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# DATA REGARDING THE MUSSELS POPULATION STRUCTURE (*MYTILUS GALLOPROVINCIALIS* LMK.) FROM THE AREA OF AGIGEA DYKE

#### BY

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This paper offers data concerning some biometrical aspects and also the structure of sexes of a reprezentative sample of the mussels population (*Mytilus galloprovincialis* Lmk.) from the area of the Agigea dyke, cropped from a natural substratum at the depth of 15 m. As a result in the collected sample in October, 2003, the individuals from the size class 60 - 70 mm are predominant and the histological analysis of the gonads showed the predominance of male individuals and an inactive gametogenetic phase in both sexes.

#### Introduction

The controlled growth of mussels on artificial supports is possible if in the sea medium exists some early sapling made of by natural population of mussels (Abada-Boudjema Yamina Madiha, 1996). That is why it is necessary to evaluate the reproductive potential and structure of sexes of these natural populations.

*Mytilus galloprovincialis* Lmk. sex - ratio presented by the majority of the authors is 1:1 (Vorobyov, 1938, quoted by Zayka and others, 1990; Kudinsky and others, 1985; Kudinsky and Shurova, 1990), but it may variate depending on different medium factors and also the gathering season. The histological studies of the mussels gonads have shown that the active reproduction period of these species begins in April – May period and goes on until August – September period with an interuption of 4 - 6 weeks during the hottest period (Kudinsky and others, 1985; Comănescu and others, 1995; Neagu and others, 1998). In Vorobyov's opinion (1938, quoted by Zayka and others, 1990), the ratio 1 : 1 is typical for the young individuals, but among the mussels that have achieved the age of 3 years – males are the predominant ones. In the sector of Sevastopol, Kiseleva (1972, quoted by Zayka and others, 1990) showed that the males represent only 20 - 30 % of the adult individuals. Kudinsky and Shurova (1990) on the basis of their research conclude that in unfavourable conditions, the females become predominant in the mussels population. It can be said that this fact may represent a kind of adaptation to the maintenance of mussels populations in unfavourable conditions.

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This study represents a step in an attempt of evaluation of the natural mussels stock, as a source of sapling for the controlled growth.

#### Materials and methods

This research has been made on the basis of a sample represented by 77 individuals of *Mytilus galloprovincialis* Lmk. The collecting of samples was made in the area of Agigea dyke, at 1 km distance from the shore, at a depth of 15 m, in October, 2003, with a scuba diver. The samples has been fixed in 10% formaldehyde. The following types of analysis have been made:

- □ <u>biometrical analysis</u>, consisting in measuring of length (L) and height (H) of the valves by means of sliding callipers, being established 6 size classes, with an interval of 9.9 mm, after the method of Zayka and others, 1990 (Fig. 1).
- □ <u>histological analysis</u> of gonads, belonging to 65 individuals, by classical histological methods that led to the obtaining of permanent microscopical pieces that have been stained with hemalaun eosine and photographed with a NOVEX microscope with a Canon EOS1V.



# Fig.1. Scheme of method of measuring mussels valves: L - length, H – height.

# **Results and Discussions**

From the biometrical analysis it can be noticed that:

- □ the majority of analysed individuals are mature, with the size between 3 7 cm. The weight of young youthful individuals is reduced (6 9%) (Fig. 2):
- □ it can be noticed a positive correlation between the length and the height of the valves in all the categories with the mention that the correlation ratio decreases



Data regarding the mussels population structure Mytilus galloprovincialis Lmk. (...)

with the growth of individuals. This means that the speed of growth of individuals is much greater, than the height of the valves, especially in individuals from the big size classes with considerable length, where the ration of correlation is very close to zero (Fig. 3, 4).







From the <u>histological analysis</u> it is noticed that:

□ male individuals represent 47%, from the total number of analized individuals, and the females – 25%. The remained 28% are unidentified individuals from sexual view point, because of the lackh of gametes, or due to a preliminary expulsion of gametes, or because of gonadic involution (Fig. 5);



- □ it has been noticed that in every size class males are dominant.
- □ individuals of big dimensions end up the elimination of gametes earlier than those of smaller dimensions (Fig. 6).

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□ the samples have been collected at the beginning of October, 2003, during the period following the sexual elements elimination. In the male gonads are noticed some follicles still being in the period of gametes expulsion, as well as follicles with eliminated gametes. In female gonads the ratio of follicles with eliminated gametes is greater (Fig. 7).

# **Conclusions:**

This study allowed us to underline the following aspects:

- the structure of mussels population: males 47%, and females 25%. Sex ratio is 1.88 ♂: 1 ♀. The rest of 28% are unidentificable individuals from sexual view point.
- it has been stated that the individuals from 60 70 mm size class are predominant and they are mature from sexual view point.
- in males, as compared to females, there is noticed the predominance of follicles with gametes in the process of elimination and with eliminated gametes. In females the emptied follicles are predominant. This proves the tendency of gonades to enter the inactive fase during the period of winter.

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# Fig. 7. Different stages of female (a, b, c) and male (d, e, f) gonads follicles:

a  $-\bigcirc$  gonad with not eliminated gametes, b  $-\bigcirc$  gonad with partly eliminated gametes, c  $-\bigcirc$  gonad with almost completely eliminated gametes, d  $-\oslash$  gonad with not eliminated gametes, e  $-\oslash$  gonad with partly eliminated gametes, f  $-\oslash$  gonad with almost completely eliminated gametes. The arrows point to the follicles with gametes.