

Abstract

**CHALLENGES, LIMITATIONS AND KNOWLEDGE GAPS CONCERNING
ALLOCHTHONOUS TREES IN URBAN ENVIRONMENTS: WINGED ELM**

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**Radenka Kolarov^{1,a}, Djurdja Petrov^{2,b*}, Nevenka Galečić^{2,c}, Dejan Skočajić^{2,d},
Jelena Čukanović^{1,e}, Sara Đorđević^{1,f}, Mirjana Ocokoljić^{2,g}**

¹ University of Novi Sad, Faculty of Agriculture, Trg Dositeja 8, 21000 Novi Sad, SERBIA

² University of Belgrade, Faculty of Forestry, Kneza Višeslava 1, 11030 Belgrade, SERBIA

^a <https://orcid.org/0000-0003-1976-7618> ^b <https://orcid.org/0000-0001-5207-2741>

^c <https://orcid.org/0000-0003-2771-4583> ^d <https://orcid.org/0000-0002-2679-3278>

^e <https://orcid.org/0000-0003-3327-5484> ^f <https://orcid.org/0000-0002-4096-8433>

^g <https://orcid.org/0000-0002-9171-2833>

Abstract

*Variable ecosystem conditions and diverse socio-economic developments over the centuries have contributed to the uncontrolled transatlantic introduction of allochthonous trees, leading to their presence in cultivated European landscapes. For this reason, a systematic reconnaissance approach was applied in the municipality of Novi Beograd during 2024, when the species *Ulmus alata* Michx. was identified. According to the authors' knowledge, this is the only recorded finding of the species in Serbia; consequently, local space users were interviewed. Considering the need for holistic perspectives in sustainable urban development, as well as the integration of urban, suburban and rural spatial concepts at both local and regional levels, all phenological changes of Winged elm were recorded during 2025. An evaluation of phenological events and a morphometric analysis of leaves were carried out. A mass occurrence of leaf aphid galls was documented, together with the absence of flowering and fruiting phenophases. The results indicate that, alongside formal, technical and conceptual requirements, it is essential to take into account the potential benefits and risks arising from ecological challenges.*

Keywords: *Ulmus alata* Michx., assisted migration, database, *Eriosoma ulmi*, landscape-suitable elms.

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REFERENCES

[1] Alpert, P., Bone, E., Holzapfel, C. *Plant Ecol. Evol.* 2000, 3, 52–66.

* djurdja.stojicic@sfb.bg.ac.rs

- [2] Nyssen B, Den Ouden J, Verheyen K, *et al.* Integrating black cherry in forest management in the Netherlands and Belgium,” In: Krumm F, Vitkova L, editor. Introduced Tree Species in European Forests. Joensuu: European Forest Institute; 2016. p.362.
- [3] Pötzelsberger, E., Spiecker, H., Neophytou, C., *et al.* Curr. For. Rep. 2020, 6, 339–353.
- [4] Pančić, J. Šumsko drveće i šiblje. Belgrade: Glas Srp. učenog društva; 1871. Knj. XXX.
- [5] Pančić J, Flora Kneževine Srbije, Beograd. 1874. p.798.
- [6] Pančić J, Dodatak flori Kneževine Srbije. Glas Srp. učenog društva; 1884. Knj. XXX.
- [7] Vukićević E, Dekorativna dendrologija. ICS: Beograd, 1974. p.379
- [8] Mratinić E, Kojić M, Samonikle vrste voćaka u Srbiji. Belgrade: Institut za poljoprivredna istraživanja Srbije, 1998.
- [9] Tucović A, Ocokoljić, M. In: Proceedings of 6th Symposium on the Flora of Southeastern Serbia; (4–7 July); Sokobanja, Serbia. 2000. p. 227–239.
- [10] Petrov Dj, Ocokoljić M, Galečić N, *et al.* In: Proceedings of the 30th International Symposium Conference Ecological Truth and Environmental Research; (20–23 June); Bor, Serbia. 2023. p. 210–215.
- [11] Čukanović, J., Đorđević, S., Petrov, Dj., *et al.* Horticulturae 2025, 11, 684.
- [12] Đorđević, S., Tóth, A., Kuczman, G., *et al.* Sustainability 2025, 17, 9865.
- [13] Anastasijević N. Podizanje i negovanje zelenih površina. Belgrade: Šumarski fakultet; 2011.
- [14] Bartula M. Flora donjeg toka reke Save. Belgrade: Univerzitet u Beogradu, 2001.
- [15] Škorić A, Filipovski G, Ćirić M. Klasifikacija zemljišta Jugoslavije. Sarajevo: Akademije nauka i umjetnosti Bosne i Hercegovine; 1985. Posebna izdanja knjiga LXXVIII.
- [16] Cosmulescu, S., Ionescu, M. Int. J. Biometeorol. 2018, 62(11), 2007–2013.
- [17] Meier U. BBCH-Monograph. Growth Stages of Plants. Berlin: Blackwell Wissenschafts-Verla; 1997. p.622.
- [18] Ruiz, D., Campoy, J.A., Egea, J. Environ. Exp. Bot. 2007, 61, 254–263.
- [19] Pl@ntNet data at GBIF. Available from: <https://identify.plantnet.org/k-world-flora/species/Ulmus%20alata%20Michx./data>
- [20] Urban, J. J. For. Sci., 2003, 49(8), 359–379.
- [21] Samardžić I, Filipović D, Anđelković G. In: Proceedings of the 8th Symposium Lokalna samouprava u planiranju i uređenju prostora i naselja; (23–25 April); Herceg Novi, Crna Gora. 2020. p. 419–426.
- [22] Barczak, T., Bennewicz, J., Korczynski, M., *et al.* Insects 2021, 12, 173.
- [23] Coeurdacier AN, Perez Hidalgo I, Petrović-Obradović O, In: Abstract Proceedings of the 8th International Symposium on Aphids: 8-12 June: Catania, Italy. 2009. p. 84.
- [24] Linex, R. The Elms of Texas. Available from: <https://txmn.org/centraltexas/files/2020/06/Texas-Elms.pdf>