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MYA ARENARIA (L.) IN THE POLISH BALTIC SEA COAST (Kołobrzeg – Władysławowo)

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Abstract

A population of *Mya arenaria* was studied in the Polish coastal zone (up to 3 nautical miles) of the Baltic Sea in the open coast of Polish Middle Pomerania. Abundance, wet biomass, and the frequency of *Mya* were determined in the coastal waters, including estuaries of the Parsęta, Wieprza, Słupia, Łupawa, and Łeba rivers and Władysławowo. The frequency (F) of *Mya* in the open coast of the Middle Pomerania amounted to 19.5%. The abundance of *Mya*, in the coastal zone surveyed, ranged from 0 to 265 specimens per m^2 of the bottom ($\bar{x}$ = 10.4 spec. m^{-2}). Wet biomass of this bivalve ranged from 0 to 25.52 g_{ww} m^{-2} ($\bar{x}$ = 1.56 g_{ww} m^{-2}). Apparently *Mya arenaria* has found better conditions for living and development in the central of the Middle Pomerania coast. The abundance of this mollusc in the estuary of Słupia (Ustka) was 100-fold higher than in the estuary of Wieprza (Darłowo) and Łupawa (Rowy) and the wet weight was 11-fold higher, respectively. *Mya arenaria* plays an important role in the monitoring of benthos of the Baltic Sea, constitutes a food base of animals (fish), and takes part in the process of purification of waters of the coast stretch studied (biofiltration, biosedimentation).

Key words: Polish Baltic Sea coast, estuary, *Mya arenaria*, abundance and biomass

INTRODUCTION

Mya arenaria is a species widely distributed in the seas and oceans of the Northern Hemisphere (North America, Europe) (Beal 2002, Barber et al. 2002, Reise et al. 1999, et al). In the Baltic Sea it is a characteristic species of the macrozoobenthos, inhabiting the bottom down to some 30 m deep (Warzocha 1994 et al.). It may become a dominant macrozoobenthos species while *Mya arenaria* are absent or poorly represented, *Macoma balthica* gains a substantial biomass. *Mya*, because of its common occurrence in different zones of the bottom was used by Warzocha (1995) for characterizing benthic communities in the Baltic (e.g. *Macoma balthica-Mya arenaria*). *Mya* similarly how example *Macoma balthica* plays also an important

ecological role in the Baltic constituting a component of hemiplankton (larval stages) and benthos (Gunther et al. 1998). Those molluscs, as deposit feeders, contribute to elimination of seston (including bacteria), phyto- and zooplankton from the supra benthic layer and their biosedimentation in a form of agglutinates and faeces (Riisgård et al. 2003, Word and Shumway 2004). The biomass of *Mya arenaria* constitutes also a rich food base for fish and water birds including commercially important fish species (Krzykawski and Załachowski 1983, Mulicki 1947). The species surveyed has been studied as a component of Baltic benthos (Demel and Mulicki 1954, Mulicki and Żmudzinski 1969, Piesik et al. 2003, Warzocha 1994). More detailed studies were carried out in the Pomeranian Bay and in the Gdańsk Bay (Herra and Wiktor 1985, Osowiecki 2000, Kube et al. 1996, 1997, Masłowski 2000, Ostrowski 1996, Witek 1995, Żmudziński and Ostrowski 1990). In addition to the above-mentioned authors, *Mya* as a component of the macrozoobenthos, was studied also by Kotwicki (1997), Żmudziński (1982), Haque et al. (1997), Żmudziński and Andrulewicz (1997) who concentrated on the Polish territorial waters, particularly the shallowest zone subjected to wave action. *M. arenaria* is an important species enabling determination of changes in macrozoobenthos in monitoring of the Baltic Sea. The coastal zone, due to a direct contact with land and receiving waters of predominantly polluted and eutrophied rivers, is along the deepest areas, the most endangered zone of the Baltic Sea.

The aim of the present study was to determine the distribution and structure (abundance, wet weight) of the population of *Mya arenaria* in the three-mile Polish coastal zone within the stretch of Kołobrzeg-Władysławowo. The acquired data will help to determine in the future the quantitative changes indicating trends in development of *Mya* in our coastal zone exposed to various factors of human activity. This paper is also intended to outline the distribution and abundance of *Mya* as a food base for animals, in this number also fish species of economical importance.

MATERIAL AND METHODS

Mya arenaria was studied from 1998 throughout 2003, within the three-mile Polish coastal zone of the Baltic stretching from Kołobrzeg to Władysławowo (Fig. 1). The bivalves were sampled from a total of 58 sites with a Van Veen bottom sampler, covering the area of 0.1 m^2. A double sample was taken from each site, which translates to a total of 116 samples. The precise location of the profiles and the sampling sites was determined using the Global Positioning System (GPS) and a radar bearing. A total of 11 bottom profiles perpendicular to the shoreline were designated within the coast stretch studied. The profiles were three-nautical-mile-long, except for Władysławowo, where the profile was only two-mile-long. Within the latter, two additional sites were designated 1 mile from the shore and 1 mile to the west and to the east. Fig. 1 presents the location and the distance from the shore (in nautical miles) and the number of sampling sites on individual profiles. The material collected was strained on a benthic sieve with a 1-mm mesh size and subsequently fixed in a 4-% formaldehyde solution. In the laboratory, the material was sorted and the number of

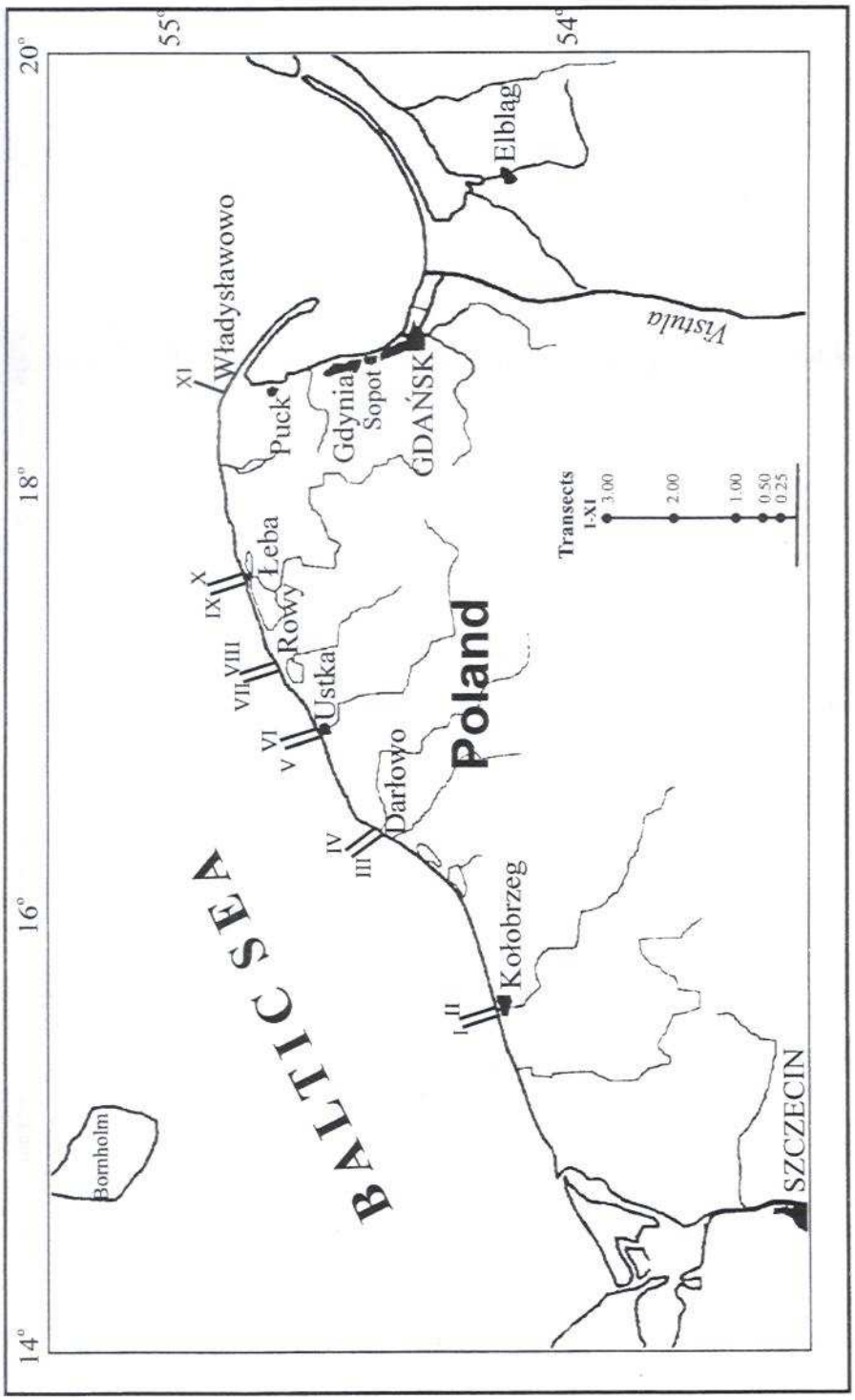

Fig.1. Location of sampling stations and transects

Table 1

Depth and substrate type on the sampling sites in the coastal zone of the Middle Pomerania

Region Location	Transect	Nautical miles											
		0.25		0.5		1.0		1.5		2.0		3.0	
		A	B	A	B	A	B	A	B	A	B	A	B
Middle Pomerania													
Parsęta estuary Kołobrzeg – West	I	10.4	fgs	12.1	fgs	12.5	---	---	---	12.6	g, fgs	13.3	s, fgs
Kołobrzeg – East	II	7.0	fgs	9.4	fgs	10.3	---	----	----	14.4	g, fgs	15.6	g, fgs
Wieprza estuary Darłówko – West	III	---	---	9.0	fgs	13.5	mgs	---	---	14.7	mgs	19.3	fgs
Darłowo – East	IV	---	---	8.2	fgs	15.0	mgs	---	---	17.0	mgs	19.5	cgs
Słupia estuary Ustka – West	V	6.5	fgs	11.0	fgs	14.6	gs	---	---	16.5	fgs	18.0	gs
Ustka – East	VI	---	---	6.7	g	12.5	gs	---	---	18.5	gs	20.0	gs
Łupawa estuary Rowy – West	VII	2.3	fgs	5.7	fgs	16.5	ss	---	---	20.0	gs	22.4	gs
Rowy – East	VIII	2.1	fgs	6.4	fgs	12.7	fgs	---	---	22.4	gs	20.0	gs
Łeba estuary Łeba – West	IX	---	---	5.1	g	14.0	fgs	---	---	17.7	ss	18.2	fgs
Łeba – East	X	---	---	3.0	fgs	11.2	fgs	---	---	15.0	fgs	---	---
Open coastal Władysławowo	XI	5.4	ss	8.0	g	13.0	ss	IW 12.0	I E 13.0	IW ss	I E ss	15.4	g	---	---

g – gravel, fgs – fine-grained sand, mgs – medium-grained sand, cgs – coarse-grained sand, ss – silty sand, gs – gravelly sand, s – stons

the bivalves was related to 1 m^2. The wet weight of *Mya*, dried on a filter paper (including the water present in the mantle cavity) was determined on a laboratory balance to the nearest 0.001 g and related to the $1m^2$ of the bottom. Also the type of substrate and the depth were noted on the individual sites (Tab. 1). In the face sinking oneself this bivalves in sediments bottom obtained results biomass appear understated.

RESULTS

The dominant four species, presently observed in the studied stretch of the Polish coastal zone (Kołobrzeg-Władysławowo) were *Macoma balthica* (L.), *Mytilus edulis* L., *Mya arenaria* L. and *Cardium edule* Petersen, all of them typical representatives of shallow areas of the Baltic Sea. The leading species–*M. arenaria* was surpassed in its abundance and biomass, first of all, *Mytilus edulis, Macoma balthica* (except the areas of Darłówko and Rowy in the Middle Pomerania also *Cardium glaucum*). The abundance of *M. arenaria* in the studied zone was significantly diversified (from 0 to 265 specimens per m^2) and in the profiles Darłówko and Rowy no *Mya* was found (Tab. 2). The abundance of *Mya* on the bottom of the coastal zone of the central Middle Pomerania was over 42-fold higher compared to their abundance in the West Polish Baltic coastal zone and 4.5-fold higher compared to their abundance in the East Polish Baltic coastal zone and it reached the value of 54.5 ind. per m^2. The highest mean densities of *Mya* in the waters of middle Pomerania were recorded on profiles VI (Ustka East) and IX (Łeba West) and they amounted to 100 and 7.1 ind. m^{-2}, respectively.
Transformed raw data indicate that the abundance of *Mya* increases along with the distance from the shore, up to 1.0 Nm:

Middle Pomerania	0.25	0.5	1.0	1.5	2.0	2.5	3.0	Distance from shore line [Nm]
	0	4.5	25.0	10.2	4.8	7.5	10	Abundance [spec. m^{-2}]

Detailed data on the abundance of *Mya arenaria* on the profiles studied are shown in Table 2.
More detailed data on the mean wet weight of *Mya* on the entire studied area and the full range of depths covered confirms in general terms the grow smaller of the mean biomass along with the growing distance from the shore, which is associated with the depth increase:

0-9.9 m depth	-	0.05 $g_{w.w.}$ m^{-2}
10.0-14.9 m depth	-	39.91 $g_{w.w.}$ m^{-2}
15.0-19.9 m depth	-	26.06 $g_{w.w.}$ m^{-2}
20.0-24.9 m depth	-	22.20 $g_{w.w.}$ m^{-2}

No statistically significant correlation, however, was demonstrated between the abundance and the wet weight of Mya–and the depth of its occurrence in the coastal

Table 2

Abundance and frequency (F) of *Mya arenaria* in the studied 3-mile Polish coastal zone of the Baltic Sea (Kołobrzeg-Władysławowo)

Region Location	Transect	abundance (ind. m^{-2})							F (%)
		Nautical Mile (Nm)						$\bar{x}$	
		0.25	0.5	1.0	1.5	2.0	3.0		
Middle Pomerania									
Parsęta estuary Kołobrzeg – West	I	0	0	0	–	0	0	0	0
Kołobrzeg – East	II	0	0	0	–	13	0	2.6	10
Wieprza estuary Darłówko – West	III	0	0	0	–	0	0	0	0
Darłowo – East	IV	–	0	0	–	0	0	0	0
Słupia estuary Ustka – West	V	0	45	0	–	0	0	9	20
Ustka – East	VI	–	5	265	–	20	110	100.0	100
Łupawa estuary Rowy – West	VII	0	0	0	–	0	0	0	0
Rowy – East	VIII	0	0	0	–	0	0	0	0
Łeba esturary Łeba – West	IX	0	0	0	5.5	20	15	7.1	43
Łeba – East	X	0	0	0	0	0	0	0	0
Open coastal Władysławowo	XI	0	0	10	1W: 15 / 1E: 10	0	–	5.0	42

Table 3

Wet weight and frequency of *Mya arenaria* in the studied 3-mile Polish coastal zone of the Baltic Sea (Kołobrzeg-Władysławowo)

Region Location	Transect	Biomass (in g_{ww} m^{-2})							F (%)
		Nautical Mile (Nm)						$\bar{x}$	
		0.25	0.5	1.0	1.5	2.0	3.0		
Middle Pomerania									
Parsęta estuary Kołobrzeg – West	I	0	0	0	0	0	0	0	0
Kołobrzeg – East	II	0	0	0	–	0.13	0	0.01	10
Wieprza estuary Darłówko – West	III	0	0	0	–	0	0	0	0
Darłowo – East	IV	–	0	0	–	0	0	0	0
Słupia estuary Ustka – West	V	0	4.15	0	–	0	0	0.83	20
Ustka – East	VI	–	0.05	19.45	–	0.25	22.20	10.48	100
Łupawa estuary Rowy – West	VII	0	0	0	–	0	0	0	0
Rowy – East	VIII	0	0	0	–	0	0	0	0
Łeba esturary Łeba – West	IX	0	0	0	12.18	25.52	0.29	5.43	43
Łeba – East	X	0	0	0	0	0	0	0	0
Open coastal Władysławowo	XI	0	0	1.20	1W: 2.6 / 1E: 0.2	0	–	0.39	42

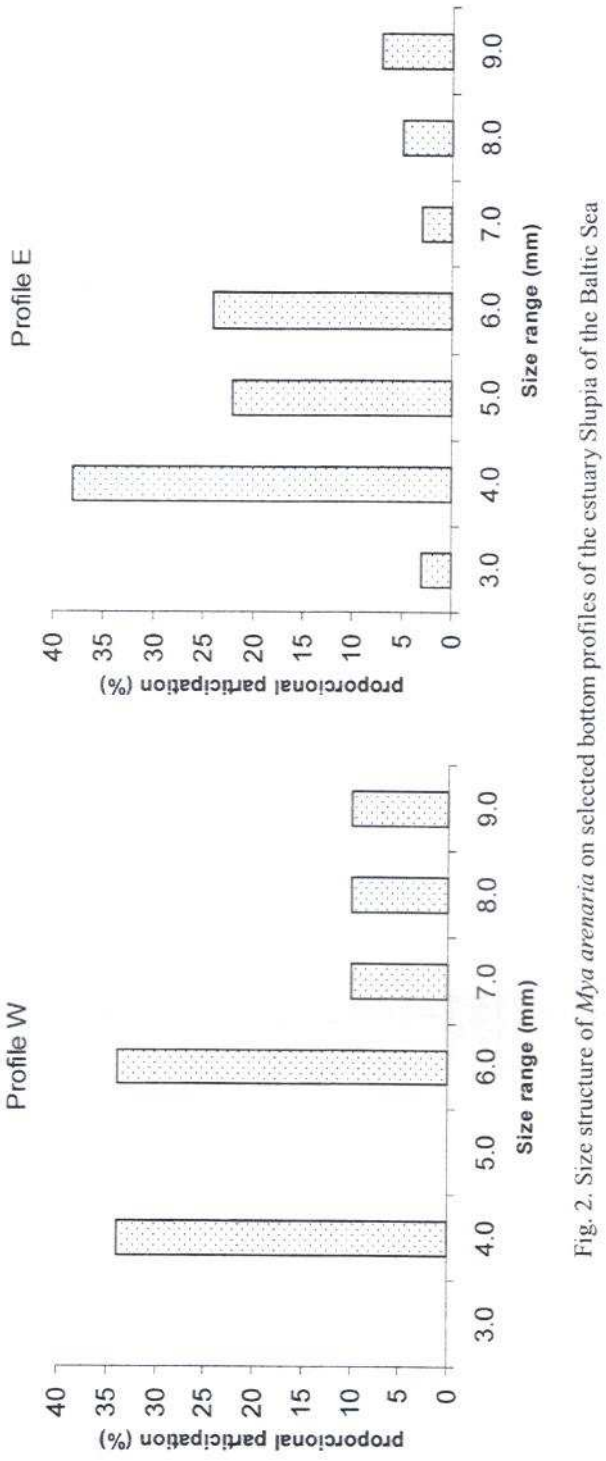

Fig. 2. Size structure of *Mya arenaria* on selected bottom profiles of the estuary Slupia of the Baltic Sea

zone. The wet weight of *Mya*, similarly as the abundance and frequency were higher in the central Middle Pomerania compared to the West and East Polish Baltic coastal zone. The value of the mean wet weight was 11-fold higher in the Ustka estuary ($\bar{x}$ = 11.31 g_{ww} m^{-2}) compared to the wet weigh of that's specimens in the studied west coastal zone of the Polish Baltic coastal zone (0.01 g_{ww} m^{-2}) and was 2-fold higher in the studied east coastal zone of the Polish Baltic coastal zone (5.82 g_{ww} m^{-2}, Tab. 3). Similarly as the abundance, the values of the wet weight varied within a wide range (0.0-25.52 g_{ww} m^{-2}). The highest wet weight of *M. arenaria* was observed in the area of Ustka and Łeba (transects: VI, IX). On six transects (I, III, IV and VII, VIII, X) where *Mya* was absent, the lowest value of the wet weight of this bivalve was observed on profile II (Kołobrzeg East), (Tab. 3).
The frequency (F) of *Mya arenaria* was distinctly higher in the Słupia estuary (Ustka) (60%) compared to the frequency of *Mya* in the coastal waters of the West zone Middle Pomerania (2.5%). *Mya* was recorded at all sites (F = 100%) only in the area of Ustka East (transects VI). The lowest frequencies of *Mya* were stated in the areas of Darłówko, Rowy, and Łeba (transects III, IV, VII, VIII, Tab. 3). Age structure of *Mya arenaria* was studied on two profiles (Słupia estuary – V, VI). It is evident from the present study that in the Polish coastal zone these bivalves live up to 3 years (which is perhaps affected by a special way of reading age rings on the shell). In the area of the Polish Baltic coastal zone the age structure of *Mya arenaria* was studied on the Ustka profile, where dominated juvenile bivalves, the group 1+ being the most abundant (63% of the population). Those data which is probably caused by predation impact of fish (*Platichthys flesus* (L.), *Platessa platessa* (L.), *Scophthalmus maximus* (L.) and others.
The study of the size structure (shell width, measured from the apex) of *Mya arenaria* demonstrated that the width of shell of bivalves in the studied zone of the Polish Baltic coastal reached 9 mm. It is interesting that in general, the mean width of *Mya* oneself did not differ on profiles eastern and western Słupia estuary (Fig. 2).

DISCUSSION

The surveyed coastal zone of the Baltic Sea (Fig. 1) is the most extensively exposed to the action of frequently unfavourable factors of the proximate land and it is particularly true for the estuary areas. The extent of river impact on the coastal zone is dependant, predominantly on the flow velocity of a river, level of its pollution and eutrophication (Tab. 4). It is also very important if the river estuary contains a larger body of water acting as a sedimentation area. In such bodies of water, substantial amounts of abiseston, heavy metals, PCBs and other substances harmful to hydrobionts are eliminated. On the other hand those bodies of water (Gardno Lagoon, Łebsko Lagoon) promote an intense increase of primary production (development of bacterioplankton, phytoplankton) and secondary production e.g. zooplankton. Intensely developing plankton (bioseston) from those areas is carried out to the coastal zone of the sea. It substantially enriches the food base of a number of hydrobiont species, in this number also benthic forms, particularly water-filtering bivalves.

Table 4

A checklist of pollutants load (tons/year or in kg/year) in the estuary areas of rivers according to "IMGW Gdynia (1999)"

	Rega River	Wieprza River	Słupia River	Łupawa River	Łeba River
BOD_5	2181.2	1160.0	1708.3	795.8	1337.4
COD Mn	39012.6	19774.9	11150.8	4375.4	10793.7
T-N	2585.8	1244.6	1114.0	636.3	1083.6
$N\text{-}NH_4$	230.4	147.7	41.4	26.2	81.8
$N\text{-}NO_x$	1578.6	696.7	643.3	433.3	517.3
N-org.	775.0	398.9	429.6	176.6	484.6
T-P	215.5	119.4	77.9	32.7	72.0
Calcium (Ca)	66169.8	30872.6	30101.7	13304.8	25179.4
$P\text{-}PO_4$	53.1	38.7	48.2	19.5	48.0
Chromium total (Cr)	1.1	0.606	0.565	0.251	0.430
Zinc (Zn)	2.58	1.11	11.48	4.30	10.55
Cadmium (Cd)	1.10	0.606	0.056	0.025	0.043
Copper (Cu)	1.47	0.940	0.846	0.430	0.639
Lead (Pb)	1.49	0.87	1.26	0.55	1.58

Some, typically freshwater plankters, in contact with more salty waters (7-8 PSU) of the Baltic die off in bulk, enriching the bottom in organic matter, which in turn may be utilised by benthos. Rivers bring mineral salts to the coastal zone, in this number nutrients, promoting increase of primary production, through increased development of autochthonous Baltic planktonic algae (Friedrich and Wilamski 1985, Krzymiński et al. 1999, Niemkiewicz 1999, Poleszczuk and Sitek 1995, Trojanowska et al. 2001, Trzosińska 1990). Substantial amounts of organic seston (high BOD5; Tab. 4) and allogenous biogenic substances enhancing primary production in the marine areas of estuaries influence development of macrozoobenthos, in this number bivalves. For example, near the Świna mouth, the wet weight of *Mya arenaria* reaches 2 kg m^{-2} (Piesik et al. 2003). Comparing the data from tables 4 and 5 we can conclude that *Mya* developed most extensively in the estuary area of the coastal zone the mouths of Słupia and Łeba, where the waters bring the highest amounts of bioseston and nutrients, compared to the other estuaries surveyed. The presently determined mean values on the abundance and wet weight of *Mya* in the estuary zone of the coastal waters and in the areas of open shore do not enable to draw an explicit conclusion on the gross effect of rivers (trophic conditions) on supposedly more extensive devel-

Table 5

Abundance, wet weight and frequency of *Mya arenaria* in the studied 3-mile Polish coastal zone of the Baltic Sea

Region Location	Transect	abundance (ind. m^{-2})		wet weight (g_{ww} m^{-2})		F (%)	Source
		range	$\bar{x}$	range	$\bar{x}$		
Parsęta estuary Kołobrzeg – West	I	0	0	0	0	10	present paper
Kołobrzeg – East	II	0-13	2.6	0-0.13	0.03		
Wieprza estuary Darłowo	III	0	0	0	0	0	
Słupia estuary Ustka – West	IV	0-45	9.0	0-4.15	0.83	55	
Ustka – East	V	5-265	100.0	0.05-22.52	10.48		
Ustka			996.0		94.34		Woźniak 2004
Łupawa estuary Rowy	VI	0	0	0	0	0	present paper
Rowy – East	VII	0	0	0	0		
Open coastal Czołpino		0-20	4.0	0-2.26	0.45	20	Piesik 1998
Czołpino			17.8		0.13		Woźniak 2004
Łeba estuary Łeba – West	IX	0-30	7.1	-	-	20	present paper
Łeba – East	X	0	0	-	-	0	
Łeba			107.0		10.05		Woźniak 2004
Open coastal Władysławowo	XI	0-20	5	0-2.60	0.39	42	present paper
Wisła estuary Wiosłoujście		0	0	0	0	0	Herra, Wiktor 1985

Table 6

Comparison of the abundance, biomass, and the frequency of *Mya arenaria* in the coastal zone of river estuaries (first order estuary) and the Władysławowo

Region	Estuary		Open coast		Estuary			Open coast		
	abundance ind. m^{-2}				biomass g_{ww} m^{-2}		F	biomass g_{ww} m^{-2}		F
	range	$\bar{x}$	range	$\bar{x}$	range	$\bar{x}$	%	range	$\bar{x}$	(%)
Polish Baltic coastal zone	0-265	13.2	0-20	5.0	0-22.52	1.62	10.5	0-2.6	0.39	42

opment of *Mya* (Tab. 6). It is possible, however, that big pomeranian rivers such as Słupia, Łeba may enhance development of macrozoobenthos, in this number *Mya* (Tab. 5). Also hydrological factors may be important (transfer of sediments by benthic water currents), as well as the type of substrate, and biotic factors (predation).

Mya arenaria for many reasons constitutes a young and important component of macrozoobenthos inhabiting the floor of the Baltic Sea, down to 30 m depth (Warzocha 1994). Because of its permanent occurrence in defined zones of the bottom of this sea Warzocha (1987) distinguished macrozoobenthos guilds, where the *Mya* is a component: *Mya arenaria-Macoma balthica*. Also in other seas e.g. the Norwegian Sea Oug (2001) distinguishes a *Mya* "community". In the Pomeranian Bay, depending on the distance from the discharge points of the Odra River waters, which is associated with detritus enrichment of the bottom, the dominant species are *Mya arenaria* and *Mytilus edulis* (cf. Powilleit et al. 1995).

It is evident from the data that in the three-mile coastal zone of the middle Pomerania, the Baltic *Mya* was not the dominant species in the macrozoobenthos community. The exception was the area of Ustka and Łeba (transect VI, IX) where these bivalves were the subdominant together from properly *Cardium glaucum* or *Macoma balthica*.

The age structure of *M. arenaria* study in the area estuary Słupia (Fig. 1). The former zone was inhabited only by smaller *Mya* aged 0 to 2+ (three-year-olds). The bottom of the estuary Słupia (east of Ustka) was covered mainly by greater *Mya* (Fig. 2). Such atypical age structure of the population studied was possibly linked to a specific predation. Large specimens of *Mya* are probably intensively eaten up also by turbot, *Scophthalmus maximus*, attaining the length of 55 cm in the Baltic Sea.

Juvenile specimens of flatfishes, particularly in summer, feed on the bottom in warmer waters close to the shore. During their feeding they may bite off siphons of *Mya*, protruding above the bottom. The bivalves with missing terminal parts of their siphons are forced to dig up immediately below the surface of the bottom and are this way more vulnerable to predation (flat fishes such as European plaice, *Pleuronectes platessa* or water birds), (Goeij et al. 2000). The presently acquired data on the occurrence, abundance, and the biomass of *M. arenaria* in the studied Polish coastal zone of the Baltic, indicate that those bivalves are affected in different intensity by abiotic factors (water current, type of bottom) and biotic (autochthonous and

allochthonous bioseston content, predation). *M. arenaria* occurred commonly and its frequency (F) ranged from 0 to 100%. In individual coastal zones, *Mya* encountered variable conditions for their development, which is confirmed by variable abundance, and the wet weight (Tab. 5). In the studied stretch of the Middle Pomerania, the abundance of *Mya* were as many as 300-fold lower (328.3 specimens per m^{-2}) in relation to the data of Woźniak (2004).
Analysis of the wet weight of *Macoma* indicates that the food base for aquatic fauna, including commercially important fish species, provided by this mollusc develops the most intensively in the coastal zone of Ustka and Łeba (transects VI-IX) in the Middle Pomerania.

CONCLUSIONS

1. *Mya arenaria* is a bivalve not commonly occurring in the studied three-mile Polish coastal zone of the Baltic. The frequency (F) of this species ranged from 0 to 100%. The highest frequency was recorded in the areas of Ustka (100%). The frequency for the coastal zone of Polish Baltic coastal has amounted to 19.5% (on the average).
2. The abundance of Baltic *Mya* was diversified (from 0 to 265 specimens per m^{-2}), ($\bar{x}$ = 10.4 spec. per m^2). In the Słupia estuary it was over 50-fold higher (54.5 spec. per m^2) than that in the estuary of Wieprza and Łupawa.
3. The wet weight of *M. arenaria* in the coastal zone studied (Kołobrzeg-Władysławowo) ranged from 0 to 25.52 g_{ww} m^{-2} ($\bar{x}$ = 1.56 g_{ww} m^{-2}). In the Słupia estuary the mean wet weight (5.65 g_{ww} m^{-2}) was 5-fold higher in relation to the mean wet weight of this species in the Wieprza and Łupawa estuary.
4. *Mya* lived up to 3 years (according to the present method of age reading). The age structure of the population of *M. arenaria* studied in the estuary Słupia was not strongly diversified and the dominant groups were 1+.
5. The analysis of the mean abundance, wet weight, and the frequency points out that *Mya* population in the Słupia and Łeba estuary, compared to the areas of the Wieprza and Łupawa estuary exhibited more intensive qualitative growth, which was probably caused by more convenient trophic conditions, weakened, and selective pressure of flatfishes and more favourable hydrological conditions modifying the sandy bottom.

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MYA ARENARIA (L.) W POLSKIEJ STREFIE PRZYBRZEŻNEJ BAŁTYKU (KOŁOBRZEG – WŁADYSŁAWOWO)

Streszczenie

Badano populację małża *Macoma balthica* w polskiej strefie przybrzeżnej Bałtyku (do 3 Mm) w otwartym wybrzeżu Pomorza Środkowego (Middle Pomeranian). Określono zagęszczenie, biomasę mokrą oraz frekwencję *Mya* w wodach przybrzeżnych, w tym w rejonach ujść rzeki Wieprzy, Słupi, Łupawy i Łeby. Wartość frekwencji *Macoma* w strefie przybrzeżnej otwartego morza (Pomorza Środkowego) wynosiła – F = 19,5%. Zagęszczenie *Mya* w badanej strefie przybrzeżnej wahało się w granicach od 0 do 265 ind. m^{-2} dna ($\bar{x}$ – 10,4 osobn. m^{-2}). Wartość masy mokrej tego gatunku małża wahała się od 0 do 25,52 g_{mm} m^{-2} ($\bar{x}$ – 1,56g_{ww} m^{-2}). *Mya arenaria* znajdowała dogodniejsze warunki dla rozwoju w estuarium Słupi, gdzie zagęszczenie tego małża było 100-krotnie wyższe, a masa mokra 11-krotnie wyższa w porównaniu z estuarium Wieprzy i Łupawy. *Mya arenaria* odgrywa ważną rolę w monitoringu bentosu Morza Bałtyckiego oraz uczestniczy w procesie doczyszczania wód badanej strefy przybrzeżnej (biofiltracja, biosedymentacja).