



Riparian Communities of Porsuk River (Eskişehir-Kütahya/Turkey)

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ABSTRACT

In his study, it is aimed to determine of the Riparian vegetation of Porsuk River from floristic point of view. The study area is located in the eastern part of Aegean Region and western part of Central Anatolia. From the phytogeographic point of view study area is located Irano-Turanien and Mediterranean Floristic Regions which is under the influences of Mediterranean climate with arid and semi-arid type. Totally 156 taxa (infraspecies) were identified in the riparian zone of the area that is belongs to 98 genera and 42 families. Two different vegetation types identified in the area that is woody and herbaceous riparian communities. In this study the only characteristic species of each vegetation types were given.

KEYWORDS :Porsuk River, vegetation types, floristic composition, riparian

INTRODUCTION

The plant communities near to river banks characterized by the hydrophilic plants are known as riparian vegetation.. Riparian vegetation is characterized by high fluctuating water level and very high soil moisture (Molina et. al 2004). The riparian zone forms the interface between the riverine waterbody and the hinterland of the river.

Riparian zone, despite their differences show has some similar ecological character such as energy flow, nutrient cycling, water cycle, hydrological functions, floristic and faunistic composition. These features surrounding them with riparian zone also shows their value in relation to the area of the unique value between landscaped and they are surrounded. Riparian zones are affected by biotic factors such as tourism, grazing, hunting, domestic and industrial waste and so on (Molina et. al 2004).

Turkey is relatively rich in wetlands compared with European and Middle East countries. Riparian plant communities which constitutes an important part of the wetlands. Turkey has become a contracting party to the Ramsar Convention in the year 1994 (Özen and Beklioğlu 2007).

Riparian zones are important in ecology, environmental management, and civil engineering because of their role in soil conservation, biodiversity and riparian buffer zone for water quality.

In this study, especially focused to determine of the Riparian vegetation of Porsuk River from floristic point of view.

Porsuk river was located in Sakarya river basin (one of the 26 river basins of Turkey) and is the longest tributary of the Sakarya River. The Porsuk river has its source in the Murat Mountain near to the village of Tokul 17 km from the Kütahya province on the Western Anatolian plateau. Porsuk River advances eastbound embracing various springs along its flow route and after about 460 km, merges with Sakarya River at about 676 meters above sea level (in the proximity of Kiranharman Village) . Porsuk River enters into the provincial borders of Eskişehir at the vicinity of Kalburcu Çiftlikleri located on northwest of Incesu Village (Ocak et al. 2012) (Figure 1).

Ocak et al. (2012) was studied flora of Porsuk river and surrounding and identified 266 taxa belonging to 170 genera and 59 families. Our study has enriched physiognomically dominant endemic floristic taxa typical of riparian vegetation types, and proposed richer floristic compositions.



Figure 1. Map of the study area

MATERIALS AND METHODS

The materials of this study were collected from banks of Porsuk River between 2013 March and 2014 August in 10 field trips. Special attention was paid to the collection of plant specimens as per the method at least two of each and with the plant organs, such as flowers, fruit, leaves, and roots. Collected plant specimens were dried and turned to herbarium materials. Dried plant specimens are protected at the Herbarium of Ankara University, Faculty of Sciences (ANK).

Several sources, particularly "Flora of Turkey and The East Aegean Islands (Davis 1965, Davis et al., 1988, Güner et al., 2000), were referred in identification of plants (Towsend and Guest 1966-1980, Meikle 1977, Viney 1996, Fassett 1957, Seçmen and Leblebici 1997, and Baytop 1998).

In order to define the climate of research area, the data from six meteorological stations (Kütahya, Eskişehir, Sivrihisar, Alpu, Ankara, and Pولاتlı) closest to the region were acquired from the archives of General Directorate of Turkish Meteorological Service and evaluated according to Akman (2011).

The precipitation regime in Kütahya is East Mediterranean Precipitation Regime Type 1, W.Sp.A.Sm. (winter, spring, autumn, summer), in all other stations, is Sp.W.A.Sm. (spring, winter, autumn, summer), is characterized by East Mediterranean Precipitation Regime Type 2. According to Emberger's Mediterranean bioclimate classification, the study area is under the influence of mild Mediterranean climate.

RESULTS AND DISCUSSION

As result of field studies in the research area 156 taxa (infraspecies) were identified in the riparian zone of the area that is belongs to 98 genera and 42 families. to the vegetation types were determined.

Vegetation types on the banks of Porsuk River which was chosen as the lotic research area were studied, and in conclusion, woody and herbaceous riparian vegetation types were determined. Each of these vegetation types was dealt individually in the study, and evaluated and tried to be interpreted in terms of their floristic compositions.

1. Woody riparian communities

This particular vegetation type comprises such bodies characterized by water-resistant hydrophilic tall trees stretching along the banks of lakes, rivers, and creeks. *Salix* L. and *Populus* L. composing the tree layer forms a gallery forest on river and watercourse banks, and has a broad distribution in our country. This species defined in Europe spreads over around the globe; in Northwest Africa, Europe (excluding northern end), Southwest and Central Asia, and Western Siberia. In the least degenerated riparian zones around the world, trees are dominant. Local riparian forests create an edaphic climax in river water beds, and this is an example to vegetations showing no zonation. Woody riparian communities differs from other types of forest in that they are usually linear, following the line of a river or creek.

The species constituting in the physiognomy of this vegetation type are given below:

Woody layer: *Acer tataricum*, *Fraxinus angustifolius* subsp. *oxycarpa*, *Malus sylvestris* subsp. *mitis*, *Populus alba*, *Populus nigra* subsp. *nigra*, *Populus tremula*, *Prunus spinosa* subsp. *dasyphylla*, *Pyrus communis* subsp. *communis*, *Salix alba*, *S. excelsa*, *S. triandra* subsp. *bornmuelleri*, *Ulmus minor* subsp. *minor*

Scrub layer: *Berberis crataegina*, *B. vulgaris*, *Crataegus monogyna* subsp. *azarella*, *C. pseudoheterophylla*, *Rosa canina*, *Rubus caesius*, *R. hirtus*, *R. sanctus*

Herb layer: *Agrostis stolonifera*, *Althea officinalis*, *Anthemis tinctoria* var. *pallida*, *Astragalus odoratus*, *Bromus japonicus* subsp. *japonicus*, *Bromus tectorum*, *Calystegia sepium* subsp. *sepium*, *Cichorium intybus*, *Cirsium arvense* subsp. *vestitum*, *Conium maculatum*, *Consolida orientalis*, *Convolvulus arvensis*, *Erodium cicutarium* subsp. *cicutarium*, *Elymus repens* subsp. *repens*, *Equisetum arvense*, *Galega officinalis*, *Galium aperine*, *G. verum* subsp. *verum*, *Geum urbanum*, *Glycyrrhiza glabra* var. *glandulifera*, *Hedera helix*, *Hordeum bulbosum*, *Hordeum marinum* var. *marinum*, *Inula britannica*, *Lotus corniculatus* var. *tenuifolius*, *Lysimachia vulgaris*, *Medicago lupulina*, *Mentha spicata* subsp. *spicata*, *Plantago lanceolata*, *Poa trivialis*, *P. pratensis*, *Potentilla reptans*, *Rubia tinctorum*, *Sanguisorba minor* subsp. *lasiocarpa*, *Sisymbrium altissimum*, *Trifolium fragiferum* var. *fragiferum*, *Torilis arvensis* subsp. *neglecta*, *Torilis leptophylla*, *Urtica dioica*, *Verbena officinalis*, *Vitis sylvestris*

2. Herbaceous riparian communities

This vegetation type is generally found along watercourses and rivers, in lakes and swamps, and shallow waters. Bottom parts of the plants in such regions are in soil that is always or periodically submerged, meaning in slime (halophytic plants). Because they have a well developed root system, it is much easier for them to form a community (Seçmen and Leblebici, 1997).

The species constituting in the physiognomy of this vegetation type are given below:

Alisma lanceolatum, *Apium nodiflorum*, *Barbarea plantaginea*, *Bolboschoenus maritimus* var. *cymosus*, *B. maritimus* var. *maritimus*, *Butomus umbellatus*, *Carex acuta*, *C. acutiformis*, *C. divisa*, *C. hirta*, *C. hordeistichos*, *C. riparia*, *Cyperus longus*, *Eleocharis palustris*, *Epilobium hirsutum*, *Equisetum palustre*, *E. ramosissimum*, *Juncus gerardi* subsp. *libanoticus*, *J. inflexus*, *Lemna minor*, *Lycopus europaeus*, *Lysimachia vulgaris*, *Lythrum salicaria*, *Mentha aquatica*, *M. longifolia* subsp. *typhoides* var. *typhoides*, *Phragmites australis*, *Plantago lanceolata*, *Pulicaria dysenterica*, *Rorippa amphibia*, *Rumex conglomeratus*, *R. pulcher*, *Schoenoplectus lacustris* subsp. *lacustris*, *S. lacustris* subsp. *tabernaemontani*, *Scirpoides holoschoenus*, *Sparganium erectum* subsp. *neglectum*, *Typha angustifolia*, *T. latifolia*, *Polygonum lapathifolium*, *Xanthium strumarium* subsp. *strumarium*, *Veronica anagallis-aquatica*

Conservation of riparian vegetation provides a welcoming environment for recreational activities, shade and a wind break for young livestock and crops, enhances water quality and aquatic habitat, sup-

ports healthy rural communities and contributes to increased land values.

ACKNOWLEDGEMENTS

- This study was funded by BAP (Scientific Research Projects Presidency of Ankara University, Project number: 11B4240008).
- This study was produced by a part of PhD thesis which is entitled "Syntaxonomical Analysis of Riparian Vegetation of Porsuk Stream (Eskisehir-Kutahya)".

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