ULST Timisoara
Multidisciplinary Conference on Sustainable Development
15-16 May 2025

CURRENT DATA ON THE STATUS OF KNOTWEED SPECIES (FALLOPIA, POLYGONUM, PERSICARIA, REYNOUTRIA) IN WETLAND AREAS OF ROMANIAN BANAT

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Abstract: *We have as our starting point a genus with very well-known species, but with a highly debated systematics and unexploited economic potential. Polygonum is a large and cosmopolitan genus (the online taxonomic database, Plants of the World Online recognizes 173 species, but other authors, e.g. DONG et al., 2014, in IDOUDI et al., 2024 consider about 300 species), with very common plant species in Romania's flora, known as knotweed. The systematics of the genus Polygonum is very controversial and still unresolved, as we said, that's why several species have been reclassified and moved to the genera Persicaria, Bistorta, Fagopyrum, Fallopia, Reynoutria, Koenigia. CIOCÂRLAN (2009) presents 25 spontaneous and cultivated species from our country. The cultivated ones are Fallopia aubertii (L. Henry) Holub (Polygonum aubertii Louis Henri), Persicaria orientalis (L.) Spach (Polygonum orientale L.), Reynoutria japonica Houtt. (Polygonum cuspidatum Sieb. et Zucc.) and Reynoutria sachalinensis Nakai (Polygonum sachalinense Fr. Schmidt). The last two species escaped from culture and became subspontaneous and very aggressive as invasive. The spontaneous species grow in ponds and marshes, in ditches and canals, in humid forests or some are segetal and ruderal. We are discussing here those that belong to the first ecological category. That's why we have chosen the following 7 species encountered in humid areas: Persicaria amphibia (L.) Delarbre (Polygonum amphibium L.), Persicaria hydropiper (L.) Delarbre (Polygonum hydropiper L.), Persicaria lapathifolia (L.) Delarbre (Polygonum lapathyfolium L.), Persicaria minor (Huds.) Opiz (Polygonum minus Hudson), Persicaria mitis (Schrank) Holub (Polygonum mite Schrank), Persicaria maculosa Gray (Polygonum persicaria L.), Reynoutria japonica Houtt. (Polygonum cuspidatum Sieb. et Zucc.). Our chorological data is corroborated with that collected in this region by SORAN, BOŞCAIU, GRIGORE, VICOL, OPREA, ARVAT, COSTE, DRĂGULESCU and other authors (from 1954 until now). We have taken into account the ecological differences, their participation in the vegetation and we draw attention to the spread of one of the very invasive species, Reynoutria japonica Houtt. We would like to emphasize that we look at them not only from a botanical and ecological point of view, but also from the perspective of their pharmaceutical potential, because some species contain phytochemical compounds, which makes them very appreciated.*

• Introduction

Polygonum genus is native in over 200 countries, including Romania. Until recently, knotweeds were considered only the *Polygonum* species, but now, under the name knotweed, we also find species from other genera, such as: *Fallopia, Persicaria* or *Reynoutria*, because their taxonomy has been revised.

• Material and method

In our study we analyzed 7 plant species of knotweed that grow in wet zones. We discussed their morphological traits, we updated the distribution of these species and the cenotic environment in which they grow as well the environmental conditions. We compared the available data, collected in this region by SORAN (1954, 1956), BOŞCAIU (1966), GRIGORE (1971), COSTE (1974), VICOL (1974), OPREA (1976), ARVAT (1977), LOVASZ (1995), DRĂGULESCU (2013) .... with our own field observations.

Persicaria amphibia (L.) Delarbre

Persicaria lapathifolia (L.) Delarbre

Reynoutria japonica Houtt.

Persicaria orientalis (L.) Spach

• Results and discussions

Nr. crt.	Valid name (POWO)	Name in CIOCÂRLAN (2009)	Other homotypic synonyms
1.	*Persicaria amphibia* (L.) Delarbre	*Polygonum amphibium* L.	*Chulusium amphibium* (L.) Raf., *Persicaria fluitans* Montandon
2.	*Persicaria hydropiper* (L.) Delarbre	*Polygonum hydropiper* L.	*Peutalis hydropiper* (L.) Raf.
3.	*Persicaria lapathifolia* (L.) Delarbre	*Polygonum lapathyfolium* L.	*Polygonum persicaria* var. *lapathifolium* (L.) Meisn.
4.	*Persicaria minor* (Huds.) Opiz	*Polygonum minus* Hudson	*Peutalis minor* (Huds.) Raf., *Polygonum minus* Huds., *Polygonum persicaria* f. *minus* (Huds.) Beckh.
5.	*Persicaria mitis* (Schrank) Assenov	*Polygonum mite* Schrank	*Persicaria hydropiper* subsp. *mite* (Schrank) Majeed Kak
6.	*Persicaria maculosa* Gray	*Polygonum persicaria* L.	*Peutalis persicaria* (L.) Raf., *Polygonum lapathifolium* subsp. *maculosum* (Gray) Dyer & Trimen
7.	*Reynoutria japonica* Houtt.	*Polygonum cuspidatum* Sieb. et Zucc.	*Fallopia japonica* (Houtt.) Ronse Decr., *Polygonum reynoutria* Makino, *Tiniaria japonica* (Houtt.) Hedberg

Spread: Liebling (SORAN, 1954, 1956), Lugoj (BOŞCAIU, 1966, VICOL, 1974), Timiş-Bega interfluve (GRIGORE, 1971), Locva Mountains (COSTE, 1974), Satchinez, Sînnicolaul Mare Plain (OPREA *et al.*, 1974, OPREA, 1976), Buziaş Plain (LOVASZ, 1995), Timiş river basin (DRĂGULESCU, 2013), Pişchia, Surduc (NEACŞU *et al.*, 2007-2024).

Cenotic environment (the most frequent): *POTAMOGETONETEA PECTINATI* R. Tx. et Prsg. 1942, ass. *Polygono-Potametum natantis* Soó 1964, *BIDENTETEA TRIPARTITI* R. Tüxen et al. ex von Rochow 1951, ass. *Bidenti-Polygonetum hydropiperi* Lohmeyer in R. Tüxen 1950, *Echinochloo-Polygonetum lapathifolii* Soó et Csűrös 1974.

Phytochemical composition: phenolic compounds (phenolic acids, flavonoids, tannins, stilbenes), volatile compounds, fatty acid, polysaccharides, bioactive compounds. pharmacological uses are practically unlimited: antipyretic, antidiuretic, gastroprotective, hepatoprotective, antiparasitic, antidiabetic, anticancer, antitumoral, neuropharmacological, antimicrobial, antiinflammatory, antioxidant (IDOUDI *et al.*, 2024).

• Conclusions

We found 7 species of knotweed which grow in wetlands areas from Banat. However common the species are, their systematics are still debated. Known as part of the genus *Polygonum*, their current names are: *Persicaria amphibia* (L.) Delarbre, *Persicaria hydropiper* (L.) Delarbre, *Persicaria lapathifolia* (L.) Delarbre, *Persicaria minor* (Huds.) Opiz, *Persicaria mitis* (Schrank) Assenov, *Persicaria maculosa* Gray, *Reynoutria japonica* Houtt.

In terms of spread, the most frequent, they are found in aquatic or pioneer vegetation on water shores, but since wetlands are fragile ecosystems, the presence of these species depends on the stability of the former.

Their economic potential represents a real source that can be exploited, and that's why, we intend to continue this study by monitoring their microbiological activity.