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TAXONOMY, ECOLOGY AND DISTRIBUTION OF ACER HYRCANUM FISCH. & MEY. SENSU LATO

Sažetak: U radu je data taksonomija i distribucija *Acer hyrcanum* Fisch. & Mey. sensu lato. Za *A. hyrcanum* subsp. *intermedium* (Pančić) Bornmüller je data ekologija, status zaštite i IUCN kategorizacija za teritoriju Crne Gore.

Ključne riječi: *Acer hyrcanum* s. l., taksonomija, distribucija, ekologija, IUCN kategorizacija

Abstract: In this paper are given taxonomy and distribution *Acer hyrcanum* Fisch. & Mey. sensu lato. For *A. hyrcanum* subsp. *intermedium* (Pančić) Bornmüller is given ecology, protection status and IUCN categorization for the territory of Montenegro.

Key words: *Acer hyrcanum* s. l., taxonomy, distribution, ecology, IUCN categorization

INTRODUCTION

Acer hyrcanum was described as a new species by Fischer and Meyer (1837) from southeast Caucasus (mountain Talüsch in Azerbaijan). The species prefers very specific ecological conditions and it is relatively rare in forest communities of Caucasus, Crimea, Asia Minor and Balkan Peninsula. Nowadays, the populations of the species are very endangered, especially, by human impact and it needs very sophisticated protection measures of the species. IUCN categorization for the territory of Montenegro is given for *Acer hyrcanum* subsp. *intermedium*.

MATERIAL AND METHODS

The following literature was used in this paper: Monographs of the genus *Acer* L., Regional Floras, Original papers for the genus *Acer* L.; Horvat, Glavač, Ellenberg (1974): Vegetation Südosteuropas. Syntaxonomy of phytocoenoses which are mentioned in this paper is harmonized with Prodrum phytocoenorum Jugoslaviae (Zu-

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pančić et al. 1986) and Prodromus phytocoenosum of Montenegro (Blečić & Lakušić 1976). Except these literature we used our terrain investigations and following Herbarium collections: Herbarium of Natural Museum in Belgrade (BEO), Herbarium Botanical Institute BAN, Sofia (SOM), Herbarium of National Museum in Sarajevo (SARA), Herbarium of Botanical Institute and Botanical Garden „Jevremovac” of Biological Faculty of University in Belgrade (BEOU).

RESULTS

TAXONOMY AND DISTRIBUTION:

Acer hyrcanum Fisch. & Mey., 1837

Synonyms: *A. campestre* var. *hyrcanum* (Fisch. & Mey.) Loudon, 1842

A. opulifolium Ledebour, 1842, (non Villars)

A. tauricum hort. ex Kirchner, 1864

A. barbatum sensu Gordon, 1873, (non Michaux)

A. caucasicum hort. ex Nicholson, 1881

A. ibericum hort. ex Nicholson, 1881, (non Willdenow)

A. italum subsp. *hyrcanum* (Fisch. & Mey.) Pax

A. italum var. *euhyrcanum* Schwerin, 1893

A. opalus var. *hyrcanum* (Fisch. & Mey.) Rehder, 1914

A. opalus subsp. *hyrcanum* (Fisch. & Mey.) Murray, 1977

Distribution: Balkan mountain forests in Croatia, Serbia, Bosnia and Hercegovina, Montenegro, Albania, Greece, Bulgaria, Crimea; also in Western Asia Turkey, South Georgia, Armenia, Azerbaijan, Lebanon and Western Iran).

1. *Acer hyrcanum* Fisch. & Mey. subsp. *hyrcanum*

Distribution: Turkey, South Georgia, Armenia, Azerbaijan, Western Iran.

2. *Acer hyrcanum* Fisch. & Mey. subsp. *intermedium* (Pančić)

Bornmüller, 1925

Basionym: *Acer intermedium* Pančić, 1871

Synonyms: *A. italum* var. *serbicum* Pax, 1886

A. intermedium var. *cordisectum* Borbas, 1891

A. italum f. *cordisectum* (Borbas) Pax, 1893

A. italum f. *intermedium* (Pančić) Schwerin, 1893

Distribution: Mountain forests in Western Croatia, Bosnia and Hercegovina, Montenegro, Southwest, Northeast and Southeast Serbia, Kosovo, Albania, Macedonia, North Greece, Western, Central and South Bulgaria.

3. *Acer hyrcanum* Fisch. & Mey. subsp. *reginae-amaliae* (Orphanides ex Boissier) Murray, 1970

Basionym: *A. reginae amaliae*

Synonyms: *A. monspessulanum* L. var. *reginae-amaliae*

A. orientale f. *quinquenerve* Vierhapper, 1919

Distribution: South Greece

4. *Acer hyrcanum* Fisch. & Mey. subsp. *keckianum* (Pax) Yaltirik, 1967

Basionym: *A. italum* Lauth var. *keckianum* Pax, 1893

Synonym: *A. hyrcanum* f. *tomentellum* (Pax) Simonkai, 1908

Distribution: Mountainous regions in Lebanon and Western Turkey

5. *Acer hyrcanum* Fisch. & Mey. subsp. *sphaerocarpum* Yaltirik, 1967

Distribution: Southern Turkey

**6. *Acer hyrcanum* Fisch. & Mey. subsp. *tauricum* (Boiss. & Bal.)
Yaltirik, 1967**

Basionym: *A. tauricum* Boissier & Balansa, 1856

Synonyms: *A. reygassei* Boissier & Blanche, 1856

A. hyrcanum Fisch. & Mey. var. *tauricum* (Boiss. & Bal.) Boiss., 1867

A. hyrcanum Fisch. & Mey. var. *reygassei* (Boiss. & Blanche) Boiss., 1867

A. italum Lauth var. *tauricum* (Boiss. & Bal.) Pax, 1886

A. italum Lauth var. *reygassei* (Boiss. & Bl.) Pax, 1886

A. italum Lauth var. *acutilobum* Schwerin, 1893

A. italum Lauth f. *reygassei* (Boiss. & Bl.) Schwerin, 1893

A. italum Lauth f. *tauricum* (Boiss. & Bal.) Schwerin, 1893

Distribution: Mountains of Lebanon, W. Syria, Turkey

7. *Acer hyrcanum* Fisch. & Mey. subsp. *stevanii* (Pojarkova) E. Murray, 1969

Basionym: *A. stevenii* Pojarkova, 1933.

Distribution: Crimea

ECOLOGY

Ecology is given only for *A. hyrcanum* subsp. *intermedium*.

Geological substrate: *A. h.* subsp. *intermedium* is the most present at limestone rocks; relatively frequent at red sandstones; rarely at silicates and metamorphosed permian red sandstones and conglomerates; very rarely at red sandstones and conglomerates with quartz and it is extremely rare at serpentines.

Slope: *A. h.* subsp. *intermedium* is rarely found at totally flat terrains. Usually it is found at more or less inclined terrains (very rarely even to 80 °), but its presence is the most often at terrains whose slope is from 20 ° to 45 °.

Altitude: This forest species inhabit areas from 150 m (the canyon of Una river) to 1800 metres above the sea level (north part of Albania), but its presence is the most often in areas between 800 and 1200 metres above the sea level where on some loca-

lities it builds relatively larger populations (from 50 to 100 adult trees and very rarely more than 100) if there are optimal ecological conditions of the habitat.

Exposition: *A. h.* subsp. *intermedium* is present at all expositions but its presence the most frequent at south expositions, often at west and north expositions and there is rarer at east exposition.

Soil: These soils belong to the rendzina type or brown soils. These rendzinas were often brownized or more or less degraded (shallow and with a lot of skeletal material). Into valleys these rendzinas were mixed with deluvial material into combined substrate „rendzina-deluvium”.

Phytocoenology: *A. h.* subsp. *intermedium* is connected with forest communities of 13 alliances and it is the most frequent at communities of these alliances: *Fagion moesiaca* Blečić et Lakušić 1970, *Quercion petraeae-cerridis* Lakušić et B. Jovanović 1980 and *Ostryo-Carpinion orientalis* Ht. 1954 emend. 1958. At the following relic polydominant associations *Acer intermedium* is edificator and it is finding optimal conditions for development at them: *Syringo-Coryletum colurnae* var. geogr. *Acer intermedium* B. Jovanović 1979; *Aceri intermedii-Coryletum colurnae* B. Jovanović 1953; *Quercu-Coryletum colurnae* var. geogr. *Acer intermedium* Mišić et A. Dinić 1971; *Fraxino excelsioris-Coryletum colurnae* var. geogr. *Acer intermedium* Mišić et A. Dinić 1972; *Juglandi-Aceretum hyrcani* Lov. (1983) 1984 and *Aceri-Ostryetum carpinifoliae* Petković, Tatić, Marin & Ilijin-Jug 1986.

PROTECTION STATUS AND IUCN CATEGORIZATION FOR A. HYRCANUM SUBSP. INTERMEDIUM:

IUCN category: VU; criteria: D

Regional adjustment of categories: The natural population of the subspecies in the regional level are less endangered in Bulgaria, Serbia, Macedonia and Bosnia & Herzegovina, while conservation status of the species in Croatia, Albania and Greece is similar to Montenegro.

International IUCN category: –

Assessment of population and population trend: At all localities (24) in Montenegro the species is presents with small subpopulations (less then 100 individuals) and at mostly (23 localities) it presents less then 30 individuals in subpopulation.

Causes of threats: Connection of these subpopulations of the species with specific and rare habitats; small natural subpopulations of this species; deforestation.

According to the IUCN standard classification: 1 Habitat loss (primarily human induced); 1.4 Unspecified (1.4.2 Deforestation); 4. Atmospheric pollution; 4.3 Wildfire.

Conservation measures: the species is protected by national law (Official gazette of the Republic of Montenegro, No. 76/06)

Taxon description: small tree, up to 16 m. Leaves up to 10 cm, with long narrow, ± parallel-sides lobes. Lower surface of leaf glabrous. Flowers are yellow-green, monoecious. Fruit wings parallel to divaricate (angle between the outside edges of the wings up to 130 °). Flowering time: III – V. Life form: P

Habitat: Mixed oak forests of the order *Quercetalia pubescentis* Klika 1933 and especially at the alliances *Ostryo-Carpinion orientalis* Ht. 1954 emend. 1958 and *Quercion petraeae-cerridis* Lakušić et B. Jovanović 1980; and mixed beech forests of the order *Fagetalia sylvaticae* Pawl. 1928 and especially at the alliance *Fagion moesiaca* Blečić & Lakušić 1970.

Distribution in Montenegro: Orjen mt., Grahovo district, Nikšić district, the canyon of Komarnica river, the canyon of Piva river, the canyon of Tara river, Plav district.

General Distribution: Balkan Peninsula (Al, Bu, B&H, Cro, Gr, Mne, Srb)

CONCLUSION

The species of *Acer hyrcanum* s. l. is differentiated in the following subspecies: *A. h.* subsp. *hyrcanum*, *A. h.* subsp. *intermedium*, *A. h.* subsp. *stevenii*, *A. h.* subsp. *tauricum*, *A. h.* subsp. *sphaerocarpum*, *A. h.* subsp. *keckianum* and *A. h.* subsp. *reginae-amaliae*. All these subspecies are rare at forest communities. Their populations are frequently small or very small and endangered, especially, by negative human impact and it needs very sophisticated protection measures of the species.

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