THE STUDY OF PHYTOSOCIOLOGY AND ECOLOGY OF COMMON GLASSWORT - *SALICORNIA EUROPAEA* L. SPECIES IN OLTENIA REGION, ROMANIA

MARIANA NICULESCU[1], NESRIN ÖRÇEN[3], FLORIN DORIAN COJOACĂ[1], AYSUN ŞENER[4], ZORAN PRŽIĆ[5]

[1]University of Craiova, Faculty of Agronomy, 19 Libertatii Street, 200583, Craiova, mniculescum@yahoo.com, Romania
[2]University of Craiova, Faculty of Horticulture, 13 A. I. Cuza Street, Craiova, Romania, luminita25dragomir@yahoo.com
[3]Ege University Agricultural Faculty, Field Crops Department, 5100 Bornova, Izmir, Turkey, nesrin.orcen@ege.edu.tr
[4]University of Adana Science and Technology, Faculty of Engineering and Department of Food Engineering, Saricam 01250 Adana, Turkey, asener@adanabtu.edu.tr
[5] Faculty of Agriculture, Univerrsity of Belgrade, Serbia, zoranata4@yahoo.com
*Corresponding author: f_cojoaca@yahoo.com

ABSTRACT

The thematic area provided, it is part of Oltenia region of Romania and it is a very important area by point of view geographically, flora and fauna, landscape, cultural and course economic. The overall objective of this research was to contribute to a better kmowledge of the phytosociology, ecology and distribution of plant community edified by the glasswort - Salicornia europaea L. This species is one of the native halophytic plants of our country that widely spread in salt areas.

S. europaea is found around much of the coastline of Europe from the Arctic to the Mediterranean, as well as on the shores of both the Black Sea and Caspian Sea and it is also present sporadically where inland salines occur across Europe. S. europaea has been prescribed in traditional medicines for the treatment of intestinal ailments, nephropathy, and hepatitis in Oriental countries. In addition, S. europaea has recently reported to be effective on the atherosclerosis, hyperlipidemia and diabetes.

In the analysed phytocoenoses S. europaea was dominant, as the species is finding in this area favourable as the species is finding in this area favourable ecological conditions for an abundance development.

This species edified the following plant communities: Salicornietum europaeae Wendelbg. 1953; Puccinelietum distantis Sóo 1937; Suaedeto-Kochietum hirsutae (Br.-Bl. 1928) Ţopa 1939.

The plant communities with glasswort have been analyzed and characterized from the chorological, ecological point of views. This plant communities from an area and at the same time their description and analysis from the ecological, chorological, syntaxonomical and syndinamical perspectives presents a great importance from the scientific and practical point of view.

Keywords: *Salicornia europaea*, plant communities, Oltenia, ecology

INTRODUCTION

The overall objective of this research was to contribute to a better kmowledge of the phytosociology, ecology and distribution of plant community edified by the glasswort - *Salicornia europaea* L. This species is one of the native halophytic plants of our country that widely spread in salt areas.

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MATERIAL AND METHODS

The study area is located in Oltenia, Romania at altitudes ranging from 20 m to 400 m on the soils rich in salts, besides saltwater springs, on the ponds and lakes saline.

From the point of view of the protection status, the studied stands are located in the protected area:ROSCI0045 Jiu Corridor, ROSCI 0045 Jiu-Danube Confluence, ROSCI0039 Ciuperceni-Desa, RONPA 0818 Ocnele Mari from Romania.

These studies were conducted during May to September in the period 2017-2019. For the analysis of the plant community in the study area was used the methoology of phyto-sociologic research of the Central European Phyto-Sociologic School, which is based on the principles and methods elaborated by Braun-Blanquet (1939). The plant communities were identified according to the characteristic, edifyng, dominant and differential species. For the classification and phytosociology study were used synthesis papers on the Romanian (Coldea, 1991, 2015) and Europeen vegetation (Mucina *et al.,* 1993; Mucina *et al.,* 2015; Rodwell *et al.,* 2002). The environmental analysis included altitude, slope, aspect, and soil properties. The plant community were analyzed and characterized from the chorologic, ecologic point of view and according to the aspect of the floristic composition and physiognomy To identify the type of habitat were used the Romanian Manual for interpretation of EU habitats (Mountford and Gafta, 2008) and the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Nuță and Niculescu, 2019).

RESULTS AND DISCUSSIONS

Salicornia europaea (fig. 1) is found around much of the coastline of Europe from the Arctic to the Mediterranean, as well as on the shores of both the Black Sea and Caspian Sea. *Salicornia europaea* it is also present sporadically where inland salines occur across Europe.

Europe distribution

Northern Europe: Denmark, Finland, Ireland, Norway, Sweden, United Kingdom

Middle Europe: Belgium, Czech Republic, Germany, Netherlands, Poland

Southeastern Europe: Albania, Bulgaria, Croatia, Greece (incl, Crete), Italy (incl. Sicily), Romania, Slovenia

Eastern Europe: Estonia, Latvia, Lithuania, Moldova, Russian Federation-European part, Ukraine (incl. Krymeea)

Southwestern Europe: France (incl. Corsica)

Taxonomy:

Genus – Salicornia
Family – Chenopodiaceae
Subfamily - *Salicornioideae*
Tribe - *Salicornieae*

Fig. 1. *Salicornia europaea* (foto M. Niculescu, 2018)

The identification of the plant communities from an area and at the same time their description and analysis from the ecological, chorological, syntaxonomical and sindynamical perspectives presents a great importance from the scientific and practical point of view. In the analysed phytocoenoses *S. europaea* was dominant, as the species is finding in this area favourable as the species is finding in this area favourable ecological conditions for an abundance development. This species edified the following plant communities: *Salicornietum europaeae* Wendelbg. 1953; *Puccinelietum distantis* Sóo 1937; *Suaedeto-Kochietum hirsutae* (Br.-Bl. 1928) Ţopa 1939. The plant communities with glasswort have been analyzed and characterized from the chorological, ecological point of views. This plant communities from an area and at the same time their description and analysis from the ecological, chorological, syntaxonomical and syndinamical perspectives presents a great importance from the scientific and practical point of view.

1.*Salicornietum europaeae* Wendelbg. 1953;

This palnt community installed on the salty and often sandy soil, with excess moisture. In the study area we meet this species in Gighera, Desa, Ocnele Mari

Physiognomy and floristic composition. The edifying species of this plant community is *Sanicula europaea.* In the floristic composition there are a series of *Saliconietalia* and *Thero-Salicornion* characteristic species such as: *Suaeda maritima, Aster tripolium, Salsola soda, Bassia hirsuta, Spergularia marina, Limonium gmelinii, Puccinelia limosa*. In the analysed phytocoenoses was observed the predominance of the *Salicornia europaea* species, which finds in this area of Oltenia favourable ecological conditions.

Ecology. Considering the mean abundance – dominance of the species, the plant community edified by *Salicornia europaea* is dominated by halophilous species and in terms of humidity: meso-higrophilous, and higrophilous elements. According to the temperature factor, the mesotherm species are the most abundant, followed by the xero-mesotherm ones. Taking into account the soil reaction one can notice the predominance of the neutrophilous species.

2. *Puccinelietum distantis* Sóo 1937;

This plant community is widespread on the salted soils is all over Romania.The phytocoenoses of this plant community occur the ecotops with high humidity.

Physiognomy and floristic composition. The edifying species of this plant community is *Puccinelia distans,* but with it in the floristic composition of the pthyotocoenoses is frequent *SalicoInia europaea.* So, in the floristic composition there are a series of Puccinelio-Salicornietea characteristic species such as: *Limonium gmelinii, Plantago schwarzenbergiana, Suaeda maritima, Aster tripolium, Salsola soda, Spergularia marina, Puccinelia limosa.*

Ecology. In the floristic composition of the ptytocoenoses of this plant community meet numerous higrophilous, mesohigrophilous, mesophilous, mesotherms and neutrophilous elements.

3.*Suaedeto-Kochietum hirsutae* (Br.-Bl. 1928) Ţopa 1939

The plant community developed on the soil with high humidity, reaching a coverage of up to 80%. Such phytocoenoses have been identified in Gighera, Desa, Cipuerceni, Ostroveni.

Physiognomy and floristic composition. The phytocoeonoses have a special composition, being characterised by the dominance of the species: *Salicornia europaeae, Suaeda maritima, Bassia hirsuta.*

Ecology. The analysis of the phytocoenoses of this plant community based on ecologic factors, shows the higrophilous, mesohigrophilous mesotherms and neutrophilous elements.

This species is included in Natura 2000 habitats: **1310** *Salicornia* and other annuals colonising mud and sand; CLAS. PAL.: 15.1 and **1530*** Ponto- Pannonic salt-steppes and salt-marshes;CLAS. PAL.: 15.A1, 15.A2 as habitats of community interest included in the Habitats Directive.

CONCLUSIONS

Three types of plant communities with *Salicornia europaea* of conservative interest was identified in Oltenia, in the Danube and Jiu floodplains and also in the Subcarpathian area of Oltenia (Getics Subcarpathians of Valcea) – in Ocnele Mari Protected Area. *Salicornia europaea* is included in the Phytocoenoses of the important Natura 2000 habitats: **1310** *Salicornia* and other annuals colonising mud and sand;CLAS. PAL.: 15.1 and **1530*** Ponto- Pannonic salt-steppes and salt-marshes;CLAS. PAL.: 15.A1, 15.A2.

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