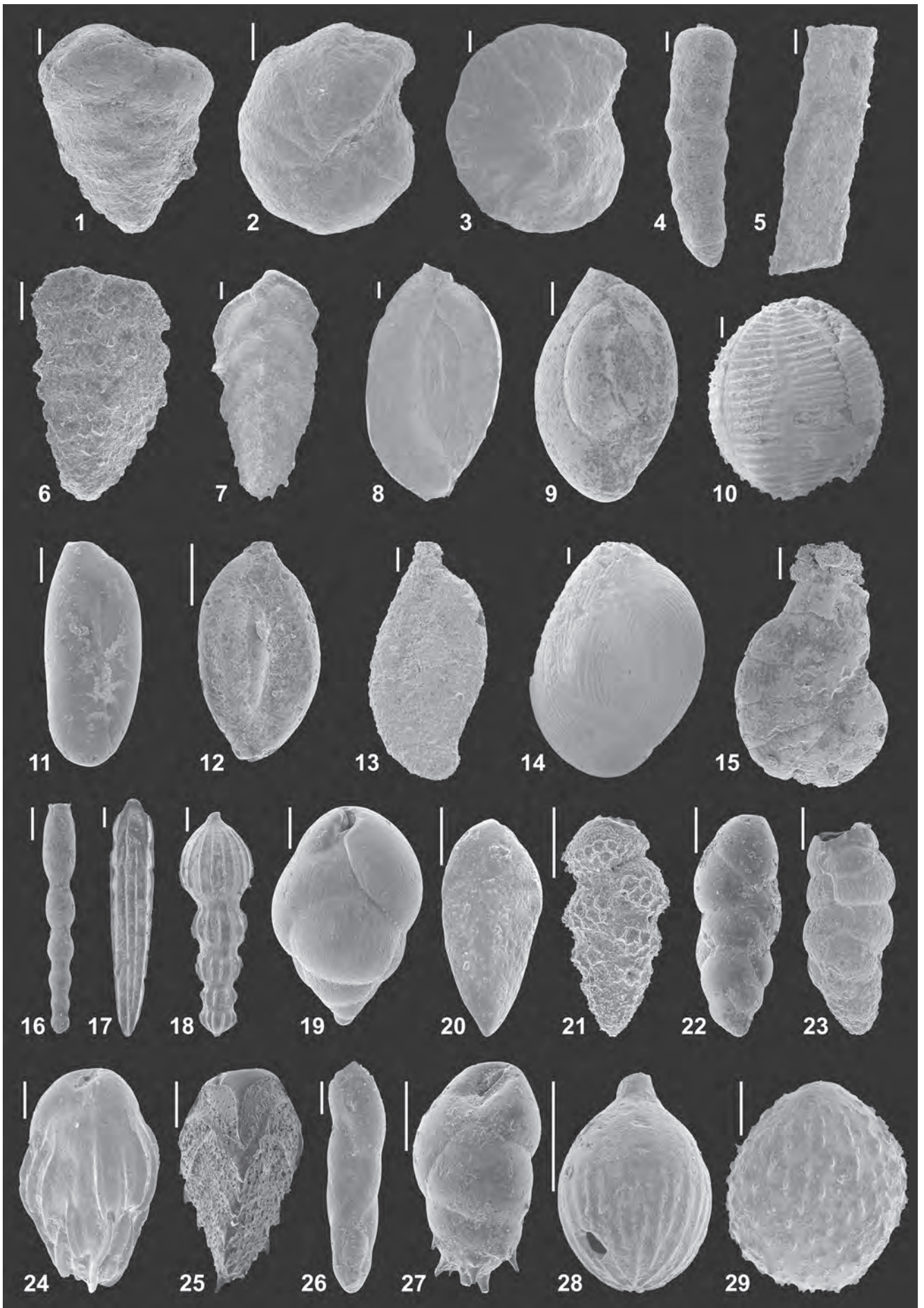


Plate 2

Typical hyaline benthic (Figs. 1–8, 11–28) and planktonic (Figs. 9–10) foraminiferal species from the Mistelbach Halfgraben.

- Fig. 1: *Guttulina communis* (D'ORBIGNY, 1826), PO1 (520–525 m) 17/2.
Fig. 2: *Lenticulina inornata* (D'ORBIGNY, 1846), HRD19 (650–656 m) 7/1.
Fig. 3: *Sphaeroidina bulloides* D'ORBIGNY in DESHAYES, 1828, SI3 (1,000–1,003 m) 8/2.
Fig. 4: *Cibicidoides lobatulus* (WALKER & JACOB, 1798), AH1 (130–135 m) 5/1.
Fig. 5: *Valvulineria complanata* (D'ORBIGNY, 1846), SI3 (900–906 m) 7/3.
Fig. 6: *Nonion commune* (D'ORBIGNY, 1846), SI3 (900–906 m) 7/3.
Fig. 7: *Siphonina reticulata* (ČŽJŽEK, 1848), AH1 (310–315 m) 11/1.
Fig. 8: *Amphistegina radiata* (FICHTEL & MOLL, 1798), PO1 (520–525 m) 17/2.
Fig. 9: *Globigerina bulloides* D'ORBIGNY, 1826, PO1 (130–135 m) 4/2.
Fig. 10: *Globigerinoides trilobus* (REUSS, 1850), AH1 (130–135 m) 5/1.
Fig. 11: *Melonis pompilioides* (FICHTEL & MOLL, 1798), SI3 (900–906 m) 7/3.
Fig. 12: *Pullenia bulloides* (D'ORBIGNY, 1846), SI3 (900–906 m) 7/3.
Fig. 13: *Heterolepa dutemplei* (D'ORBIGNY, 1846), SI3 (1,000–1,003 m) 8/2.
Fig. 14: *Hansenisca soldanii* (D'ORBIGNY, 1826), SI3 (1,000–1,003 m) 8/2.
Fig. 15: *Conorbella imperatoria* (D'ORBIGNY, 1846), PO1 (520–525 m) 17/2.
Fig. 16: *Biasterigerina planorbis* (D'ORBIGNY, 1846), PO1 (520–525 m) 17/2.
Fig. 17: *Aubignyna* sp. 1 – spiral side, WA1 (300–305 m) 3/1.
Fig. 18: *Aubignyna* sp. 1 – umbilical side, WA1 (300–305 m) 3/1.
Fig. 19: *Ammonia pseudobeccarii* (PUTRYA, 1946) – spiral side, WA1 (200–205 m) 1/1.
Fig. 20: *Ammonia pseudobeccarii* (PUTRYA, 1946) – umbilical side, WA1 (200–205 m) 1/1.
Fig. 21: *Ammonia viennensis* (D'ORBIGNY, 1846) – spiral side, AH1 (160–165 m) 6/2.
Fig. 22: *Ammonia viennensis* (D'ORBIGNY, 1846) – umbilical side, AH1 (160–165 m) 6/2.
Fig. 23: *Porosonion granosum* (D'ORBIGNY, 1846), AH1 (160–165 m) 6/2.
Fig. 24: *Porosonion granosum* (D'ORBIGNY, 1846) – umbilical area, AH1 (160–165 m) 6/2.
Fig. 25: *Elphidium flexuosum* (D'ORBIGNY, 1846), AH1 (190–195 m) 7/4.
Fig. 26: *Elphidium grilli* PAPP, 1963, WA1 (200–205 m) 1/1.
Fig. 27: *Elphidium aculeatum* (D'ORBIGNY, 1846), AH1 (130–135 m) 5/1.
Fig. 28: *Elphidium aculeatum* (D'ORBIGNY, 1846), keel with small teeth, AH1 (130–135 m) 5/1.

Scale bar = 100 µm.

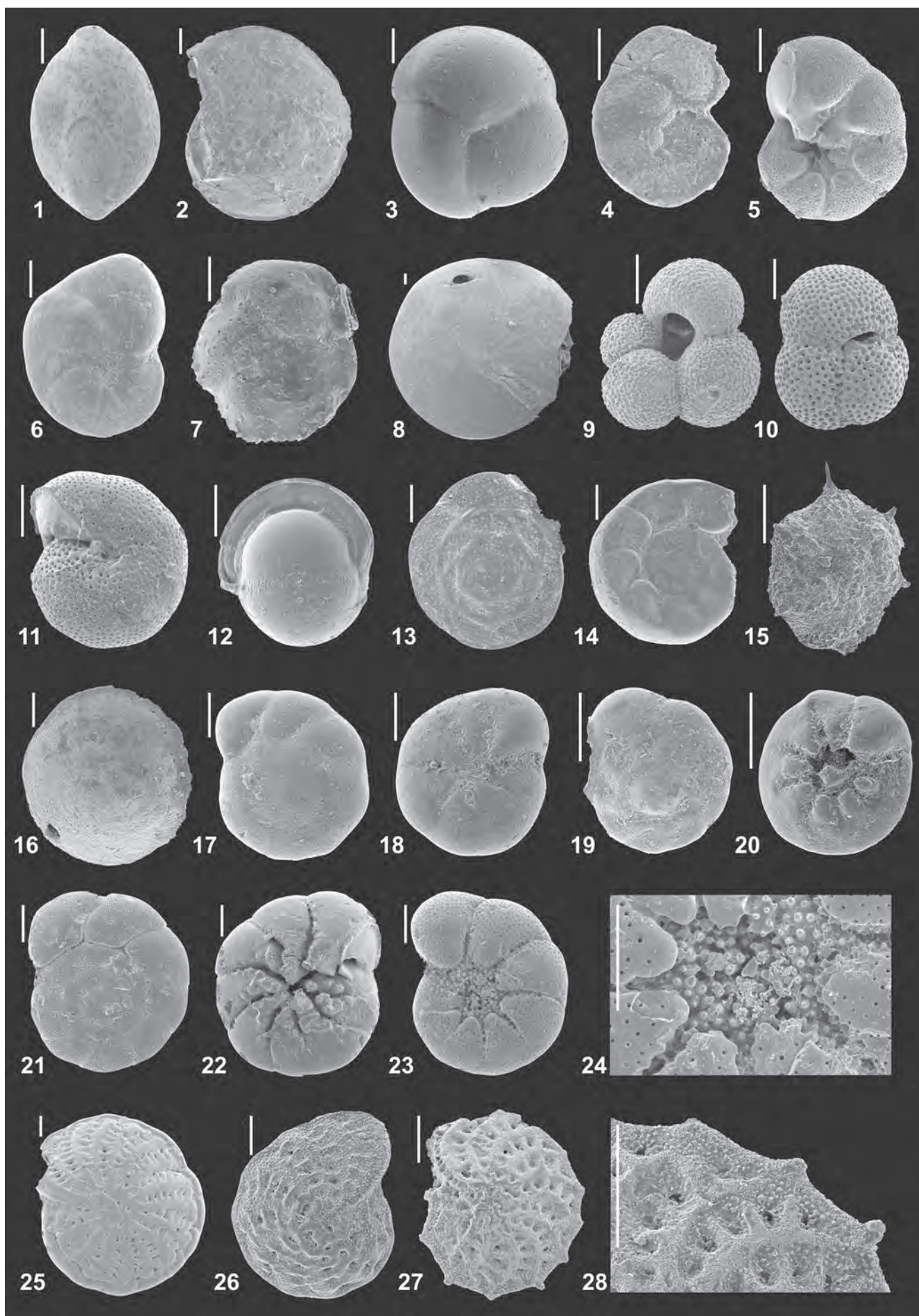
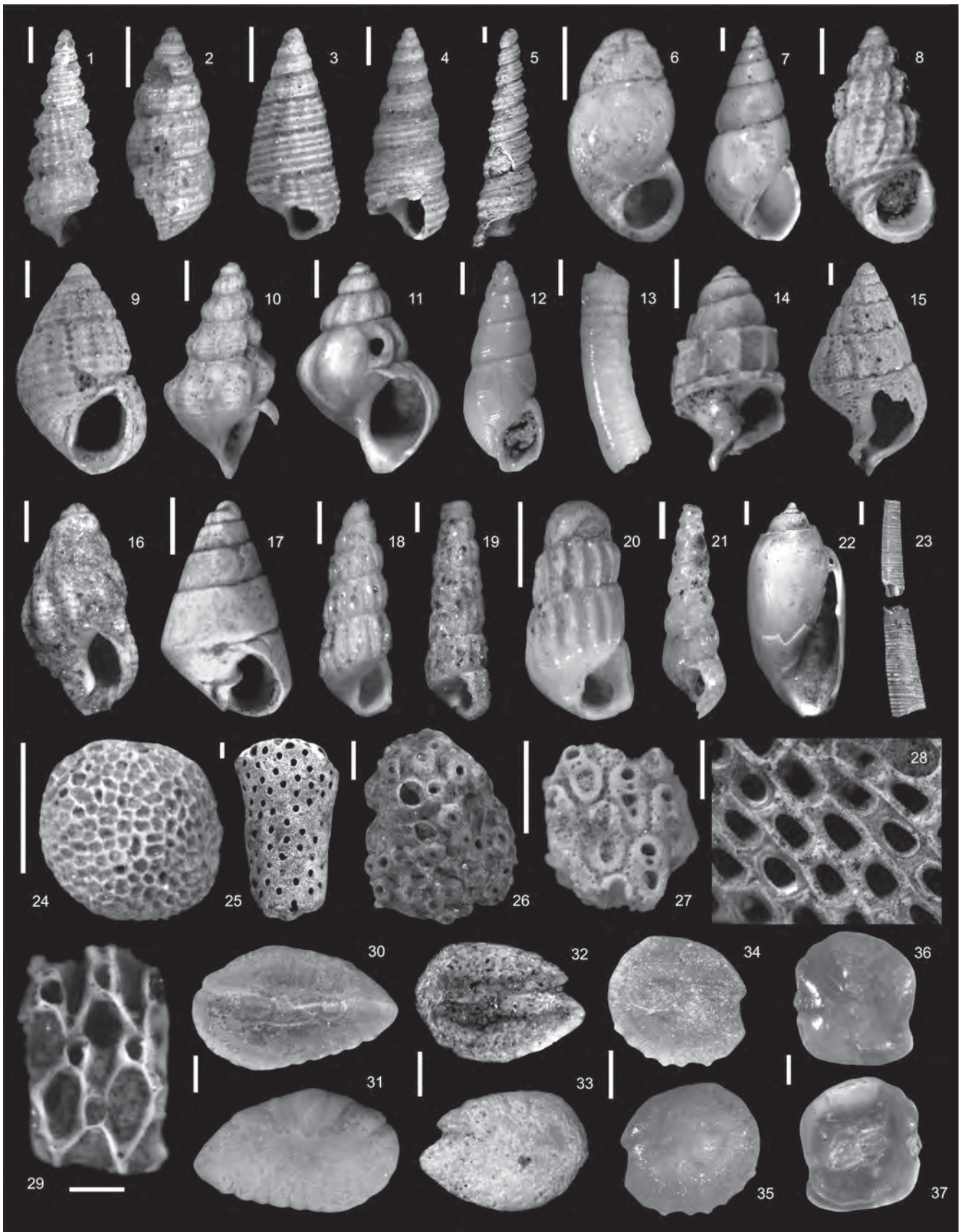


Plate 3

Macrofossils from the cores: Figs. 1–22: Gastropoda, Fig. 23: Scaphopoda, Figs. 24–29: Bryozoa, Figs. 30–37: otoliths.

- Fig. 1: *Bittium spina* (HÖRNES, 1855), AH (190–195 m) 7/4.
Fig. 2: *Sandbergeria perpusilla* (GRATELOUP, 1827), AH (190–195 m) 7/4.
Fig. 3: *Cerithidium multiliratum* (BRUSINA, 1877), PO1 (520–525 m) 17/2.
Fig. 4: *Cerithidium schwartzi* (HÖRNES, 1856), PO1 (520–525 m) 17/2.
Fig. 5: *Ptychidia vindobonensis* (HANDMANN, 1882), AH1 (220–225 m) 8/2.
Fig. 6: *Stenothyroides schwartzi* (HÖRNES, 1856), Mi1 (800–805 m) 1/2.
Fig. 7: *Hydrobia subsuturata* JEKELIUS, 1944, PO1 (220–225 m) 7/2.
Fig. 8: *Manzonia scalaris* (DUBOIS, 1831), HDR24 (550–555 m) 5/1.
Fig. 9: *Alvania ampulla* (EICHWALD, 1853), PO1 (520–525 m) 17/2.
Fig. 10: *Mohrensternia styriaca* HILBER, 1897, WA1 (300–305 m) 3/1.
Fig. 11: *Mohrensternia inflata* (HÖRNES, 1856), WA1 (300–305 m) 3/1.
Fig. 12: *Pseudonoba striata* (HÖRNES, 1856), AH1 (220–225 m) 8/2.
Fig. 13: *Caecum cf. trachea* (MONTAGU, 1803), AH (190–195 m) 7/4.
Fig. 14: *Profundinassa cf. fuchsi* (KOENEN, 1872), Si3 (1,000–1,003 m) 8/2.
Fig. 15: *Tritia styriaca* (HILBER, 1879), AH (190–195 m) 7/4.
Fig. 16: *Tritia subasperata* (BOETTGER, 1906), HRD (645–650 m) 7/1.
Fig. 17: *Odostomia* sp., Si3 (1,000–1,003 m) 8/2.
Fig. 18: *Turbonilla* sp. 1, HFR (645–650 m) 7/1.
Fig. 19: *Turbonilla* sp. 2, HFR (645–650 m) 7/1.
Fig. 20: *Turbonilla* sp. 3, Si3 (1,000–1,003 m) 8/2.
Fig. 21: *Anisocycla cf. nitidissima* (MONTAGU, 1803), AH (190–195 m) 7/4.
Fig. 22: *Acteocina lajonkaireana* (BASTEROT, 1825), WA1 (300–305 m) 3/1.
Fig. 23: *Gadilina jani* (HÖRNES, 1856), AH1 (220–225 m) 8/2.
Fig. 24: *Ceriopora* sp., PO1 (520–525 m) 17/2.
Fig. 25: *Myriapora truncata* (PALLAS, 1776), PO1 (520–525 m) 17/2.
Fig. 26: *Cellepora* sp., PO1 (520–525 m) 17/2.
Fig. 27: *Adeonellopsis* sp., PO1 (520–525 m) 17/2.
Fig. 28: *Biflustra* sp., PO1 (520–525 m) 17/2.
Fig. 29: *Cupuladria* sp., WA1 (400–405 m) 5/1.
Figs. 30–31: *Gadiculus argenteus* GUICHENOT, 1850, Si3 (1,000–1,003 m) 8/2.
Figs. 32–33: *Diaphus acutirostrum* (HOLEC, 1975), HRD25 (490–495 m) 4/1.
Figs. 34–35: *Diaphus austriacus* (KOKEN, 1891), AH1 (190–195 m) 7/4.
Figs. 36–37: *Lesueurigobius vicinalis* (KOKEN, 1891), AH1 (220–225 m) 8/2.

Scale bar = 500 µm.



**Tab. 1, samples 1–44 (Part 1).
Specimen counts of foraminifers per sample.**

		AH1 (100–105 m) 4/1	AH1 (130–135 m) 5/1	AH1 (160–165 m) 6/2	AH1 (190–195 m) 7/4	AH1 (220–225 m) 8/2	AH1 (250–255 m) 9/4	AH1 (280–285 m) 10/2	AH1 (310–315 m) 11/1	AH1 (370–375 m) 13/3	AH1 (430–435 m) 15/3	AH1 (460–465 m) 16/1	AH1 (520–523 m) 18/3	AH1 (610–615 m) 21/2	GI1 (1,050–1,055 m) 17/1	GI2 (1,084–1,086.7 m) 10/2	HRD19 (400–405 m) 1/2	HRD19 (495–500 m) 2/1
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
AGGLUTINATED FORAMINIFERA	<i>Ammodiscus miocenicus</i> KARRER	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0
	<i>Ammodiscus</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bathysiphon filiformis</i> M. SARS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bathysiphon taurinensis</i> SACCO	0	0	0	0	0	0	0	1	0	0	0	0	13	0	8	0	0
	<i>Cribrostomoides subglobosus</i> (M. SARS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	119	0	0
	<i>Cyclammina bradyi</i> CUSHMAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cyclammina karpatica</i> CICHA & ZAPLETALOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Glomospira saturniformis</i> GRZYBOWSKI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Haplophragmoides carinatus</i> CUSHMAN & RENZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Karrerella chilostoma</i> (REUSS)	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Martinottiella communis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Paravulvulina serrata</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pseudogaudryina mayeriana</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Reticulophragmium karpaticum</i> CICHA & ZAPLETALOVA	0	0	0	0	0	0	0	0	52	114	4	12	24	102	16	0	0
	<i>Reticulophragmium</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Semivulvulina deperdita</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Semivulvulina pectinata</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	<i>Siphotextularia concava</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spirorutilus carinatus</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
	<i>Textularia gramen</i> D'ORBIGNY	0	1	1	11	1	3	1	1	0	0	0	0	0	0	0	0	0
	<i>Textularia gramen maxima</i> CICHA & ZAPLETALOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Textularia laevigata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Textularia mariae</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Textularia pala</i> CZJZEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Trochamminoides contortus</i> MALLORY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Agglutinated indet. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Agglutinated indet. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MILIOLID FORAMINIFERA	<i>Adelosina longirostra</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Adelosina schreibersi</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Borelis melo</i> (FICHEL & MOLL)	0	0	0	13	2	0	0	0	0	0	0	0	0	0	0	0	
	<i>Borelis melo haueri</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Cornuspira plicata</i> (CZJZEK)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Cycloforina badenensis</i> (D'ORBIGNY)	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Cycloforina contorta</i> (D'ORBIGNY)	0	0	0	14	20	0	4	0	1	0	0	0	0	0	0	0	
	<i>Cycloforina gracilis</i> (KARRER)	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Cycloforina lucida</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Cycloforina nussdorfensis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Cycloforina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Miliolidae indet. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Pseudotriloculina consobrina</i> (D'ORBIGNY)	0	3	0	27	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Pyrgo simplex</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Pyrgoella ventruosa</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina agglutinans</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina akneriana</i> D'ORBIGNY	0	0	0	35	4	0	2	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina boueana</i> D'ORBIGNY	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina buchiana</i> D'ORBIGNY	1	0	0	17	2	0	0	0	0	0	0	0	0	0	0	0	
<i>Quinqueloculina foeda</i> (REUSS)	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0		
<i>Quinqueloculina haidingeri</i> D'ORBIGNY	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
<i>Quinqueloculina hauerina</i> D'ORBIGNY	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0		
<i>Quinqueloculina seminulum</i> LINNÉ	0	0	0	0	0	0	0	1	5	0	1	5	0	0	0	0		
<i>Quinqueloculina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<i>Quinqueloculina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<i>Quinqueloculina</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Tab. 1, samples 1–44 (Part 2).		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
MILIOLID FORAMINIFERA	<i>Quinqueloculina</i> sp. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina</i> sp. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina</i> sp. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina</i> sp. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Quinqueloculina triangularis</i> D'ORBIGNY	0	0	0	0	8	0	1	0	3	6	0	0	0	0	0	0	0	1
	<i>Sigmolinita tschokrakensis</i> GERKE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolopsis celata</i> (COSTA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolopsis schlumbergeri</i> (SILVESTRI)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolopsis</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spirolina austriaca</i> D'ORBIGNY	0	0	0	5	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	<i>Spirolina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spiroloculina canaliculata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spiroloculina excavata</i> D'ORBIGNY	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spirosigmolinita tenuis</i> (CZJZEK)	0	0	0	0	2	0	0	0	0	1	0	0	0	0	3	0	0	0
	<i>Triloculina eggeri</i> (BOGDANOVICH)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Triloculina gibba</i> D'ORBIGNY	0	0	0	13	10	0	1	0	0	0	0	0	0	0	0	0	0	0
	<i>Triloculina inflata</i> D'ORBIGNY	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<i>Triloculina scapha</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
HYALINE FORAMINIFERA	<i>Ammonia pseudobeccarii</i> (PUTRYA)	137	2	0	1	28	0	3	0	4	1	0	3	1	0	0	0	1	
	<i>Ammonia tepida</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<i>Ammonia viennensis</i> (D'ORBIGNY)	127	9	252	171	68	1	13	0	17	22	0	5	3	0	0	2	3	
	<i>Amphicoryna badenensis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphicoryna hispida</i> (D'ORBIGNY)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphicoryna ottnangensis</i> (TOULA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphimorphina haueriana</i> NEUGEBOREN	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphistegina radiata</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Astronion stelligerum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Aubignyna</i> sp. 1 (see SCHÜTZ et al., 2007)	13	11	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	<i>Biapertorbis biaperturatus</i> POKORNY	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Biasterigerina planorbis</i> (D'ORBIGNY)	1	33	0	8	6	0	15	3	13	24	0	9	4	0	0	0	0	0
	<i>Bitubulogenerina reticulata</i> CUSHMAN	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bolivina dilatata</i> REUSS	0	8	0	0	21	0	3	3	1	0	0	1	1	0	0	0	0	0
	<i>Bolivina hebes</i> MACFADYEN	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bolivina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina buchiana</i> D'ORBIGNY	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina elongata</i> D'ORBIGNY	0	53	1	1	4	1	9	0	0	1	0	0	0	0	0	0	0	117
	<i>Bulimina elongata longa</i> (VENGLINSKYI)	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina striata</i> D'ORBIGNY	1	15	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
	<i>Bulimina subulata</i> (CUSHMAN & PARKER)	0	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cancris auriculus</i> (FICHTEL & MOLL)	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cassidulina laevigata</i> D'ORBIGNY	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Caucasina schischkinskayae</i> (SAMOYLOVA)	0	4	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
	<i>Ceratocancris haueri</i> (D'ORBIGNY)	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicoides austriacus</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicoides budayi</i> (CICHA & ZAPLETALOVA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicoides lobatulus</i> (WALKER & JACOB)	0	20	33	1	19	0	0	0	3	2	0	1	2	0	0	0	0	0
	<i>Cibicoides lopjanicus</i> (MYATLYUK)	0	0	0	0	0	0	8	4	0	3	0	0	0	0	0	0	0	2
	<i>Cibicoides pachyderma</i> (RZEHA)	0	0	3	2	2	0	0	0	0	2	0	0	0	0	0	0	0	0
	<i>Cibicoides</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	<i>Cibicoides</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicoides</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicoides ungerianus ungerianus</i> (D'ORBIGNY)	0	0	0	1	12	0	2	4	0	0	0	0	0	0	0	0	0	0
	<i>Conorbella imperatoria</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Dentalina acuta</i> D'ORBIGNY	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Dentalina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Discorbinoidea</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidiella minuta</i> (REUSS)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium aculeatum</i> (D'ORBIGNY)	1	7	11	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium advenum</i> (CUSHMAN)	0	4	0	7	12	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium angulatum</i> (EGGER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium antoninum</i> (D'ORBIGNY)	12	3	0	0	0	0	0	0	11	20	0	7	0	0	0	0	0	0
	<i>Elphidium crispum</i> (LINNÉ)	1	18	5	97	2	0	29	0	31	42	0	13	5	0	2	0	0	0
	<i>Elphidium fichtelianum</i> (D'ORBIGNY)	0	12	0	11	5	0	1	3	2	0	0	0	0	0	0	0	0	0
	<i>Elphidium flexuosum</i> (D'ORBIGNY)	0	0	0	17	0	0	0	0	3	0	0	3	0	0	0	0	0	0
	<i>Elphidium grilli</i> PAPP	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium hauerinum</i> (D'ORBIGNY)	0	2	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium josephinum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium karpaticum</i> MYATLYUK	0	0	0	0	0	0	6	0	3	0	0	1	0	0	0	0	0	0
<i>Elphidium koberi</i> TOLLMANN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium listeri</i> (D'ORBIGNY)	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium macellum</i> (FICHTEL & MOLL)	0	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium obtusum</i> (D'ORBIGNY)	7	0	20	5	2	1	3	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium ortenburgense</i> (EGGER)	0	0	0	0	0	0	5	0	0	6	1	1	9	0	0	0	0	1	
<i>Elphidium reussi</i> MARKS	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
<i>Elphidium rugosum</i> (D'ORBIGNY)	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	
<i>Elphidium</i> sp. (see CICHA et al., 1998)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Tab. 1, samples 1–44 (Part 3).		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	<i>Elphidium</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 11	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 12	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	<i>Elphidium subtypicum</i> PAPP	0	0	0	0	0	0	0	1	0	6	0	0	0	0	0	0	0
	<i>Elphidium ungeri</i> (REUSS)	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Eponides repandus</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	<i>Escomebovina ? trochiformis</i> (ANDREAE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Favulina geometrica</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Favulina hexagona</i> (WILLIAMSON)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Fissurina laevigata</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Fissurina marginata</i> (MONTAGU)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Fontbotia wuellerstorfi</i> (SCHWAGER)	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0
	<i>Fursenkoina subacuta</i> (D'ORBIGNY)	1	11	0	0	12	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Glabratella</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Glandulina ovula</i> D'ORBIGNY	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina bulloides</i> D'ORBIGNY	0	71	4	1	10	0	45	27	7	3	0	0	0	0	0	0	0
	<i>Globigerina concinna</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina diplostoma</i> REUSS	0	6	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina falconensis</i> BLOW	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina ottnangiensis</i> RÖGL	0	0	0	0	0	0	29	3	0	0	0	0	0	0	0	0	0
	<i>Globigerina praebulloides</i> BLOW	0	5	0	0	0	0	0	26	4	5	0	3	6	0	0	0	2
	<i>Globigerina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina tarchanensis</i> SUBBOTINA & CHUTZIEVA	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinella obesa</i> (BOLLI)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinella regularis</i> (D'ORBIGNY)	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinoides bispericus</i> TODD	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
	<i>Globigerinoides quadrilobatus</i> (D'ORBIGNY)	0	17	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinoides trilobus</i> (REUSS)	0	1	0	0	3	0	0	4	0	0	0	0	0	0	0	0	0
	<i>Globoquadrina cf. altispira</i> (CUSHMAN & JARVIS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globorotalia bykovae</i> AISENSTAT	2	1	3	0	0	0	1	0	1	0	0	0	0	0	0	0	0
	<i>Globorotalia peripheroronda</i> BLOW & BANNER	0	6	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0
	<i>Globorotalia transylvanica</i> POPESCU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globoturborotalita woodi</i> (JENKINS)	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	<i>Globulina gibba</i> D'ORBIGNY	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globulina punctata</i> D'ORBIGNY	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globulina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globulina striata</i> (EGGER)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Grigelis pyrula</i> (D'ORBIGNY)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Guttulina austriaca</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Guttulina communis</i> (D'ORBIGNY)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Hansenisca soldanii</i> (D'ORBIGNY)	0	0	0	1	1	0	0	1	0	3	0	0	1	0	0	0	0
	<i>Heterolepa dutemplei</i> (D'ORBIGNY)	0	14	1	1	6	0	18	8	6	3	0	2	2	0	14	0	1
	<i>Hoeglundina elegans</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 6	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 7	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	Hyaline indet. 9	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	Hyaline indet. 10	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
	Hyaline indet. 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Hyalinonettrion clavatum</i> (D'ORBIGNY)	0	2	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	<i>Laevidentalina communis</i> (D'ORBIGNY)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina elegans</i> (D'ORBIGNY)	0	0	0	0	9	0	0	1	0	0	0	0	0	0	0	0	0

Tab. 1, samples 1–44 (Part 4).		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	<i>Laevidentalina inornata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina scripta</i> (D'ORBIGNY)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena gracilicosta</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena haidingeri</i> (CZJZEK)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	<i>Lagena</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena</i> sp. 2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Lagena striata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina americana</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina austriaca</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina cultrata</i> (DE MONTFORT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina inornata</i> (D'ORBIGNY)	0	0	0	0	0	8	7	0	2	0	0	0	0	0	4	0	0
	<i>Lenticulina melvilli</i> (CUSHMAN & RENZ)	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	1
	<i>Lenticulina orbicularis</i> (D'ORBIGNY)	0	0	0	0	0	0	4	38	1	2	0	0	0	0	0	0	0
	<i>Lenticulina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina spinosa</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina vortex</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Marginulina hirsuta</i> (D'ORBIGNY)	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	<i>Melonis affinis</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Melonis pompilioides</i> (FICHTEL & MOLL)	0	4	0	0	4	0	4	4	1	2	0	0	0	0	0	0	0
	<i>Myllostomella recta</i> (PALMER & BERMÚDEZ)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Neoeponides schreibersi</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Neugeborina irregularis</i> (D'ORBIGNY)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Neugeborina longiscata</i> (D'ORBIGNY)	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nodosaria</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nodosaria</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nodosaria</i> sp. 3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonion bogdanowiczi</i> VOLOSHINOVA	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonion commune</i> (D'ORBIGNY)	0	18	7	4	83	0	11	6	1	2	0	0	1	0	0	0	13
	<i>Nonion tumidulus</i> PISHVANOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	<i>Nonionella turgida</i> (WILLIAMSON)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonionoides karaganicus</i> (KRASHENINNIKOV)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Orbulina suturalis</i> BRÖNNMANN	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Orthomorpha columella</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pappina parkeri</i> (KARRER)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	<i>Pappina primiformis</i> (PAPP & TURNOVSKY)	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	<i>Parafissurina carinata</i> (BUCHNER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Paragloborotalia ? mayeri</i> (CUSHMAN & ELLISOR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pararotalia aculeata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pararotalia rimosa ?</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Planularia kubinyi</i> (HANTKEN)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Plectofrondicularia digitalis</i> (NEUGEBOREN)	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Plectofrondicularia raricosta</i> (KARRER)	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Plectofrondicularia striata</i> (HANTKEN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Porosonion granosum</i> (D'ORBIGNY)	3	1	224	18	86	0	7	1	2	12	0	3	1	0	0	0	0
	<i>Praeglobobulimina pyrula</i> (D'ORBIGNY)	0	12	6	0	4	0	1	0	0	2	0	0	0	0	0	0	0
	<i>Protoglobobulimina pupoides</i> (D'ORBIGNY)	0	5	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
	<i>Pseudonodosaria brevis</i> (D'ORBIGNY)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	<i>Pullenia bulloides</i> (D'ORBIGNY)	0	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Pullenia quinqueloba</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pygmaeosestron hispidum</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>REUSSella spinulosa</i> (REUSS)	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Scallopstoma ovicula</i> (D'ORBIGNY)	0	0	0	0	0	0	1	0	0	1	0	0	0	3	0	0	0
	<i>Siphonina reticulata</i> (CZJZEK)	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
	<i>Siphonodosaria consobrina</i> (D'ORBIGNY)	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	<i>Sphaeroidina bulloides</i> D'ORBIGNY in DESHAYES	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Stilostomella adolphina</i> (D'ORBIGNY)	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Turborotalita quinqueloba</i> (NATLAND)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Uvigerina aculeata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Uvigerina acuminata</i> HOSIUS	0	1	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0
	<i>Uvigerina breviformis</i> (PAPP & TURNOVSKY)	0	0	0	0	0	0	14	0	3	0	0	0	0	0	0	0	0
	<i>Uvigerina graciliformis</i> PAPP & TURNOVSKY	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
	<i>Uvigerina gracilis</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Uvigerina grilli</i> SCHMID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Uvigerina macrocarinata</i> PAPP & TURNOVSKY	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0
	<i>Uvigerina mantaensis</i> CUSHMAN & EDWARDS	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
	<i>Uvigerina pygmoides</i> PAPP & TURNOVSKY	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
	<i>Uvigerina semiornata</i> D'ORBIGNY	0	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0
	<i>Uvigerina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Uvigerina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Uvigerina venusta</i> FRANZENAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Vaginulinopsis hauerina</i> (D'ORBIGNY)	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	<i>Valvulineria complanata</i> (D'ORBIGNY)	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	0	0
	<i>Virgulopsis tuberculatus</i> (EGGER)	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
	Total	336	438	601	510	580	21	278	183	174	304	5	75	74	266	39	5	150

	KAZ (1,020-1,025 m) 3/1	KAZ (1,020-1,025 m) 3/4	KAZ (1,080-1,085 m) 4/3	KAZ (1,140-1,145 m) 5/2	KAZ (1,380-1,385 m) 9/3	MTW1 (1,100-1,105 m) 3/5	MTW1 (1,130-1,138 m) 4/7	MTW1 (1,130-1,138 m) 4/2	MTW1 (1,380-1,385 m) 9/1	MTW1 (1,480-1,485 m) 12/4	MI1 (1,062-1,067 m) 3/2	MI1 (1,373.5-1,377 m) 7/4	MisU1 (1,298-1,302 m) 1/2	MisU1 (1,885-1,894 m) 3/1	MisU1 (1,885-1,894 m) 3/4	PW U3 (1,123-1,128 m) 1/1	PW U3 (1,123-1,128 m) 1/3	
Tab. 1, samples 45-88 (Part 1).	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	
AGGLUTINATED FORAMINIFERA																		
<i>Ammodiscus miocenicus</i> KARRER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Ammodiscus</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Bathysiphon filiformis</i> M. SARS	0	0	0	0	0	0	0	0	0	0	3	101	0	0	0	0	0	0
<i>Bathysiphon taurinensis</i> SACCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cribrostomoides subglobosus</i> (M. SARS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cyclammina bradyi</i> CUSHMAN	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
<i>Cyclammina karpatica</i> CICHA & ZAPLETALOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Glomospira saturniformis</i> GRZYBOWSKI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Haplophragmoides carinatus</i> CUSHMAN & RENZ	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Karrerella chlostoma</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Martinottiella communis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
<i>Paravulvulina serrata</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pseudogaudryina mayeriana</i> (D'ORBIGNY)	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Reticulophragmium karpaticum</i> CICHA & ZAPLETALOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Reticulophragmium</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
<i>Semivulvulina deperdita</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	0	0
<i>Semivulvulina pectinata</i> (REUSS)	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Siphotextularia concava</i> (KARRER)	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
<i>Spirorutilus carinatus</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	13	0	0	1	0	0	0	0	0
<i>Textularia gramen</i> D'ORBIGNY	0	22	0	2	0	0	3	0	2	1	0	0	0	0	0	0	0	0
<i>Textularia gramen maxima</i> CICHA & ZAPLETALOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Textularia laevigata</i> D'ORBIGNY	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Textularia mariae</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Textularia pala</i> CZJZEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Trochamminoides contortus</i> MALLORY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 2	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0
Agglutinated indet. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Agglutinated indet. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Agglutinated indet. 5	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Agglutinated indet. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MILIOLID FORAMINIFERA																		
<i>Adelosina longirostra</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
<i>Adelosina schreibersi</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Borelis melo</i> (FICHEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Borelis melo haueri</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cornuspira plicata</i> (CZJZEK)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cycloforina badenensis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cycloforina contorta</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cycloforina gracilis</i> (KARRER)	0	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	43
<i>Cycloforina lucida</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cycloforina nussdorfensis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Cycloforina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Miliolidae indet. 3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Miliolidae indet. 4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miliolidae indet. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pseudotriloculina consobrina</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pyrgo simplex</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pyrgoella venturosa</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina agglutinans</i> D'ORBIGNY	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina akneriana</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina boueana</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina buchiana</i> D'ORBIGNY	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina foeda</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina haidingeri</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina hauerina</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina seminulum</i> LINNÉ	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Quinqueloculina</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tab. 1, samples 45–88 (Part 2).		45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
MILIOLID FORAMINIFERA	<i>Quinqueloculina</i> sp. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Quinqueloculina</i> sp. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Quinqueloculina</i> sp. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Quinqueloculina</i> sp. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Quinqueloculina triangularis</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolinita tschokrakensis</i> GERKE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolopsis celata</i> (COSTA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolopsis schlumbergeri</i> (SILVESTRI)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Sigmolopsis</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spirolina austriaca</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spirolina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spiroloculina canaliculata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spiroloculina excavata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Spirosigmolinita tenuis</i> (CZJZEK)	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0
	<i>Triloculina eggeri</i> (BOGDANOVICH)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Triloculina gibba</i> D'ORBIGNY	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<i>Triloculina inflata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Triloculina scapha</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
HYALINE FORAMINIFERA	<i>Ammonia pseudobeccarii</i> (PUTRYA)	2	0	0	0	0	0	6	2	25	0	0	0	0	0	1	0	2
	<i>Ammonia tepida</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	<i>Ammonia viennensis</i> (D'ORBIGNY)	4	5	112	11	47	1	3	1	6	0	0	0	1	41	1	132	158
	<i>Amphicoryna badenensis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphicoryna hispida</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphicoryna ottnangensis</i> (TOULA)	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0
	<i>Amphimorphina haueriana</i> NEUGEBOREN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Amphistegina radiata</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Astronion stelligerum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Aubignyna</i> sp. 1 (see SCHÜTZ et al., 2007)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Biapertorbis biaperturatus</i> POKORNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Biasterigerina planorbis</i> (D'ORBIGNY)	0	0	0	0	0	0	1	0	3	2	0	0	0	0	0	0	0
	<i>Bitubulogenerina reticulata</i> CUSHMAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bolivina dilatata</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bolivina hebes</i> MACFADYEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bolivina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina buchiana</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina elongata</i> D'ORBIGNY	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina elongata longa</i> (VENGLINSKYI)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina striata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Bulimina subulata</i> (CUSHMAN & PARKER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cancris auriculus</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cassidulina laevigata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Caucasina schischkinskayae</i> (SAMOYLOVA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Ceratocancris haueri</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicidoides austriacus</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicidoides budayi</i> (CICHA & ZAPLETALOVA)	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
	<i>Cibicidoides lobatulus</i> (WALKER & JACOB)	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0
	<i>Cibicidoides lopjanicus</i> (MYATLYUK)	0	0	0	0	0	0	41	4	44	9	0	0	0	0	0	0	0
	<i>Cibicidoides pachyderma</i> (RZEHA)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	<i>Cibicidoides</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicidoides</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicidoides</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Cibicidoides ungerianus ungerianus</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	<i>Conorbella imperatoria</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Dentalina acuta</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Dentalina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Discorbinooides</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidiella minuta</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium aculeatum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium advenum</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium angulatum</i> (EGGER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium antoninum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium crispum</i> (LINNÉ)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium fichtelianum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	<i>Elphidium flexuosum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium grilli</i> PAPP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium hauerinum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium josephinum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium karpaticum</i> MYATLYUK	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
<i>Elphidium koberi</i> TOLLMANN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium listeri</i> (D'ORBIGNY)	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium macellum</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium obtusum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium ortenburgense</i> (EGGER)	0	0	0	0	0	0	9	3	3	0	0	0	0	0	0	0	0	
<i>Elphidium reussi</i> MARKS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium rugosum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium</i> sp. (see CICHA et al., 1998)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Elphidium</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Tab. 1, samples 45–88 (Part 3).		45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
	<i>Elphidium</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0
	<i>Elphidium</i> sp. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	<i>Elphidium</i> sp. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium</i> sp. 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Elphidium subtypicum</i> PAPP	0	0	0	0	0	0	11	0	4	10	0	0	0	0	0	0	0
	<i>Elphidium ungeri</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Eponides repandus</i> (FICHELT & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Escomebovina ? trochiformis</i> (ANDREAE)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Favulina geometrica</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Favulina hexagona</i> (WILLIAMSON)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	<i>Fissurina laevigata</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Fissurina marginata</i> (MONTAGU)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Fontbotia wuellerstorfi</i> (SCHWAGER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Fursenkoina subacuta</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	<i>Glabratella</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Glandulina ovula</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina bulloides</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina concinna</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina diplostoma</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina falconensis</i> BLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina ottnangiensis</i> RÖGL	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina praebulloides</i> BLOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina</i> sp. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	<i>Globigerina</i> sp. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerina tarchanensis</i> SUBBOTINA & CHUTZIEVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinella obesa</i> (BOLLI)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinella regularis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinoides bispericus</i> TODD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinoides quadrilobatus</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globigerinoides trilobus</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globoquadrina cf. altispira</i> (CUSHMAN & JARVIS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globorotalia bykova</i> AISENSTAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globorotalia peripheroronda</i> BLOW & BANNER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globorotalia transylvanica</i> POPESCU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globoturbotalita woodi</i> (JENKINS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Globulina gibba</i> D'ORBIGNY	0	6	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
	<i>Globulina punctata</i> D'ORBIGNY	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1	0	0
	<i>Globulina</i> sp. 1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	<i>Globulina striata</i> (EGGER)	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0
	<i>Grigelis pyrula</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	<i>Guttulina austriaca</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Guttulina communis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Hansenisca soldanii</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Heterolepa dutemplei</i> (D'ORBIGNY)	22	42	0	0	0	0	3	2	7	32	0	0	0	0	0	0	0
	<i>Hoeglundina elegans</i> (D'ORBIGNY)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	Hyaline indet. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 14	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0
	Hyaline indet. 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hyaline indet. 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Hyalinonettrion clavatum</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina communis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina elegans</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tab. 1, samples 45–88 (Part 4).		45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
HYALINE FORAMINIFERA	<i>Laevidentalina inornata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina scripta</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Laevidentalina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena gracilicosta</i> REUSS	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	<i>Lagena haidingeri</i> (CZJZEK)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lagena striata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina americana</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina austriaca</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina cultrata</i> (DE MONTFORT)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina inornata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	4
	<i>Lenticulina melvilli</i> (CUSHMAN & RENZ)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina orbicularis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina</i> sp. 1	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina spinosa</i> (CUSHMAN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Lenticulina vortex</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Marginulina hirsuta</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Melonis affinis</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Melonis pompilioides</i> (FICHTEL & MOLL)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Myllostomella recta</i> (PALMER & BERMÚDEZ)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Neoeponides schreibersi</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Neugeborina irregularis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Neugeborina longiscata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nodosaria</i> sp. 1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	<i>Nodosaria</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nodosaria</i> sp. 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonion bogdanowiczi</i> VOLOSHINOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonion commune</i> (D'ORBIGNY)	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	1
	<i>Nonion tumidulus</i> PISHVANOVA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonionella turgida</i> (WILLIAMSON)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Nonionoides karaganicus</i> (KRASHENINNIKOV)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Orbulina suturalis</i> BRÖNNMANN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Orthomorphina columella</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pappina parkeri</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pappina primiformis</i> (PAPP & TURNOVSKY)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	<i>Parafissurina carinata</i> (BUCHNER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Paragloborotalia ? mayeri</i> (CUSHMAN & ELLISOR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pararotalia aculeata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pararotalia rimosa ?</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Planularia kubinyi</i> (HANTKEN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Plectofrondicularia digitalis</i> (NEUGEBOREN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Plectofrondicularia raricosta</i> (KARRER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Plectofrondicularia striata</i> (HANTKEN)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Porosonion granosum</i> (D'ORBIGNY)	7	4	0	0	0	0	0	2	0	0	0	0	0	0	9	0	0
	<i>Praeglobobulimina pyrula</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Protoglobobulimina pupoides</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pseudonodosaria brevis</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pullenia bulloides</i> (D'ORBIGNY)	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
	<i>Pullenia quinqueloba</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Pygmaeosestron hispidum</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Reussella spinulosa</i> (REUSS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<i>Scallopstoma ovicula</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Siphonina reticulata</i> (CZJZEK)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Siphonodosaria consobrina</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Sphaeroidina bulloides</i> D'ORBIGNY in DESHAYES	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
<i>Stilostomella adolphina</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Turborotalita quinqueloba</i> (NATLAND)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina aculeata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina acuminata</i> HOSIUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina breviformis</i> (PAPP & TURNOVSKY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina graciliformis</i> PAPP & TURNOVSKY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina gracilis</i> REUSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina grilli</i> SCHMID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina macrocarinata</i> PAPP & TURNOVSKY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina mantaensis</i> CUSHMAN & EDWARDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina pygmoides</i> PAPP & TURNOVSKY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina semiornata</i> D'ORBIGNY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Uvigerina venusta</i> FRANZENAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Vaginulinopsis hauerina</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Valvulineria complanata</i> (D'ORBIGNY)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>Virgulopsis tuberculatus</i> (EGGER)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	40	102	114	16	47	1	97	17	122	90	3	108	2	63	14	134	257	

Tab. 2 (Part 1).

		MisU1 (1,885–1,894 m) 3/4	MisU1 (1,885–1,894 m) 3/1	MisU1 (1,624–1,633 m) 1/2	HRD19 (590–595 m) 3/1	HRD19 (650–656 m) 7/1	HRD24 (256–260,5 m) 2/1	HRD24 (390–395 m) 3/1	HRD24 (550–555 m) 5/1	HRD24 (641–645 m) 7/1	HRD24 (775–779,5 m) 9/1	HRD25 (290–298 m) 1/1	HRD25 (310–315 m) 2/1	HRD25 (490–495 m) 4/1	HRD25 (550–557 m) 5/1	HRD25 (645–650 m) 7/1
Bivalvia	<i>Abra reflexa</i> (EICHWALD, 1830)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Acanthocardium</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Aequipecten macrotis</i> (SOWERBY, 1847)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Anadara diluvii</i> (LAMARCK, 1819)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Anomia</i> sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Cardioidea indet.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Circomphalus haidingeri</i> (HÖERNES, 1834)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Corbula gibba</i> (OLIVI, 1792)	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
Bivalvia	<i>Cyclocardia scalaris</i> (SOWERBY, 1825)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Ervilla pusilla</i> PHILIPPI, 1836	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Gouldia minima</i> (MONTAGU, 1803)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Limopsis anomala</i> (EICHWALD, 1830)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Microripides dentatus</i> (DEFRANCE, 1823)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Modiolus brocchi</i> HÖRNES, 1867	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Nuculoidea indet.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Obsoletiforma obsoleta</i> (EICHWALD, 1853)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Ostrea digitalina</i> (DUBOIS, 1831)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Parvicardium minimum</i> (PHILIPPI, 1836)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Pectinoidea indet.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Plagiocardium papillosum</i> (POLI, 1795)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Saccula commutata</i> (PHILIPPI, 1844)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Bivalvia	<i>Sarmatimacra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Scalaricardita scalaris</i> (SOWERBY, 1825)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Talochlamys multistriata</i> (POLI, 1795)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Tellinoidea indet.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroidea indet.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	<i>Venus nux</i> GMELIN, 1791	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	Bryozoa – <i>Cupuladria</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Adeonellopsis</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Biflustra</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Cellepora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Ceripora</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Hornera</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Myriapora truncata</i> (PALLAS, 1776)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Pleuronea</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bryozoa	<i>Smittina</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Echinodermata	diadematoid spines	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Gastropoda	<i>Acteocina lajonkairieana</i> (BASTEROT, 1825)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Vitta pachii</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Vitta picta</i> (FÉRUSSAC, 1825)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Vitta tuberculata</i> (SCHRETER, 1915)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Alvania ampulla</i> (EICHWALD, 1853)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Alvania oceani</i> (D'ORBIGNY 1852)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Alvania perregularis</i> (SACCO, 1895)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Alys miliaris</i> (BROCCHI, 1814)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Bittium reticulatum</i> (DA COSTA, 1778)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Gastropoda	<i>Bittium spina</i> (HÖRNES, 1855)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Caecum trachea</i> (MONTAGU, 1803)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Cerithidium multiliratum</i> (BRUSINA, 1877)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Cerithidium schwartzi</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Chrysallida</i> sp.	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0
Gastropoda	<i>Chrysallida subtypica</i> (SACCO, 1892)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Clavatula oliviae</i> HOERNES & AUINGER, 1891	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Anisocycla</i> cf. <i>nitidissima</i> (MONTAGU, 1803)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Eulima trulla</i> BOETTGER, 1906	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Euspira</i> sp.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Eulimella</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Fusiniidae indet.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Gibborissoia elata</i> (BOETTGER, 1902)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Gibborissoia varicosa</i> (DE BASTEROT, 1825)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Gibbula pseudangulata</i> (BOETTGER, 1907)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Gibbula</i> sp. 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Granulolabium bicinctum</i> (BROCCHI, 1814)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Granulolabium plicatum</i> (BRUGUIÈRE, 1791)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Hydrobia</i> cf. <i>andrusowii</i> HILBER, 1897	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Hydrobia frauenfeldi</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Hydrobia subsuturata</i> JEKELIUS, 1944	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tab. 2 (Part 2).		MisU1 (1,885–1,894 m) 3/4	MisU1 (1,885–1,894 m) 3/1	MisU1 (1,624–1,633 m) 1/2	HRD19 (590–595 m) 3/1	HRD19 (650–656 m) 7/1	HRD24 (256–260,5 m) 2/1	HRD24 (390–395 m) 3/1	HRD24 (550–555 m) 5/1	HRD24 (641–645 m) 7/1	HRD24 (775–779,5 m) 9/1	HRD25 (290–298 m) 1/1	HRD25 (310–315 m) 2/1	HRD25 (490–495 m) 4/1	HRD25 (550–557 m) 5/1	HRD25 (645–650 m) 7/1
		Gastropoda	<i>Mangella</i> sp.1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Mangella</i> sp.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Manzonina scalaris</i> (DUBOIS, 1831)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Gastropoda	<i>Marginella</i> sp.	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Gastropoda	<i>Melanella</i> sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Gastropoda	<i>Mitrella sarmatica</i> KOJUMDIEVA, 1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Mohrensternia inflata</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Mohrensternia styriaca</i> HILBER, 1897	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Tritia dujardini</i> (DESHAYES, 1844)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Tritia schoenni</i> (HOERNES & AUINGER, 1882)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Tritia</i> sp. indet.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Gastropoda	<i>Tritia striatula</i> (EICHWALD, 1829)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Tritia styriaca</i> (HILBER, 1879)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Tritia subasperata</i> (BOETTGER, 1906)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Gastropoda	<i>Naytopsis kareri</i> (HOERNES & AUINGER, 1882)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Odostomia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Odostomia</i> sp. 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Opisthobranch indet.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Gastropoda	<i>Polinices</i> cf. <i>cerovaensis</i> HARZHAUSER, 2011	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Gastropoda	<i>Polinices</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Potamides theodiscus</i> (ROLLE in HILBER, 1979)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Profundinassa fuchsi</i> (KOENEN, 1872)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Pseudamnicola tholosa</i> JEKELIUS, 1944	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Pseudonoba striata</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Pseudosetia laevigata</i> (EICHWALD, 1850)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Raphitoma</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Raphitoma sparsa</i> BOETTGER, 1902	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Rissoina subconoidea</i> (GRATELOUP, 1847)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Sandbergeria perpusilla</i> (GRATELOUP, 1827)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Gastropoda	<i>Stenothyroides schwartzi</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Terebra</i> cf. <i>acuminata</i> (BORSON, 1820)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Gastropoda	<i>Terebralia lignitarum</i> (EICHWALD, 1830)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Tornus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Turboella dilemma</i> (BOETTGER, 1902)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Turboella</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Turbonilla scalaris</i> (EICHWALD, 1853)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Turbonilla</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Gastropoda	Turridae indet.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Turritella</i> s.l. <i>eryna</i> D'ORBIGNY, 1852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Ptychidia vindobonensis</i> HANDMANN, 1882	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Gastropoda	<i>Vexillum</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaphopoda	<i>Gadila</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scaphopoda	<i>Gadilina jani</i> (HÖRNES, 1856)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	<i>Ditrupea cornea</i> (LINNAEUS, 1767)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Osteichthyes	<i>Diaphus acutirostrum</i> (HOLEC, 1975)	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Osteichthyes	<i>Diaphus austriacus</i> (KOKEN, 1891)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Osteichthyes	<i>Diaphus</i> sp.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Osteichthyes	<i>Gadiculus argenteus</i> GUICHENOT, 1850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Osteichthyes	<i>Lesueurigobius vicinalis</i> (KOKEN, 1891)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tab. 2.
Presence/absence of macrofossils per sample.

Nr.	Stratigraphy	Sample	Fisher Alpha Index	Equitability J	Dominance D	Epifaunal (%)	Epifaunal to Shallow Infaunal (%)	Infaunal (%)	Deep infaunal (%)	Inner neritic taxa (%)	IN-MN (%)	IN-ON (%)	MN-ON (%)	Inner neritic-bathyal taxa (%)	Middle neritic-bathyal taxa (%)	Outer neritic-bathyal taxa (%)	Bathyal taxa (%)	Oxic Indicators (%)	Oxic/Suboxic Indicators (%)	Suboxic Indicators (%)	Suboxic/Dysoxic Indicators (%)	Dysoxic Indicators (%)	High nutrient-flux Indicators (%)	Stress Indicators (%)	Number of Taxa
1	Otrngian (lo)	GI1 (1,050–1,055 m) 17/1	1.09	0.66	0.36	1.13	83.08	4.14	0.00	0.00	0.00	0.00	0.00	44.74	1.13	1.13	3.01	1.13	0.00	0.00	1.13	0.00	0.00	0.00	6.00
2	Otrngian (lo)	GI2 (1,084–1,086.7 m) 10/2	2.49	0.72	0.31	56.41	41.03	0.00	0.00	0.00	0.00	5.13	0.00	38.46	12.82	0.00	0.00	43.59	0.00	12.82	0.00	0.00	0.00	0.00	7.00
3	Otrngian (lo)	MTW1 (1,380–1,385 m) 9/1	10.12	0.72	0.18	62.30	25.41	6.56	0.00	25.41	4.10	6.56	0.00	8.20	45.90	0.82	0.00	58.20	25.41	9.02	0.00	0.00	0.00	0.00	26.00
4	Otrngian (lo)	MTW1 (1,480–1,485 m) 12/4	5.14	0.77	0.18	80.00	0.00	4.44	0.00	0.00	2.22	11.11	0.00	53.33	13.33	4.44	0.00	75.56	0.00	3.33	2.22	0.00	0.00	2.22	15.00
5	Otrngian (up)	KA2 (1,140–1,145 m) 5/2	2.50	0.64	0.50	18.75	68.75	0.00	0.00	68.75	0.00	6.25	0.00	12.50	0.00	0.00	0.00	18.75	68.75	0.00	0.00	0.00	0.00	0.00	5.00
6	Otrngian (up)	MTW1 (1,130–1,138 m) 4/7	7.64	0.72	0.21	83.51	9.28	3.09	0.00	9.28	2.06	26.80	0.00	7.22	48.45	1.03	0.00	78.35	10.31	7.22	0.00	0.00	0.00	0.00	20.00
7	Otrngian (up)	MTW1 (1,130–1,138 m) 4/2	5.90	0.96	0.15	52.94	17.65	0.00	0.00	17.65	11.76	17.65	0.00	17.65	23.53	0.00	0.00	58.82	17.65	0.00	0.00	0.00	0.00	0.00	8.00
8	Otrngian (up)	MisU1 (1,885–1,894 m) 3/1	1.28	0.62	0.47	0.00	65.08	0.00	0.00	65.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.05	65.08	0.00	0.00	0.00	0.00	0.00	5.00
9	Otrngian (up)	MisU1 (1,885–1,894 m) 3/4	3.98	0.68	0.44	0.00	14.29	0.00	0.00	14.29	64.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00	0.00	0.00	0.00	6.00
10	Otrngian (up)	S13 (1,335–1,340 m) 12/1	7.86	0.82	0.20	20.83	41.67	4.17	4.17	41.67	0.00	12.50	0.00	8.33	8.33	4.17	0.00	16.67	45.83	8.33	0.00	4.17	4.17	11.00	
11	Otrngian (up)	AH1 (370–375 m) 13/3	8.47	0.75	0.15	39.66	41.95	9.20	0.57	18.39	10.34	24.14	0.00	4.02	5.17	0.00	0.00	41.38	14.37	4.02	0.57	0.57	0.57	26.00	
12	Otrngian (up)	AH1 (430–435 m) 15/3	9.81	0.68	0.18	37.17	45.07	9.87	0.66	15.13	12.50	23.36	0.00	1.64	5.26	1.32	0.00	38.16	11.18	2.96	1.32	0.66	2.30	34.00	
13	Otrngian (up)	AH1 (520–523 m) 18/3	5.64	0.86	0.12	36.00	26.67	28.00	1.33	20.00	17.33	20.00	0.00	5.33	0.00	0.00	17.33	44.00	0.00	1.33	1.33	0.00	2.67	15.00	
14	Otrngian (up)	AH1 (610–615 m) 21/2	7.57	0.82	0.15	43.24	37.84	1.35	5.41	5.41	9.46	31.08	0.00	4.05	5.41	1.35	0.00	35.14	12.16	2.70	0.00	5.41	4.05	18.00	
15	Otrngian (upm)	KA2 (1,020–1,025 m) 3/1	2.46	0.72	0.35	65.00	17.50	0.00	0.00	15.00	17.50	5.00	0.00	60.00	0.00	2.50	0.00	60.00	20.00	2.50	0.00	0.00	2.50	7.00	
16	Otrngian (upm)	KA2 (1,020–1,025 m) 3/4	2.75	0.77	0.24	76.47	4.90	0.98	0.00	4.90	3.92	6.86	0.00	69.61	6.86	0.00	0.00	68.63	11.76	6.86	0.98	0.00	0.98	10.00	
17	Karpatian (lo)	KA1 (701–705 m) 12/2	1.02	0.31	0.75	0.73	97.08	0.00	0.00	97.08	0.73	0.73	0.00	0.00	0.00	0.00	0.00	0.73	97.08	0.00	0.00	0.00	0.00	5.00	
18	Karpatian (lo)	KA1 (750–755 m) 13/1	1.23	0.11	0.94	2.48	97.52	0.00	0.00	96.89	0.00	1.86	0.00	0.00	0.62	0.62	0.00	1.86	97.52	0.62	0.00	0.00	0.62	6.00	
19	Karpatian (lo)	KA1 (895–900 m) 15/2	1.66	0.26	0.80	3.60	89.19	1.80	0.00	89.19	5.41	1.80	0.00	0.90	2.70	0.00	0.00	2.70	90.09	1.80	0.00	0.00	0.00	7.00	
20	Karpatian (up)	HRD19 (819–820 m) 12/1	2.22	0.64	0.36	16.46	74.68	0.00	0.00	74.68	7.59	2.53	0.00	0.00	13.92	0.00	0.00	3.80	75.95	12.66	0.00	0.00	0.00	8.00	
21	Karpatian (up)	KA1 (500–506 m) 8/1	0.91	0.17	0.89	0.91	98.63	0.00	0.00	98.63	0.46	0.46	0.00	0.00	0.00	0.00	0.00	0.91	98.63	0.00	0.00	0.00	0.00	5.00	
22	Karpatian (up)	KA1 (550–555 m) 9/2	1.11	0.42	0.62	2.00	97.00	0.00	0.00	97.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	98.00	0.00	0.00	0.00	0.00	5.00	
23	Karpatian (up)	KA1 (600–604 m) 10/4	2.58	0.50	0.49	3.66	85.37	2.44	1.22	85.37	0.00	1.22	0.00	2.44	3.66	0.00	0.00	3.66	85.37	1.22	1.22	1.22	2.44	9.00	
24	Karpatian (up)	S13 (1,250–1,255 m) 11/1	2.19	0.13	0.89	0.39	94.41	1.16	0.19	94.41	0.00	0.00	0.00	0.58	1.16	0.00	0.00	0.39	94.41	0.77	0.39	0.19	0.58	12.00	
25	Badenian (lo)	WA1 (500–505 m) 7/4	4.18	0.56	0.35	88.70	0.00	3.48	0.00	0.00	0.00	6.96	0.00	29.57	56.52	0.00	0.00	35.65	0.87	53.91	2.61	0.00	1.74	14.00	
26	Karpatian (Gi)	AH1 (250–255 m) 9/4	9.33	0.85	0.19	57.14	4.76	28.57	0.00	9.52	0.00	0.00	0.00	23.81	52.38	0.00	0.00	23.81	4.76	52.38	9.52	0.00	4.76	11.00	
27	Karpatian (Gi)	AH1 (280–285 m) 10/2	16.73	0.82	0.07	37.41	5.76	23.02	1.44	8.63	7.91	15.83	0.00	14.75	20.50	0.72	0.00	34.17	6.83	15.83	7.91	1.44	6.12	7.55	48.00
28	Karpatian (Gi)	AH1 (310–315 m) 11/1	15.79	0.79	0.10	39.89	0.00	18.58	1.64	0.00	2.19	1.09	0.00	8.20	45.36	3.28	0.55	14.21	0.00	39.89	3.28	1.64	10.93	11.48	40.00
29	Karpatian (up)	HRD25 (665–670 m) 8/1	1.35	0.49	0.59	13.27	86.73	0.00	0.00	86.73	0.00	4.42	0.00	0.00	0.88	0.00	0.00	2.65	88.50	0.88	0.00	0.00	0.00	6.00	
30	Badenian (lo)	HRD19 (630–635 m) 6/1	4.45	0.54	0.29	10.97	0.16	77.58	10.65	0.16	0.00	1.45	0.00	46.61	49.19	1.94	0.00	3.55	0.81	46.13	35.97	10.65	1.45	46.29	22.00

31	Badenian (lo)	HRD19 (650–656 m) 7/1	4.50	0.74	0.26	62.16	5.41	24.32	0.00	5.41	2.70	2.70	0.00	0.00	81.08	0.00	0.00	2.70	8.11	78.38	0.00	0.00	0.00	0.00	0.00	0.00	10.00
32	Karpatian (up)	HRD24 (775–779.5 m) 9/1	2.09	0.44	0.47	34.14	60.64	4.02	0.00	60.64	0.00	0.80	0.00	1.20	5.22	0.00	0.00	0.40	61.45	5.22	0.80	0.00	1.20	1.20	1.20	10.00	
33	Badenian (l)	SI3 (900–906 m) 7/3	15.28	0.72	0.10	10.83	1.22	39.88	3.05	0.47	0.41	0.20	0.00	24.37	22.00	7.45	0.00	8.40	0.41	24.85	17.87	3.05	19.84	18.21	70.00		
34	Badenian (l)	SI3 (1,000–1,003 m) 8/2	12.63	0.82	0.05	24.09	4.95	38.69	5.52	0.32	0.16	3.24	0.00	20.19	30.90	18.57	0.00	14.44	3.57	36.82	9.33	5.52	19.38	12.25	58.00		
35	Badenian (lo)	HRD19 (495–500 m) 2/1	4.15	0.37	0.62	8.67	2.67	87.33	0.00	2.67	0.00	2.00	0.00	82.00	11.33	0.00	0.00	6.67	4.00	10.00	78.00	0.00	78.00	78.00	15.00		
36	Badenian (lo)	HRD19 (671–576 m) 3/1	4.63	0.95	0.23	100.00	0.00	0.00	0.00	11.11	0.00	22.22	0.00	0.00	33.33	33.33	0.00	0.00	22.22	33.33	0.00	0.00	0.00	0.00	0.00	5.00	
37	Badenian (lo)	HRD19 (690–595 m) 4/1	5.41	0.58	0.25	35.05	1.93	61.74	0.32	1.93	0.64	8.36	0.00	22.19	63.99	0.32	0.00	3.22	9.65	63.34	20.58	0.32	20.58	20.90	22.00		
38	Badenian (lo)	HRD24 (650–555 m) 5/1	5.11	0.76	0.16	30.29	0.00	57.33	0.33	0.00	0.00	12.70	0.00	14.66	44.63	15.64	0.33	3.91	12.70	53.75	11.40	0.33	2.93	22.48	21.00		
39	Badenian (lo)	HRD24 (620–624 m) 6/1	6.53	0.74	0.18	21.31	16.39	57.92	1.64	16.39	0.55	0.00	0.00	20.22	61.20	0.00	0.00	7.65	16.39	56.28	14.75	1.64	7.65	16.94	22.00		
40	Badenian (lo)	HRD24 (641–645 m) 7/1	4.88	0.83	0.21	69.70	15.15	3.03	0.00	30.30	9.09	39.39	0.00	3.03	3.03	0.00	0.00	51.52	15.15	3.03	0.00	0.00	0.00	0.00	10.00		
41	Badenian (lo)	HRD25 (490–495 m) 4/1	5.53	0.75	0.18	89.86	0.72	9.42	0.00	0.72	2.90	24.64	0.00	0.72	71.01	0.00	0.00	14.49	17.39	63.77	0.00	0.00	0.00	0.00	18.00		
42	Badenian (lo)	HRD25 (650–557 m) 5/1	4.72	0.62	0.29	88.79	5.92	4.98	0.00	5.92	1.56	11.84	0.00	5.30	74.77	0.31	0.00	11.21	14.95	67.29	0.00	0.00	0.00	0.00	20.00		
43	Badenian (lo)	HRD25 (645–650 m) 7/1	3.55	0.49	0.33	45.36	44.29	5.00	0.00	44.29	6.61	0.71	0.00	0.54	47.32	0.00	0.00	2.32	44.46	45.54	0.18	0.00	0.00	0.18	18.00		
44	Badenian (lo)	PW U3 (1,123–1,128 m) 1/3	2.34	0.50	0.43	36.19	63.04	0.39	0.00	63.04	0.00	0.00	0.00	0.00	4.28	0.00	0.00	1.95	63.04	1.95	0.00	0.00	0.00	0.00	11.00		
45	Badenian (lo)	SI3 (800–805 m) 6/3	4.00	0.78	0.18	48.48	40.40	1.01	0.00	67.68	0.00	16.16	0.00	1.01	0.00	0.00	0.00	24.24	43.43	0.00	0.00	0.00	0.00	0.00	13.00		
46	Badenian (m)	AH1 (190–195 m) 7/4	9.17	0.68	0.16	58.82	33.73	2.35	0.00	38.24	5.29	38.24	0.00	3.33	1.37	0.20	0.00	36.08	44.90	0.98	0.59	0.00	0.20	0.20	37.00		
47	Badenian (m)	AH1 (220–225 m) 8/2	11.06	0.81	0.07	33.62	16.55	20.52	4.31	17.24	19.14	15.00	1.55	7.59	21.72	2.41	0.00	17.59	24.31	16.90	5.00	4.31	3.79	7.76	44.00		
48	Badenian (m)	HRD25 (290–298 m) 1/1	9.99	0.74	0.10	24.41	13.89	35.92	1.83	13.80	12.52	3.47	1.74	13.89	15.54	23.22	0.00	14.44	15.36	34.00	4.39	1.83	5.85	27.06	47.00		
49	Badenian (m)	HRD25 (310–315 m) 2/1	9.63	0.88	0.09	35.29	4.71	18.82	20.00	4.71	3.53	12.94	0.00	10.59	25.88	11.76	0.00	22.35	14.12	14.12	4.71	20.00	23.53	34.12	22.00		
50	Badenian (m)	P01 (490–495 m) 16/1	4.81	0.75	0.19	18.60	34.11	8.53	0.00	37.21	22.48	16.28	0.00	1.55	5.43	0.00	0.00	0.78	50.39	4.65	0.78	0.00	0.78	0.78	16.00		
51	Badenian (m)	P01 (520–525 m) 17/2	16.42	0.81	0.05	66.26	9.40	5.31	0.16	14.71	24.10	17.57	0.00	5.47	17.16	0.98	0.00	41.83	19.53	5.15	1.39	0.16	1.80	0.74	71.00		
52	Badenian (m)	WA1 (400–403 m) 5/1	9.99	0.71	0.11	18.82	13.81	43.85	3.49	13.96	11.84	7.44	0.00	16.69	16.08	21.55	0.00	7.13	20.94	29.44	15.17	3.49	18.06	38.85	42.00		
53	Badenian (up)	WA1 (350–353 m) 4/2	7.03	0.94	0.18	41.67	8.33	33.33	0.00	8.33	8.33	0.00	0.00	8.33	25.00	0.00	0.00	25.00	8.33	25.00	8.33	0.00	0.00	0.00	8.33	7.00	
54	Badenian	WA1 (450–455 m) 6/2	9.95	0.89	0.10	73.33	8.89	11.11	0.00	8.89	2.22	24.44	0.00	4.44	51.11	0.00	0.00	24.44	20.00	44.44	2.22	0.00	0.00	0.00	17.00		
57	Sarmatian	AH1 (130–135 m) 5/1	2.71	0.82	0.19	73.58	10.38	15.09	0.00	25.47	50.94	23.58	0.00	0.00	0.00	0.00	0.00	78.30	10.38	0.00	0.00	0.00	0.00	0.00	10.00		
58	Sarmatian	AH1 (160–165 m) 6/2	0.77	0.63	0.42	9.33	48.00	0.00	0.00	48.00	48.95	3.05	0.00	0.00	0.00	0.00	0.00	9.33	48.00	0.00	0.00	0.00	0.00	0.00	5.00		
59	Sarmatian	P01 (40–45 m) 1/1	3.47	0.66	0.35	70.89	16.46	5.06	7.59	16.46	63.29	8.86	0.00	12.66	0.00	0.00	0.00	70.89	16.46	0.00	5.06	7.59	1.27	12.66	11.00		
60	Sarmatian	P01 (99.5–105 m) 3/1	2.70	0.79	0.22	36.99	31.51	27.40	0.00	54.79	6.85	8.22	0.00	4.11	0.00	0.00	0.00	26.03	39.73	0.00	4.11	0.00	2.74	4.11	9.00		
61	Sarmatian	P01 (130–135 m) 4/2	2.84	0.62	0.27	32.73	42.27	3.42	0.00	42.27	26.80	24.82	0.00	2.52	0.90	0.00	0.00	8.63	63.67	0.90	2.52	0.00	1.44	1.98	15.00		
62	Sarmatian	P01 (160–165 m) 5/2	2.09	0.59	0.38	20.65	0.62	19.72	0.00	18.03	59.94	19.72	0.00	1.08	1.23	0.00	0.00	38.06	0.62	1.23	1.08	0.00	1.08	1.08	12.00		
63	Sarmatian	P01 (250–255 m) 8/1	3.47	0.78	0.20	17.72	20.25	8.86	31.65	20.25	35.44	2.53	0.00	39.24	1.27	0.00	0.00	16.46	21.52	1.27	7.59	31.65	7.59	39.24	11.00		
64	Sarmatian	P01 (280–285 m) 9/1	8.53	0.87	0.12	21.95	21.95	17.07	0.00	39.02	21.95	12.20	0.00	0.00	2.44	0.00	0.00	51.22	21.95	2.44	0.00	0.00	0.00	0.00	15.00		
65	Sarmatian	SI3 (400–405 m) 2/2	4.97	0.86	0.12	27.89	9.52	47.62	2.72	14.29	27.21	10.20	0.00	40.14	5.44	0.00	0.00	25.85	16.33	5.44	37.41	2.72	25.17	36.05	17.00		
66	Sarmatian	SI3 (500–505 m) 3/1	3.78	0.79	0.16	9.64	31.47	40.61	3.55	33.50	18.27	6.09	0.00	26.90	15.23	0.00	0.00	10.66	32.49	15.23	23.35	3.55	19.29	24.37	15.00		
67	Sarmatian	SI3 (600–604 m) 4/2	1.51	0.33	0.70	13.07	2.61	83.01	0.00	2.61	1.96	12.42	0.00	83.01	0.00	0.00	0.00	1.31	14.38	0.00	83.01	0.00	83.01	83.01	7.00		
68	Sarmatian	WA1 (200–205 m) 1/1	1.84	0.59	0.29	34.52	6.15	25.77	0.00	31.68	33.10	34.52	0.00	0.00	0.24	0.00	0.00	34.28	6.38	0.24	0.00	0.00	0.00	0.00	10.00		
69	Sarmatian	WA1 (300–305 m) 3/1	2.98	0.43	0.43	29.06	0.78	62.03	0.00	62.03	7.03	28.91	0.00	0.63	0.00	0.16	0.00	29.06	0.78	0.47	0.31	0.00	0.31	0.31	16.00		

Tab. 3. Diversity indices and ecological and bathymetric data (% per sample) for selected foraminiferal assemblages.

	depth	habitat	oxygen	organic	stress	references
				matter flux	marker	
<i>Ammonia</i> spp.	IN	E to SI	O/S			2, 3, 4, 6, 13
<i>Amphicoryna</i> spp.	MN-B	INF	S			1, 3, 4, 5, 8
<i>Amphimorphina haueriana</i>	MN-B	INF	S			3, 21
<i>Amphistegina radiata</i>	IN-MN	E	O			2
<i>Astronion stelligerum</i>	IN-B	INF	S			1, 2, 3, 6, 9, 10, 13
<i>Aubignyna</i> spp.	IN	INF?				2
<i>Bathysiphon</i> spp.	B	E		H		2, 8
<i>Biapertorbis biaperturatus</i>	ON-B	E				3, 5, 8
<i>Biasterigerina planorbis</i>	IN-MN	E	O			2, 3, 12, 17
<i>Bolivina</i> spp.	IN-B	DI	D		x	1, 2, 3, 4, 9, 11, 12, 14, 21
<i>Borelis</i> spp.	IN	E				2
<i>Bulimina</i> spp.	IN-B	INF	S/D	H (<i>B. elongata</i>)	x	1, 2, 3, 4, 5, 11, 14, 21
<i>Cancris auriculus</i>	MN-ON	E	S	H		2, 9
<i>Cassidulina laevigata</i>	MN-B	INF	S	M to H		1, 2, 3, 4, 12
<i>Caucasina</i> spp.	IN-B	INF	S/D			3, 4, 5, 9, 11, 14
<i>Cibicidoides lobatulus</i>	IN-MN	E	O			2, 3, 12, 13, 17, 20
<i>Cibicidoides</i> spp.	MN-B	E	O			1, 2, 3, 4, 5, 13, 17
<i>Cribrostomoides subglobosus</i>	IN-B	E to SI				2, 3
<i>Cyclammmina</i> spp.	ON-A	E?				2
<i>Cycloforina</i> spp.		E				
<i>Dentalina</i> spp.	IN-B	INF	S/D			1, 3, 4, 13
<i>Discorbinoidea</i> sp.	IN-MN					3
<i>Elphidiella</i> spp.	IN-ON	INF?				2
<i>Elphidium</i> spp. (<i>keeled</i>)	IN-ON	E	O			2, 3, 4, 17
<i>Elphidium</i> spp. (<i>unkeeled</i>)	IN	INF	O			2
<i>Eponides repandus</i>	IN-B	E	O			2, 12
<i>Fissurina laevigata</i>	IN-B	INF	S			1, 3, 12
<i>Fursenkoina subacuta</i>	IN-B	INF	S/D		x	1, 2, 3, 5, 11, 12, 14, 15, 21
<i>Glandulina</i> spp.	MN-B	INF	S			7, 12
<i>Globulina gibba</i>	IN-B		O			3, 2
<i>Grigelis pyrula</i>		INF	S			21
<i>Guttulina</i> spp.	IN-B	INF	S			3, 12
<i>Hansenisca soldanii</i>	ON-B	E	S			3, 9, 12, 16
<i>Heterolepa dutemplei</i>	IN-B	E	O			2, 3, 15
<i>Hoeglundina elegans</i>	ON-B	E to SI	S	H		1, 2, 3, 12
<i>Laevidentalina</i> spp.	ON-B	INF	S/D			3, 4, 8, 12
<i>Lagena</i> spp.	IN-B	INF	S			1, 3, 4, 5, 8, 9, 12
<i>Lenticulina</i> spp.	MN-B	E	S			1, 2, 3, 4, 8, 9, 12, 13, 15
<i>Marginulina hirsuta</i>	IN-B	INF?				8, 13, 18
<i>Martinottiella communis</i>	ON-B	E	O			2, 12, 13,
<i>Melonis</i> spp.	MN-B	INF	S/D	H		1, 2, 3, 4, 12, 13
<i>miliolids</i>	IN-ON	E				
<i>Mylostomella recta</i>	MN-B	INF				18, 19
<i>Nonion</i> spp.	MN-B	INF	S			1, 2, 3, 4, 12, 13
<i>Nonionella turgida</i>	IN-B	INF	S			1, 2, 6
<i>Pappina</i> spp.	MN-B	INF	S			3, 21
<i>Pararotalia</i> spp.	IN-MN	E	O			2, 3, 21
<i>Plectofrondicularia</i> spp.	MN-B	INF	S			3, 5, 21
<i>Porosonion granosum</i>	IN-MN					3, 4
<i>Praeglobobulimina</i> spp.	MN-B	DI	D	H	x	1, 2, 3, 4, 11, 12, 14, 17, 21
<i>Pullenia</i> spp.	ON-B	INF	S			1, 2, 3, 4, 9, 10, 12, 13
<i>Pyrgo</i> spp.	IN-B	E	O/S			1, 2
<i>Quinqueloculina</i> spp.	IN-ON	E	O/S			1, 2
<i>Reticulophragmium</i> spp.		E to SI				5
<i>Reussella spinulosa</i>	IN-ON	E	O			3, 21
<i>Semivulvulina pectinata</i>	MN-B	E	S			3, 2
<i>Sigmilopsis</i> spp.	MN-B	E				3, 5, 13, 20
<i>Siphonina reticulata</i>	MN-B	E	O			13, 21
<i>Siphonodosaria consobrina</i>	ON-B	INF	S			3, 4, 21
<i>Sphaeroidina bulloides</i>	MN-B	E	S			1, 4, 12, 13
<i>Spirolina austriaca</i>	IN	E				2
<i>Spiroloculina</i> spp.	IN	E	O/S			2, 6
<i>Spirorutilus carinatus</i>	IN-B	E	O			3, 5, 21
<i>Spirosigmilina tenuis</i>	MN-B	E	O			3, 12, 13, 20
<i>Textularia</i> spp.	IN-B	E	O			2, 3, 12, 17
<i>Triloculina</i> spp.		E	O			1, 2
<i>Uvigerina</i> spp.	MN-B	INF	S	H	x	1, 2, 3, 4, 11, 12, 14, 21
<i>Vaginulinopsis haueriana</i>	MN-B	INF	S			3, 8, 21
<i>Valvulinera complanata</i>	ON-B	INF	S		x	1, 3, 11, 14, 21

Tab. 4.

Ecologic preferences of selected benthic foraminifera. Bathymetric distribution: IN = inner neritic, MN = middle neritic, ON = outer neritic, B = bathyal, A = abyssal; microhabitat: E = epifaunal, SI = shallow infaunal, INF = infaunal, DI = deep infaunal; oxygen dependency: O = oxic, S = suboxic, D = dysoxic; dependency on organic matter flux: H = high flux, M = moderate flux; stress marker. References: 1: KAIHO (1994), 2: MURRAY (2006), 3: HOHENEGGER (2005), 4: RÖGL & SPEZZAFERRI (2003), 5: PIPPERR & REICHENBACHER (2010), 6: BERNHARD & SEN GUPTA (1999), 7: JONES (1994), 8: REOLID et al. (2008), 9: KOUWENHOVEN & VAN DER ZWAAN (2006), 10: DEN DULK et al. (2000), 11: VAN HINSBERGEN et al. (2005), 12: PEZELJ et al. (2007), 13: SPEZZAFERRI & TAMBURINI (2007), 14: SPEZZAFERRI et al. (2002), 15: BÁLDI (2006), 16: CORLISS (1991), 17: MARTINS et al. (2007), 18: ROETZEL et al. (2006), 19: GRUNERT et al. (2010), 20: WENGER (1987), 21: PEZELJ et al. (2013).