



THE WATER MOLLUSCS OF SMALL ISOLATED FOREST PONDS

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SYNOPSIS

The water molluscs occurs in all water environments. The ecosystems of lakes and rivers are know the best. It doesn't has any exact data about water molluscs of small forest ponds. The research are led in isolated forest reservoirs. The bivalves with genus *Pisidium* were studied. These bivalves have been showed to this time since 0 to 5 species. Genetic aspects of these organisms were studied also.

INTRODUCTION

Molluscs are one of the most frequently encountered groups of animals in water ecosystems. Frequently, they would create one of the most numerous groups of aquatic organisms. The occurrence and number of snails and bivalves in various types of water reservoirs have been quite profoundly examined. The best recognised are molluscs of lowland rivers, lakes, dammed reservoirs (Meier-Brook 1970, Piechocki & Dyduch-Falniowska 1993, Dillon 2000, Janicki 2002, Zettler & all 2006). The composition of species and the number of molluscs in small, isolated ponds have been examined to an insignificant extent (Abraszewska-Kowalczyk 1986, Piechocki & Dyduch-Falniowska 1993, Janicki 1999, Zettler & all 2006). Practically, there is no information on malacofauna of small field ponds. Small ponds in forests create specific habitats which would often change their physical and chemical conditions. They can create new morphological forms related to the adaptation to changing conditions of the environment.

METHODS AND MATERIAL

The material was collected in two isolated aquatic reservoirs in the forest of Gryfino Forestry District in Western Pomerania. The reservoirs were denominated as: A and B. A reservoir is a helocrene, small pond of a diameter of about 1,2 m and depth of about 0,3 m. Its bottom is covered by a layer of plant debris and slime

sediments. The reservoir is isolated by a dense layer of undergrowth and pine trees. The nearest aquatic reservoir is located about 2 km away. The B reservoir is larger. Its length is about 4 m and its width is about 2 m. Around it, there is a narrow belt of reed and at its bank there are groups of water lilies. It is about 1 m deep. The reservoir is located in the wood isolated by undergrowth and bushes.

The material was collected in July 2007. A triangle net with a mesh of about 0.5 mm was used. Two samples were taken from each reservoir. The material was preserved in formalin (5%). In the laboratory, the material was rinsed out on a net and segregated into taxa. The denominations were made with the use of a microscope. The number of individual species was converted into one square meter of the bottom area.

RESULTS

During the examination 67 individual water molluscs were collected. Of this number, 55 bivalves and 17 snails. 7 species of molluscs were found out: *Pisidium miliom*, *P. subtruncatum*, *P. obtusale*, *P. casertanum*, *Lymnaea stagnalis*, *Planorbarius corneus*, *Planorbis planorbis*. Reservoir a was less diversified as to species in which only two species of bivalves were ascertained: *P. subtruncatum*, *P. casertanum*. As to reservoir B, there were 5 species of bivalves (*Pisidium miliom*, *P. subtruncatum*, *P. obtusale*, *P. casertanum*) i 3 species of snails (*Lymnaea stagnalis*, *Planorbarius corneus*, *Planorbis planorbis*). The number of individual species of molluscs in both reservoirs was differentiated (tab. 1).

Table 1. Number of individuals and density taxa in reservoirs A i B.

Taxon	Reservoir A			Reservoir B		
	Number of individuals	Density (ind./m ²)	F	Number of individuals	Density (ind./m ²)	F
<i>Pisidium miliom</i>	-	-	-	2	6,7	3,9
<i>P. subtruncatum</i>	24	80,0	68,6	12	40,0	24,5
<i>P. obtusale</i>	-	-	-	4	13,3	8,8
<i>P. casertanum</i>	11	36,6	31,4	14	46,7	28,5
<i>Lymnaea stagnalis</i>	-	-	-	4	13,3	8,8
<i>Planorbarius corneus</i>	-	-	-	8	26,7	15,7
<i>Planorbis planorbis</i>	-	-	-	5	16,7	9,8

In reservoir A only two species of bivalves were indicated (table 10). *P. subtruncatum* (F=68,6) prevailed. As to B reservoir, there were ascertained four species of bivalves and three species of snails (table 1). Two bivalves prevailed (tab. 1).

DISCUSSION

In large aquatic reservoirs and rivers, there were generally ascertained from a dozen or more to a few dozen species of molluscs. It is related to their large area and the occurrence of a numerous microhabitats where they may live (Meier-Brook 1970, Piechowski & Dyduch-Falniowska 1993, Dillon 2000, Janicki 2002). Small field or forest ponds distinguish themselves by small areas and changeability of physical and chemical conditions. It is due to them that plastic species may occur which can sustain periodical, physical and chemical changes. In small ponds, one of the most important ecological factors is their periodical drying. Some molluscs are capable of standing the lack of water (Meier-Brook 1970, McKee & Mackie 1983, Dillon 2000). The limiting factor is the change of chemical parameters, mainly the lack of lime in water and an increased concentration of H₂ (Meier-Brook 1970, Piechocki & Dyduch-Falniowska 1993, Dillon 2000). Molluscs ascertained in reservoirs can temporarily stand changes in the environment. This capacity may partly explain the presence and absence of a larger number of species.

One of the factors which may have an impact on the composition of species in small forest ponds is spatial isolation. These reservoirs are located amidst forests and they are isolated by a large area of trees and undergrowth. The isolation has an impact on the composition of species as it hinders the movement of individual molluscs. Jackiewicz says that mammals, birds and some invertebrates contribute to molluscs being spread into new reservoirs (Fernando 1954, Mackie 1979). This problem is not well known and it requires some further examination.

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