

Cases of hermaphroditism in the Ukrainian populations of Unionidae (Bivalvia)

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Palaearctic mollusks of Unionidae family are considered to be gonochoric organisms (Stadnychenko, 1984; Antonova, 1991), rarely hermaphrodites (Pekkarinen, 1993; Yanovych, 1997), and their reproductive strategy is regarded as facultative hermaphroditism. In neoarctic Unionidae this phenomenon is more widespread: three North-American Unionidae species are obligate hermaphrodites and 14 of them are facultative hermaphrodites (Kat, 1983; Bloomer, 1939; Henley, 2002).

The aim of the present research is to determine the sex status of several species from Unionidae family with different methods.

We studied *Unio pictorum*, *U. tumidus*, *U. crassus*, *Anodonta cygnea*, *A. piscinalis*, *Pseudanodonta complanata* specimens collected during March-October 2005-2009 from the water reservoirs and streams of the Central Polissya region. The sex status of all individuals (325) was established with temporary preparations by traditional methods (Zhadin, 1938; Stroganova, 1963; Stadnychenko, 1984) and with permanent histopreparations taken from any part of gonad. In the deep histological examination of the whole gonad according to the methods used by North-American scientists (Henley, 2002) 135 mollusks from this sample were used.

Two groups of specimens were distinguished using the temporary preparations: males and females. The histological preparations from one part of the gonad revealed numerous cases of hermaphroditism (12 out of 22 mollusk samples). The share of hermaphrodites varied from 4.6 ± 2.0 (S.E.)% in *U. tumidus* to 31.7 ± 7.3 % in *A. cygnea*. In the studied region, 11.8 ± 1.8 % of unionids were found to develop male and female gametes simultaneously. The investigation of the whole gonad preparations, the number of hermaphrodites increased more than twice (27.4 ± 3.8 %). The reason for the difference between the results of these two histological methods is the different localization of male and female acynosis and uneven ratio of male and female tissues in the gland. Hermaphrodites, males and females evenly occurred in all Unionidae age groups.

Thus, the reason for the higher level of hermaphroditism in European unionids is the accurate histological analysis of the whole gonad. Also, the probable reason for the changes in population sex structure and the appearance of many hermaphrodites is associated with the negative changes in hydroecosystems, resulting in the rapid decrease of mollusk population density and facilitating trematode invasions.