THE FRESHWATER MUSSEL *Margaritifera margaritifera* (L.) IN GALICIA (NW SPAIN). PRELIMINARY STUDY IN THE RIVERS EO AND MASMA

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INTRODUCTION

Throughout the last century, the populations of the freshwater bivalve *Margaritifera margaritifera* have suffered drastic decreases in all their geographical extension (Young et al., 2001). Many populations have disappeared and others are unable to reproduce successfully. The eutrophication of the rivers is considered the main cause, which is determinant for the establishment and survival of young mussels (Bauer, 1986). This eutrophication is closely linked to intensive agriculture and anthropogenic activities from the growing urban areas.

Seasonal pH and dissolved oxygen levels were used to evaluate the degree of eutrophication. Black areas on the map indicate a high degree of eutrophication due to the agricultural activities, but it must be sufficiently developed. A section with a well-developed forest on the bank. B: Section in which the forest is reduced to a single row of trees. Removal of vegetation also creates riverbank instability, leading to bank collapse and subsequent sedimentation.

CHARACTERISTICS OF THE STUDIED RIVERS

The rivers Masma and Eo are located in the NW Spain (Fig. 1). The distance between their mouths is around 18 km. They have stable populations of *Salmo* species, *S. trutta* and *S. trutta fario*, potential hosts of the glochidia of *M. margaritifera*.

The river Masma has a length of 46.2 km. It presents a basin of 291.3 km² and a discharge rate of 6.4 m³/seg. The middle and high parts of the Masma river basin (upstream from the sampling areas) have 3249 ha of surface occupied by farmland and pastures. Moreover, two urban areas (Monrealo and Lourenzá) are crossed by the inconvenience of Masma and one of which flows through an outcrop of lime rock.

The Eo river has a length of 79 km. It is a basin of 700 km² and a discharge rate of 24.4 m³/seg. Upstream from the sampling area there are only 475 ha used for farming and pastures (SIA on line).

The water analyses are showed in Table 1.

RESULTS

The mapping of the land cover and land use (Fig. 1) and the satellite images (Fig. 2) show that the Masma river undergoes a greater agricultural and urban pressure, and a greater degree of alteration of the native riverbank vegetation. This is supported by the water analyses (Table 1), showing the Masma river a greater degree of eutrophication. The eutrophication seems to have consequences on the population structure of *M. margaritifera* on both rivers. Fig. 3 clearly shows that individuals under 65 mm are practically absent in the Masma river but appear in a significant number in the Eo river; on both rivers. Fig. 3 clearly shows that individuals under 65 mm are practically absent in the Masma river but appear in a significant number in the Eo river; these results may be explained by the reduced size of the sampling areas (Table 1).

Fig. 4.- Frequency distribution of shell lengths for each sampling point (Fig. 3). N= 33 to 60 specimens for each section. The measured specimens were returned to the river.

METHODOLOGY

Five linear transects of 100m length were selected in the Masma river (M1-M5) and four in the Eo river (Eo1-Eo4), in areas where the species was previously observed.

The structure of the populations was assess using the frequency distribution of shell lengths for each sampling point (Fig 3). N=

Table 1. Water analyses show a greater degree of eutrophication in the river Masma with respect to the EO: conductivity, NH4+ and SO4²⁻ were higher in the river Masma pH, alkalinity and Ca²⁺ were also higher in the river Masma but these results may be explained by the presence of a limestone outcrop.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Masma River</th>
<th>Eo River</th>
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<tbody>
<tr>
<td>Conductivity</td>
<td>162.3</td>
<td>18.60</td>
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<tr>
<td>NH4+ (mg/L)</td>
<td>0.129</td>
<td>0.028</td>
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<tr>
<td>Alkalinity</td>
<td>72.8</td>
<td>10.0</td>
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<tr>
<td>T (ºC)</td>
<td>16.5</td>
<td>0.70</td>
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<tr>
<td>pH</td>
<td>7.5</td>
<td>6.0</td>
</tr>
</tbody>
</table>

REFERENCES


MAPA. Visor gráfico SigPac (On line). FEGA. Ministerio de agricultura pesca y alimentación.


SIMPONIA. Visor cartográfico. SIMPONIA. Visor cartográfico (On line).

Fig. 5.- The adult *M. margaritifera*, unlike the young stages, seems to be able to live in eutrophic surroundings and on all type of substrates like rocks (A), pebbles (B), sand (C), fine sand (D), the silt (E) and between organic remains (F).