

## *Calamagrostio pseudophragmitis* – *Typhetum minimae* in the southwestern part of Romania (Oltenia)

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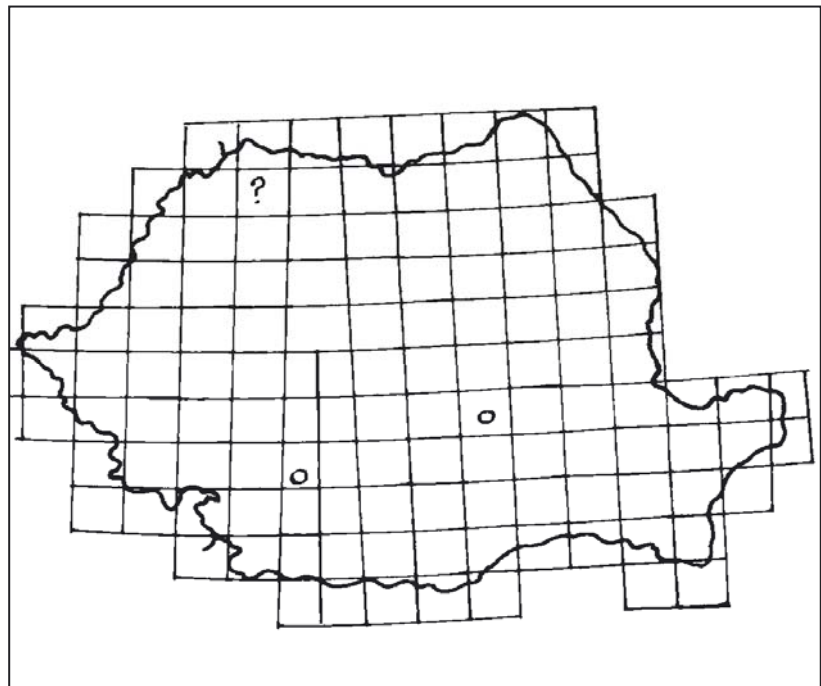
**Abstract:** This paper is an important contribution to the study of vegetation in the southwestern part of Romania (Oltenia). It reports for the first time in this area the association *Calamagrostio pseudophragmitis* – *Typhetum minimae*, which is hardly known on a national level.

**Key words:** *Calamagrostio pseudophragmitis* – *Typhetum minimae*, Oltenia, Romania

### Introduction

In 1971, an interesting floristic combination was registered in the lower basin of river Prahova (Prahova county) in which *Calamagrostis pseudophragmitis* (Haller f.) Koeler and *Typha minima* Funck (Dihoru 1971, 1976) played a distinct and specific role. The first species was found high upstream along the valleys where it had formed itself a gravel ground association *Calamagrostietum pseudophragmitis* Beldie 1967 (*Calamagrostietum pseudophragmitis* Kopecký 1968, nom., superfl.). The second species, being more thermophilic, could be mainly found in the low areas of the valleys, interfering with *Calamagrostis pseudophragmites*.

The authenticity of this association was confirmed by the fact that its coenoses were identified in other places in Romania situated far away from one another (Fig. 1).



**Fig. 1.** Distribution of the association *Calamagrostio pseudophragmitis* – *Typhetum minimae* in Romania.

○ – sites where the association was identified.

? – sites where the characteristic components of the analyzed association were mentioned (Burescu 2003), without its presence being reported.

Recently, it has been noticed by us in the southwestern part of Romania, in Oltenia, and particularly in the basin of Cerna River of Olteț (Vâlcea county), which is also our area of presentation. The characteristic species of this plant association have been also reported from the northwestern part of Romania (Satu Mare county), in similar location at the Calves Lake, but without reporting or presenting the association itself (Burescu 2003).

The basin of Cerna River of Olteț has an area of about 750 km<sup>2</sup> and includes Cerna River with its tributaries. After leaving the mountainous region, Cerna River crosses the Sub-Carpathian Hills and some depressions of variable height. The rest of the territory belongs to the Getic Piedmont, an area where the association under investigation was identified.

## Material and methods

This paper was written following a research performed by us throughout a period of 3 years. After examining the bibliographic material, we have noticed that the analysed association has been found only in few locations on a national level; that was the reason to focus our analysis on it.

The relevées method (geobotanical descriptions) have been used. The surveys were performed in various areas with representative vegetation. The species found in only one survey are listed at the end of the synthetic table, along with the survey they were found in.

The abbreviations are the usual ones used in phytocoenology: **Ch** – Chamaephyte, **G** – Geophyte, **H** – Hemicryptophyte; **HH** – Hydro-helophyte; **HT** – Hemitherophyte; **Ph** – Phanerophyte; **T** – Therophyte; **Adv** – Adventive; **Centr Eur Medit** – Central European Mediterranean; **Circ** – Circumpolar; **Cosm** – Cosmopolite; **Eur** – European; **Euras** – Eurasian; **Euras Cont** – Eurasian Continental; **Euras Submedit** – Eurasian Submediterranean; **Medit** – Mediterranean; **Pont Medit** – Pontic Mediterranean; **Submedit** – Submediterranean.

## Results and discussions

The association *Calamagrostio pseudophragmitis* – *Typhetum minimae* Dihoru 1971, 1976 (Table 1) is a pioneering association which can be found on river

gravel grounds, on alluvial soils with high moisture content, and on non-inundated fields.

The distinct heterogeneity and low consistency of the species are mainly due to frequent inundations during the vegetation period when some new species emerge while others disappear.

There have been registered 86 species of *Tracheophyta* and six species of *Bryophyta* throughout the 10 relevées. A large group belonged not only to the order *Phragmitetea australis* R. Tx. & Preising 1942, but also to *Salicetea purpureae* Moor 1958, which made the classification of the association very difficult. Initially, it was placed in *Salicetea purpureae*, alliance *Salicion elaeagni* Moor 1958 (Dihoru 1971, 1976). Later on it was transferred to order *Phragmitetea australis*, alliance *Phalaridion arundinaceae* Kopecký 1961, which was a better placing. We disagree with some botanists who insist that association *Calamagrostio pseudophragmitis* – *Typhetum minimae* should be regarded as subassociation *Typhetosum minimae* (Dihoru) Sanda & Popescu 1999 (Sanda & al. 2001): a rather mechanical classification, without any ecological and floristic analysis.

The presence of the species *Typha minima* in all registered phytocoenoses gives us grounds to include the community into *Calamagrostio pseudophragmitis* – *Typhetum minimae*, and not into *Calamagrostietum pseudophragmitis*.

In the phytocoenoses of the association, *Calamagrostio pseudophragmitis* was normally found in the higher areas of the basin of Cerna River, while *Typha minima* is in the lower, moister areas. The two species were even occasionally found in separate but not too large clusters, with a dominant interference space.

The phytocoenoses of this association were identified in the following localities in the basin of Cerna River of Olteț: Oteteliș, Valea Mare, Fârtățești, Dejoi, Ciumagi, Afânata, Stănești, Giuleștii de Sus, and Nisipi, at altitudes between 178 m and 200 m. They are somehow different from the other locations in the country.

Due to the rhizome system of the characteristic species which is very well developed, the phytocoenoses of this association play an important role in fixing the alluvia, thus contributing to the succession of vegetation sequence on the river bank.

By analyzing the spectrum of bioforms (Fig. 2), one can notice that the first place is held by hemicryptophytes, with 26 taxa, followed by therophytes, with a slightly lower number of taxa. The high number of



Phragmitetea et Phragmitetalia													
8.	H	Circ	<i>Lythrum salicaria</i>	+	+	+	+	+	+	+	+	+	V
9.	G(HH)	Cosm	<i>Eleocharis palustris</i>	+1	+	+1	-	+	+1	+	+	+	IV
10.	H(HH)	Euras	<i>Lycopus europaeus</i>	-	+	-	+	+	+	+	-	-	IV
11.	HH	Circ	<i>Alisma plantago-aquatica</i>	+1	+	+	-	+	+	+1	+	+	IV
12.	G(HH)	Circ	<i>Typha angustifolia</i>	+	+	+1	-	+	-	-	-	+	III
13.	G(HH)	Euras	<i>Bolboschoenus maritimus</i>	+	+	+	-	+	+	-	-	-	III
14.	G(HH)	Euras	<i>Phragmites australis</i>	+	+	+1	+	+	+	-	-	+	III
15.	G	Eur	<i>Iris pseudacorus</i>	+	+	-	-	-	-	-	+	-	II
16.	G(HH)	Cosm	<i>Typha latifolia</i>	+	+	+	-	-	-	-	+	-	II
17.	G	Circ	<i>Equisetum palustre</i>	-	+	-	-	+	+	-	-	-	II
18.	H(HH)	Euras	<i>Veronica beccabunga</i>	-	-	+	+	-	-	-	+	-	II
<i>Salicion elaeagni</i>													
19.	H	Euras	<i>Mentha longifolia</i>	+	+	+	-	+	+	+	-	-	IV
20.	H	Euras	<i>Saponaria officinalis</i>	-	+	-	-	+	+	-	-	-	II
<i>Salicetalia purpureae</i>													
21.	Ph	Euras	<i>Salix purpurea</i>	+1	+1	+	-	+	+	+	-	+	IV
22.	Ph	Euras	<i>Populus nigra</i>	-	+	-	-	+	+	-	-	-	II
23.	Ph	Euras	<i>Salix triandra</i>	+	+	+	-	-	-	-	-	-	II
<i>Bidentetea tripartiti</i>													
24.	T	Euras	<i>Bidens tripartita</i>	+	+	+	-	+	+	-	+	-	III
25.	T	Eur	<i>Xanthium italicum</i>	+	+	+	-	+	-	-	-	-	II
26.	T-Ht	Circ	<i>Alopecurus aequalis</i>	+	+	+	-	-	-	-	-	-	II
27.	T	Euras	<i>Crypsis alopecuroides</i>	+	+	+	-	-	-	-	-	-	II
28.	T	Euras	<i>Rumex palustris</i>	+	-	+	-	-	-	-	-	-	I
<i>Nanocyperetalia</i>													
29.	T	Euras	<i>Cyperus fuscus</i>	+	+	+	-	-	-	-	-	-	II
<i>Oenanthetalia aquaticae</i>													
30.	HH	Euras	<i>Butomus umbellatum</i>	+	+	+	-	+	+	-	+	+	IV
<i>Agropyro-Rumicion</i>													
31.	H	Euras	<i>Juncus inflexus</i>	+	+	+	-	+	+	+	+	+	V
32.	H	Euras Submedit	<i>Mentha pulegium</i>	+	+	+	-	+	+	+	-	+	IV
33.	H	Euras	<i>Ranunculus repens</i>	-	+	+	-	+	+	-	-	-	II
34.	H	Euras	<i>Rumex crispus</i>	-	+	+	-	-	-	-	-	+	I
<i>Molinio-Arrhenatheretea</i>													
35.	T-H	Euras	<i>Medicago lupulina</i>	+	+	+	-	+	+	-	-	+	III
36.	H	Euras	<i>Plantago lanceolata</i>	-	+	-	+	-	-	-	-	-	II
37.	HT	Euras	<i>Daucus carota</i> subsp. <i>carota</i>	-	+	+	-	+	+	-	+	-	II

		Stellarietea mediae															
38.	G	Euras	Sonchus arvensis	+	+	+	+	+	+	+	-	+	-	+	-	+	IV
39.	T-HT	Cosm	Stellaria media	+	+	+	+	+	+	+	+	+	+	+	+	-	IV
40.	T	Adv	Amaranthus retroflexus	-	+	+	+	+	+	+	+	+	+	+	+	+	III
41.	T	Cosm	Solanum nigrum	-	+	+	+	+	+	+	+	+	+	+	+	+	III
42.	G	Euras	Cirsium arvense	+	+	+	+	+	+	+	+	+	+	+	+	+	III
43.	T	Adv	Conyza canadensis	+	+	+	+	+	+	+	+	+	+	+	+	+	III
44.	T-HT	Circ	Anagallis arvensis	-	+	+	+	+	+	+	+	+	+	+	+	-	II
45.	T(HT)	Euras Submedit	Bromus arvensis	-	+	+	+	+	+	+	+	+	+	+	+	-	I

**Species in a single relevé:** H, Eur, *Bellis perennis* (6), T, HT, H, Adv (Am. de N) *Erigeron annuus* subsp. *strigosus* (2), G, Euras, *Tussilago farfara* (5), T, Pont. Medit, *Crepis foetida* subsp. *rhoeadifolia* (1), H, Euras, *Artemisia absinthium* (9), H, Circ, *A. vulgaris* (7), H, Circ, *Juncus articulatus* (3), T, Cosm, *J. bufonius* (2), H, Cosm, *J. effusus* (5), H, Euras, *Euphorbia cyparissias* (2), H, Euras, *E. virgata* subsp. *virgata* (2), H, Euras, *Rorippa sylvestris* (4), H, Eur, *R. pyrenaica* (2), HT, Adv (Am. de N.), *Oenothera biennis* (2), T, Cosm, *Echinochloa crus-galli* (10), T-HT, Medit, *Trifolium pallidum* (2), HT, Euras, *Melilotus albus* (1), HT, Eur, *Carduus acanthoides* (2), HT, Eur, *C. crispus* subsp. *crispus* (2), T, Circ, *Ranunculus sceleratus* (6), G (HH), Centr. Eur. Medit, *Cyperus longus* (1), H, Euras, *Vicia cracca* (9), H, Euras, *Poa trivialis* (2), H, Submedit, *P. sylvicola* (3), T, Cosm, *Chenopodium botrys* (2), T, Circ, *Portulaca oleracea* (10), T, Cosm, *Galinsoga parviflora* (8), T, Euras, *Gypsophila muralis* (9), T, Eur, *Polygonum mite* (2), Ch, Euras, *Lysimachia nummularia* (2), G(HH), Eur SE *Typha laxmannii* (2), T, Cosm, *Polygonum lapathifolium* (9), Ph, Euras, *Alnus glutinosa* (1), G, Cosm, *Cynodon dactylon* (7), HT, Euras, *Cardamine impatiens* (2), H, Euras, *Leonurus cardiaca* (7), G, Circ, *Carex hirta* (4), G(HH), Euras, *C. riparia* (3), G, Circ, *Equisetum telmateia* (10), H, Euras, *Lysimachia vulgaris* (2), T-HT, Euras, *Matricaria perforata* (8).

**Bryophyta:** *Brachythecium rutabulum* (1), *Campothecium lutescens* (1), *Funaria hygrometrica* (3), *Hypnum cupressiforme* var. *lacunosum* (1), *Amblystegium varium* (1), *Tortula muralis* (1).

**Place and date of relevés:** 1, 3 – Oteteliș (1.05.2001, 9.05.2002); 2 – Valea Mare (26.06.2003); 4 – Ciomag (12.06.2003); 5 – Giulești de Sus (26.06.2003); 6 – Fărtășești (12.06.2003); 7 – Nisipi (25.06.2003); 8 – Dejoi (25.06.2003); 9 – Stănești (9.05.2002); 10 – Afănata (26.06.2003).

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