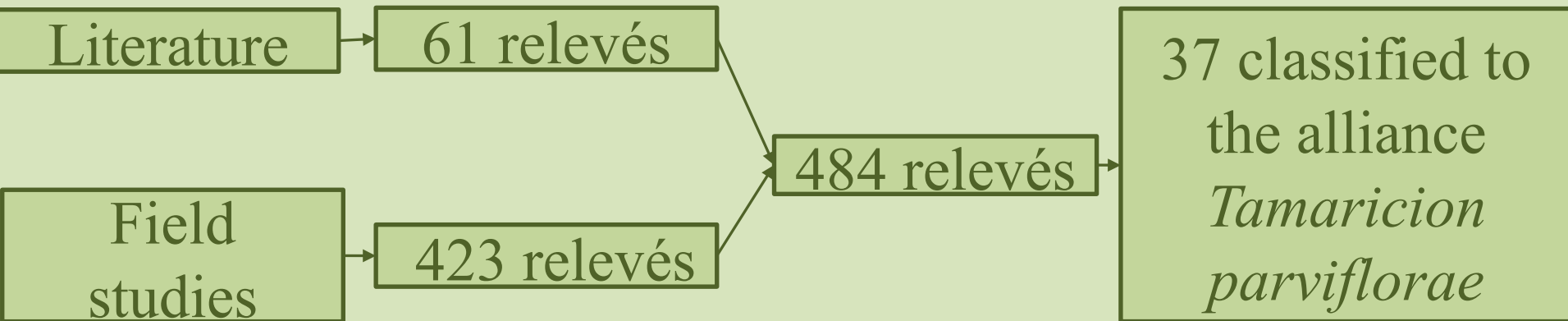


# **Syntaxonomy, ecology and status of alliance *Tamaricion parviflorae* I. Kárpáti et V. Kárpáti 1961 on the territory of Bulgaria**

**Kiril Vassilev, Beloslava Genova, Momchil Nazarov, Borislav  
Grigorov, Stoyan Georgiev & Nikolay Velez**

# Material & Methods

## Data collection



### All relevés:

- Were sampled according to the Braun-Blanquet approach
- Included data for abiotic conditions and cover of vegetation layers
- Were stored in the Balkan Vegetation Database (EU-00-013)



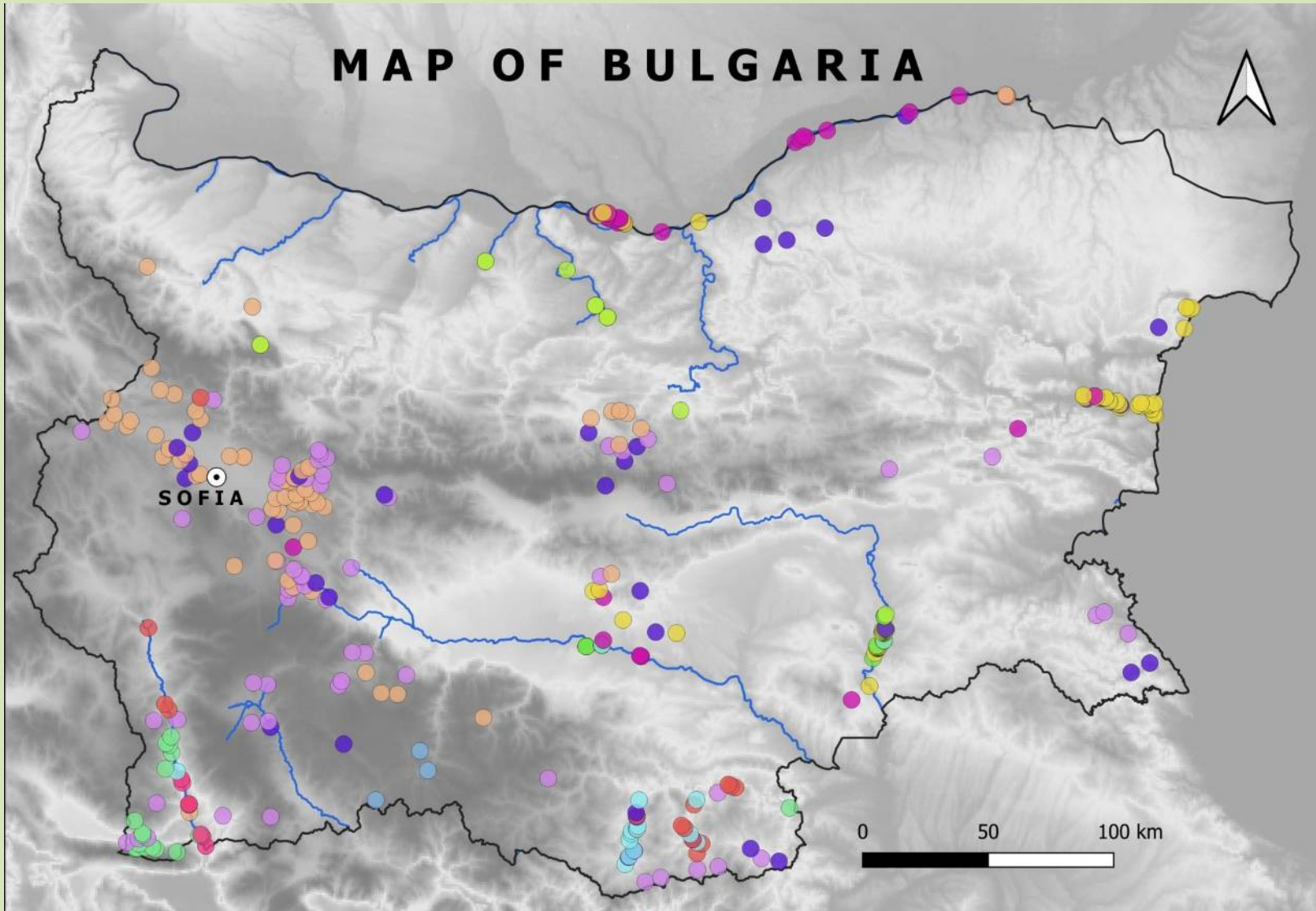
# Material & Methods

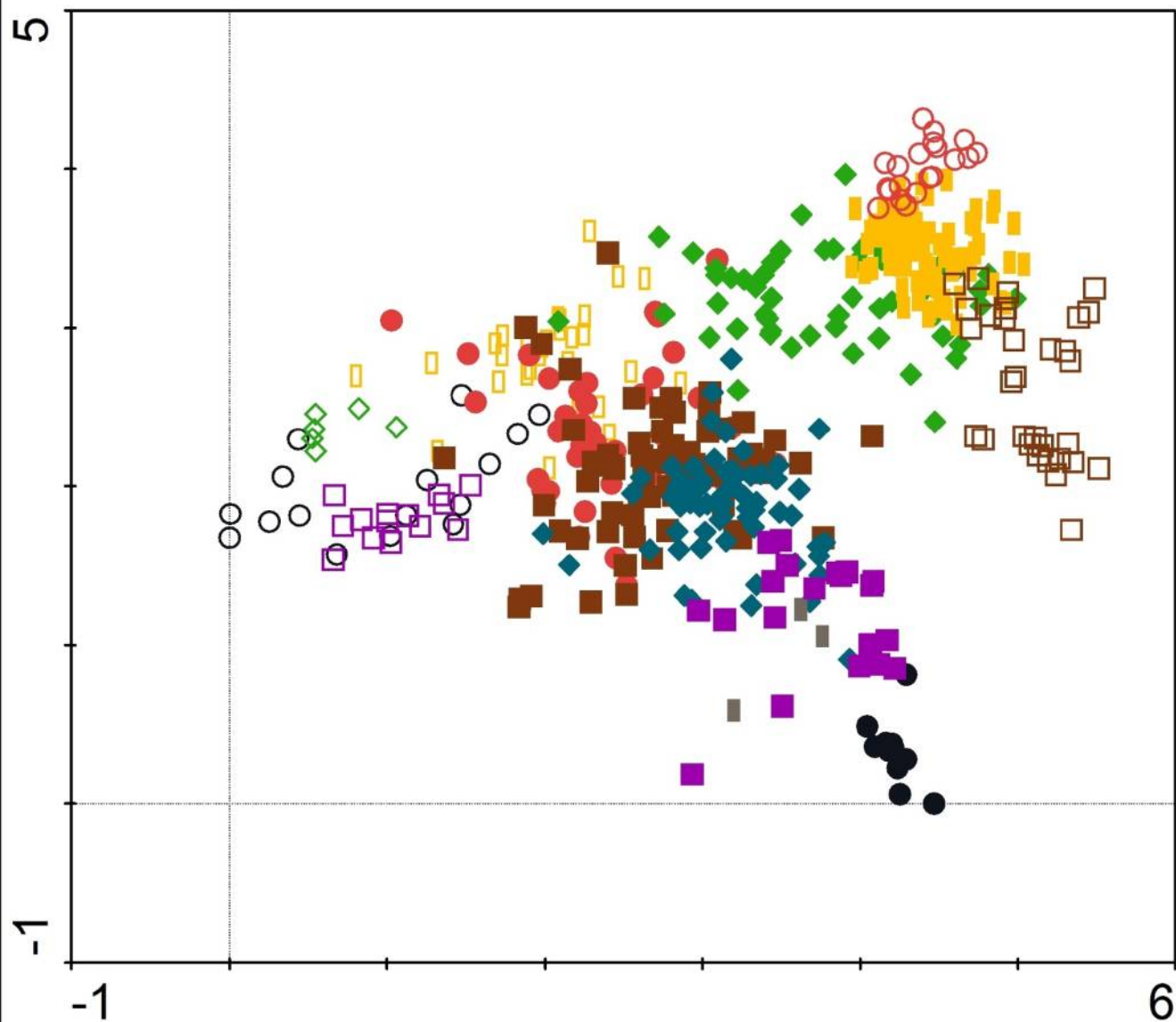
## Data analysis

- The nomenclature of the species was standardized according to the Euro+Med PlantBase;
- PC-ORD hierarchical clustering was used for classification from class to association and community levels using Sorensen (Bray-Curtis) & Flexible Beta indices;
- Ordination Method – Detrended Correspondance Analysis (DCA);
- High rank syntaxa (from class to alliances) follow Mucina et al. (2016);
- Diagnostic, constant and dominant species were determined for all syntaxa;

# Results

Riparian forests were classified to 2 classes, 4 orders, 5 alliances, 11 associations and 2 plant communities;





# SAMPLES

- Tam. tet. com.
- Tam.-Salic. purp.
- ◇ Tam. smyrn.
- Amor.-Salic.
- Salic. alb.
- Salic. frag.
- ◆ Stell. nem.-Aln. gl.
- Aln. inc. com.
- Cast.-Plat.
- Jugl.-Plat.
- ◆ Smil.ex.-Frax.ang.
- Smil.ex.-Fr.ang.PV
- Leu.aes.-Frax.ang.
- Scul. alt.-Quer.rob.

# *Tamaricion parviflorae* I. Kárpáti et V. Kárpáti 1961

- It includes tamarisk riverine scrub on coarse gravelly soils on lowland river banks (Mucina et al. 2016);
- Distributed in Greece, N. Macedonia, Albania, southern part of Bulgaria and Turkey;
- Up to now it is presented by 7 associations (*Tamarici-Salicetum purpureae* Kárpáti et Kárpáti 1961, *Nerio-Salicetum purpureae* Kárpáti et Kárpáti 1961, *Tamaricetum smyrnensis* Seçmen et Leblebici 1996, *Tamaricetum parviflorae* Kárpáti 1961, *Vitici-Tamaricetum dalmaticae* Ruci et al. 1995, *Viticetum agni casti* Lakušić 1972, *Rubo-Viticetum agni-casti* Lakušić et al. 1980) and 2 plant communities (*Tamarix-Platanus-Vitex* comm., *Tamarix tetrandra* comm.);

# ***Tamarix tetrandra* community (incl. *T. parviflora*)**

- Distributed in the southern part of Bulgaria – S valley of Struma and E Rhodope Mts (17 relèves);
- Sandy soils, flat terrains, average altitude – 230 m a.s.l.
- Well-developed shrubland and herb layers







# Diagnostic species:

*Tamarix tetrandra*, *Cynodon dactylon*, *Geranium pusillum*, *Cerastium semidecandrum*, *Neslia paniculata*, *Centaurea stoebe*, *Papaver dubium*, *Orlaya grandiflora*, *Vicia grandiflora*, *Anisantha sterillis*, *Arenaria serpyllifolia*, *Sisymbrium officinale*, *Trifolium nigrescens* + 10 more species



# Constant species:

*Rubus caesius* agg., *Galium aparine*, *Clematis vitalba*;



# Dominant species:

*Tamarix tetrandra*, *Rubus caesius* agg., *Anisantha sterillis*



# ***Ass. Tamarici-Salicetum purpureae* I.**

## **Kárpáti et V. Kárpáti 1961**

- Distributed in the southern part of Bulgaria – E Rhodope Mts and only 1 locality along the valley of Struma river (14 reléves);
- Sandy soils, flat terrains, average altitude – 241 m a.s.l.;
- Stands are found together with those of *Tamarix tetrandra* community;



# Diagnostic species:

*Salix amplexicaulis*, *Anisantha tectorum*, *Persicaria maculosa*, *Chenopodium album*, *Rumex patientia*, *Xanthium strumarium*, *Melilotus officinalis*, *Polygonum aviculare*, *Tamarix tetrandra*, *Echium vulgare*, *Sonchus asper*, *Fumaria rostellata*, *Plantago lanceolata* + 13 more species;



## Constant species:-

## Dominant species:

*Salix amplexicaulis*, *Tamarix tetrandra*, *Salix alba*





# ***Ass. Tamaricetum smyrnensis* Seçmen et Leblebici 1996**

- Locally distributed along the southern parts of the valley of Struma river – Topolnitsa, Drakata and Lebnitsa villages;
- Presented by only 6 relèves;





## Diagnostic species:

*Tamarix smyrnensis*, *Lolium perenne*, *Vulpia myurus*, *Hordeum murinum*, *Anthemis arvensis*, *Cynosurus echinatus*, *Rumex palustris*, *Artemisia campestris*, *Cichorium intybus*, *Rorippa thracica*, *Veronica verna*, *Dasypyrum villosum*, *Lactuca serriola* + 24 more species;



## Constant species:

*Salix alba*



## Dominant species:

*Tamarix smyrnensis*, *Anisantha sterillis*



# Habitat protection

- Included in the habitat type 92D0 Southern riparian galleries and thickets (*Nerio-Tamaricetea* and *Securinegion tinctoriae*) according to Directive 92/43/EEC;
- Included in Natura 2000 network in Bulgaria (7 sites – 6 in alpine and 1 in continental biogeographic region) and the cover of national level is only 231.03 ha
- The habitat type 92D0 is presented in some protected areas in Bulgaria also, like Nature Parks "Persina" and "Strandzha", Reserve "Ropotamo", Protected Sites "Kompleks Aleko-Telika", "Ostrov Tsibar" and "Pomoriysko ezero", Nature Monument "Blatoto Alepu" and some others.



# Existing threats

- long-term and strong anthropogenic pressure;
- use as pastures and the deposition of wastes on the river banks lead to ruderalization;
- distribution of alien species such as *Bidens tripartita*, *B. cernua*, *Conyza canadensis*, *Impatiens glandulifera*, *Amorpha fruticosa*;
- construction of hydro-ameliorative facilities and hydroelectric power stations;
- extraction of gravel from the rivers;



# Thank you for your attention!

**This work was partially supported by the Bulgarian Ministry of Education and Science under the National Research Programme “Young scientists and postdoctoral students” approved by DCM 577/17.08.2018, the National Science Fund (Contract ДКОСТ 01/7/19.10.2018) as a part of “COST Action CA16208 Knowledge conversion for enhancing management of European riparian ecosystems and services”.**