# RESEARCH ON QUALITATIVE AND QUANTITATIVE DETERMINATION OF AQUATIC MACROPHYTES EMERGE FROM A FRESH WATER BASIN WITHIN THE RESEARCH STATION OF AQUACULTURE AND AQUATIC ECOLOGY IASI

**Valerica Gîlcă[1*], I. Gîlcă[1], D. Simeanu[1], Cristina Simeanu[1], R.M. Radu-Rusu[1], Doina Leonte[1], C. Leonte[1], Elena Ignat[2]**

*[1]Faculty of Animal Sciences, University of Agricultural Sciences and Veterinary Medicine of Iasi, Romania*
*[2]High School "Ștefan Luchian" Ștefănești, Botoșani, Romania*

**Abstract**

*The researches took place between 1 June and 15 July 2017 and consisted in the identification and quantitative and qualitative determination of the aquatic vegetation emerge from a freshwater basin within Research Station of Aquaculture and Aquatic Ecology, Iaşi.*

*The emerging aquatic macrophites were diagnosed with the specific determinant of the respective area and vegetation, analyzing the strain, leaves, inflorescence and whole plant. The identified plants were harvested and grouped on associations to be systematically enumerated, then their biomass was determined.*

*Quantitative determination of water emerge vegetation was done on a 600 square meter (sqm). That area was divided into plots of 1 sqm, and the plants on each plot were grouped and weighed. The amount of biomass for each taxon per square meter and the entire harvesting area was then determined. With regard to the identification of emerging aquatic vegetation, 29 taxons belonging to 12 families of emerging aquatic macrophytes were determined.*

*Total plant biomass on the surface of 600 sqm was 23.120 Kg. Regarding the biomass of the emerging aquatic plants, it was found that the largest spread was Phragmites communis with 8.0 kg / sqm, followed by Typha latifolia with 5.8 kg / sqm., Typha angustifolia 4,5 kg / sqm. and Typha minima with 3.0 Kg / sqm. From the Cyperaceae family, Scirpus lacustris with 4.6 Kg / sqm was determined, and the lowest amount was the species Carex vulpina, which is usually found in the form of clusters on the edge of the fish ponds.*

**Key words:** water, fish pond, vegetation, macrophytes

## INTRODUCTION

The researches aimed to quantitatively and qualitatively determine the emery macrophytes from a fresh aquatic basin within Research Station of Aquaculture and Aquatic Ecology, Iaşi. The researches took place between 1 June and 15 July 2017 and consisted in the identification and quantitative and qualitative determination of the spring water vegetation present in the fish pond where the research was carried out.

## MATERIAL AND METHOD

The emerging aquatic macrophytes were diagnosed with the specific determinant of the respective area and vegetation, analyzing the strain, leaves, inflorescence and whole plant. The identified plants were harvested and grouped on associations to be systematically assigned, and then determined their biomass. Quantitative determination of water emerge vegetation was done on a 600 sqm. The surface was divided into plots of 1 square meter, and the plants on each plot were grouped and weighed. The amount of biomass for each taxon per square meter and the entire harvesting area was then determined. Two collections were made, and the results were entered into tables and figures.

[*]Corresponding author:
m_valerica_univagro@yahoo.com
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## RESULTS AND DISCUSSIONS

With regard to the identification of emerging aquatic vegetation, 29 taxons belonging to 12 families of emerging aquatic macrophytes were determined. The emerging aquatic plants identified in the researched fish pond:

*Typha angustifolia* - *Typhaceae* family, *Typha latifolia* – *Typhaceae* family, *Typha minima* – *Typhaceae* family;

*Phragmites communis* – *Poaceae* family, *Phalaris arundinacea* – *Poaceae* family;

*Aquatic Glyceria*, *Glyceria* genus- *Poaceae* family;

*Carex vulpina* - *Carex* genus – *Cyperaceae* family;

*Carex humilis*, *Cyperaceae* family;

*Bolboschoenus maritimus* - *Cyperaceae* family;

*Scirpus lacustris* – *Cyperaceae* family.

In the floodplain area of the shores of the aquatic basin, alongside the associations of *Carex*, *Typha* and *Pragmites*, amphibian plant shrubs met:

*Polygonium amphybium* - *Polygonaceae* family;

*Butomus umbelatus* - *Butomaceae* family;

*Parganium ramosum* - *Sparganiaceae* family, *Sparganium simplex* - *Sparganiaceae* family;

*Juncus effusus* (rust) - *Juncaceae* family;

*Salix alba* (Sallow) - *Salicaceae* family, *Salix triandra* – *Salicaceae* family.

Table 1 Total biomass of emerging plants

| No.crt. | Species | Surface of harvesting (sqm) | Wet amount | |
|---|---|---|---|---|
| | | | Kg/sqm | Kg/surface |
| 1. 1. | *Typha angustifolia* | 600 | 4.5 | 2700 |
| 2. 2. | *Typha minima* | 600 | 3.0 | 1800 |
| 3. 3. | *Typha latifolia* | 600 | 5.8 | 3480 |
| 4. 4. | *Phragmites communis* | 600 | 8.0 | 4800 |
| 5. 5. | *Phalaris arundinacea* | 600 | 3.1 | 1860 |
| 6. 6. | *Gliceria aquatica* | 600 | 3.4 | 1880 |
| 7. 7. | *Carex vulpina* | 600 | 1.7 | 1020 |
| 8. 8. | *Carex humilis* | 600 | 2.2 | 1320 |
| 9. 9. | *Bolboschoenus maritimus* | 600 | 2.5 | 1500 |
| 10. 10 | *Scirpus lacustris* | 600 | 4.6 | 2760 |
| | Total plants emerge | 600 | 38.8 | 23120 |

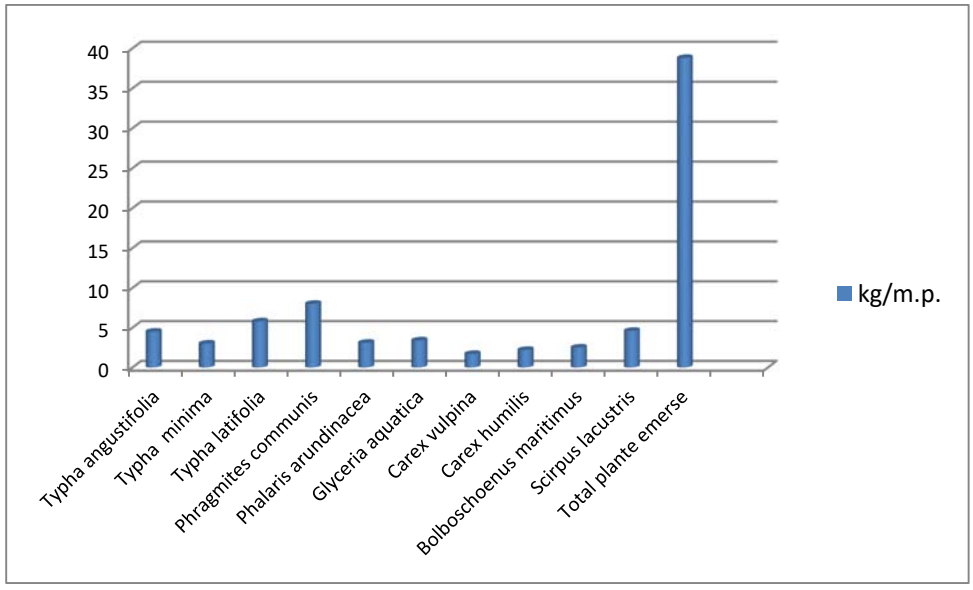


Fig. 1 Total biomass of emerging plants

Total plant biomass on the surface of 600 square meters. was 23120 Kg (Table 1, Figure 1). Regarding the biomass of the emerging aquatic plants, it was found that *Phragmites communis* was the most spread species with 8.0 Kg /sqm. followed by *Typha latifolia* with 5.8 Kg / sqm. *Typha angustifolia* with 4.5 kg / sqm. and *Typha minima* with 3.0 Kg / sqm. From the *Cyperaceae* family, *Scirpus lacustris* with 4.6 Kg / sqm was determined. and the lowest amount was the species *Carex vulpine*, which is usually found in the form of clusters on the edge of the fishpond.

## CONCLUSIONS

As a result of the determinations made, there was found an excess of emerge water vegetation (*Phragmites communis*), the development of which can be effectively prevented with the help of phytophagous fish.

Taking into account the high phytomass quantity and the appreciable amount of organic matter contained, the emerging aquatic vegetation may be an important source of feed for phytophagous fish.

By populating the aquatic basin with the *Ctenopharyngodon idella* species, with the consumption of emerge vegetation and the increase of the water surface, the water quality will be improved. while at the same time making a recovery of the basin from the point of view of fish.

The aquatic vegetation in the investigated aquatic basin is a rich trophic resource, now only partially included in the trophic base of the pool. In the absence of specific consumers (phytophagous fish), the luxuriant development of the emerge vegetation has a negative influence on the life of the pool and at the same time an appreciable amount of organic substances and energy remain untapped.

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