Article

Fl. Medit. 36: 239-245
https://doi.org/10.7320/FlMedit36.239
Version of Record published online on 28 October 2026

E. Gjeta, R. Pllumi, Z. Barina, O. Saliaj & A. Gjerani

Additions to the alien flora of Albania: *Nicotiana glauca* and *Bromus catharticus*, new records from Shkumbini River areas

Abstract

Gjeta, E., Pllumi, R., Barina, Z., Saliaj, O. & Gjerani, A.: Additions to the alien flora of Albania: *Nicotiana glauca* and *Bromus catharticus*, new records from Shkumbini River areas. — Fl. Medit. 36: 239-245. 2026. — ISSN: 1120-4052 printed, 2240-4538 online.

This article presents the records of two casual neophyte species: *Nicotiana glauca* and *Bromus catharticus*, as new additions to the alien flora of Albania. These species were identified within the riparian and nearby areas of Shkumbini River, Central Albania. The study provides detailed data regarding their locality, distribution, and ecological condition. Their presence constitutes a potential threat to the country's native flora, as well as their ability to grow and thrive in disturbed areas, facilitate rapid invasion and expansion.

Key words: plant taxa, neophyte, riparian area, Balkans.

Article history: Received 28 March 2026; received in revised form 1 October 2026; accepted 20 October 2026; published 28 October 2026.

Introduction

Shkumbini River is one of the main rivers of Albania, with a great morphological dynamics of the riverbed along its flow. In its middle course lies the Elbasan Plain, about 7–8 km long and 6–7 km wide, at an altitude of about 100 m a.s.l. This area is composed by flysch, terrigenous, and carbonate formations and belongs to the Mediterranean climate, with continental influences and it is characterized by hot–dry summers and mild–wet winters (Qiriazi 2001).

During several botanical field surveys, conducted in spring–summer of 2025, across and in the nearby riparian areas of this plain, near Mjekës–Jagodina villages, were recorded two new casual alien plant taxa for Albanian flora: *Nicotiana glauca* Graham (*Solanaceae*) and *Bromus catharticus* Vahl. (*Poaceae*).

Nicotiana L. in Knapp (2024) comprises ca. 75 species and four taxa in Tutin & al. (1972). While for Albania, Qosja & al. (1996) describes the presence of the two of them, that of: *Nicotiana rustica* L. cultivated and naturalized, as well reported by Barina & al. (2018) and *N. tabacum* L. cultivated, also presented by Pils (2024). While the large and

taxonomically complex genus *Bromus* L. includes 100–400 species distributed in temperate and cool regions worldwide (Saarela & al. 2014; Pavlickf 2021). For Albania according Vangjeli & al. (2000) it comprises 21 taxa and 29 taxa in Barina & al. (2018).

Both taxa, *N. glauca* and *B. catharticus*, found growing naturally in the nearby disturbed environments of the river Shkumbin, constitute a potential threat for the native flora, as they preferred disturbed areas and can grow rapidly, invading new areas.

Material and methods

The collected plant material underwent taxonomic identification following standard floristic sources, including: Flora e Shqipërisë (Qosja & al. 1996, Vangjeli & al. 2000), Flora Europaea (Tutin & al. 1972, 1980), Peterson & Planchuelo (1998), Verloove (2012), Saarela & al. (2014), Pavlickf (2021), Knapp (2024). The nomenclature follows IPNI (2026) and for the distribution range was used Euro+ Med PlantBase (2006+). Additional data were sourced from: CHM (2020), Plants of the World Online (POWO 2025), Pils (2016, 2024), Swearingen & Bargeron (2016), Barina & al. (2017, 2018), Lososová & al. (2023), Julve (2024), Verloove (2025) etc. Voucher specimens of private herbaria E. Gjeta (E.Gj. ShkR-0153; E.Gj. ShkR-0158) are deposited and preserved in the Albanian National Herbarium (TIR 0102312; TIR 0120123).

Results and discussions

Nicotiana glauca Graham (*Solanaceae*). Studied specimen (Fig. 1.): Albania, Elbasan, Shkumbini River, Elbasan Plain, Mjekës village, near riparian areas, along the roadside next to a vehicle service surrounding stony wall at Cërrik–Elbasan road, N 41^{0}05’07.41’’ and E 20^{0}03’58.29’’, 110 m a.s.l., 4.5.2025, E.Gj. ShkR-0158 (Herb. Gjeta) voucher deposited at Albanian National Herbarium TIR 0120123.

It was first published by Dr. Graham, 1828 in: The Edinburgh New Philosophical Journal 5: 175, where it is cited that the plant was raised in 1827 from no specific named seeds sent from Buenos Aires and cultivated in Edinburgh.

This species native range includes South, Northeast and Northwest Argentina, Bolivia, Chile North, Colombia, Southern, Southern South, Southern America and it is now recorded as introduced in 81 countries or islands worldwide (Euro+ Med PlantBase (2006+), GBIF 2023, Knapp 2024, POWO 2025).

Although Saliaj (2025) includes it in the ornamental flora of Tirana, there are no given records or field botanical observation and descriptions data provided in the text.

Ecologically, *N. glauca* prefers open disturbed sites including streams bed, gravelly and roadside areas. It is cultivated as an ornamental plant in warm-temperate European regions (Verloove 2025). All its parts are poisonous and the dispersal mode is barochoric and anthropochory (Swearingen & Bargeron 2016; Lososová & al. 2023; Julve 2024; Verloove 2025). The small seeds and weedy habits of *Nicotiana* sp. predispose them becoming invasive, for example the non–native *N. glauca* is a common component of ecosystems in west-



Fig. 1. *Nicotiana glauca* roadside, Elbasan (Photos: E. Gjeta, A. Gjerani).

ern North America and it is registered as an invasive plant in United States, which due to high seed and germination success can form monodominant stands. The propensity growing in disturbed areas means cultivated species are likely to become established briefly in areas where soil is loose or in old garden sites (Knapp 2024). Meanwhile, in CHM (2020) this species is mentioned among the most aggressive of invasive plant species within the State of Palestine. Thus, the invasive potential of *N. glauca* has to be considered and further evaluated regarding the species presence in Albania.

Bromus catharticus Vahl (*Poaceae*), belongs to *Bromus* sect. *Ceratochloa* (P. Beauv.) Griseb. Studied specimen (Fig. 2.): Albania, Elbasan, near Jagodinë village, Cërrik–Elbasan road, riparian areas along the Shkumbini River, N 41°04’19.272’’ and E 20°01’0.336’’, 76 m a.s.l., 4.5.2025, E.Gj. ShkR-0153 (Herb. Gjeta) voucher deposited at Albanian National Herbarium TIR 0102312.

Sporadic individuals of this casual neophyte were found from only one locality with accompanying plant taxa, such as: seedlings of *Salix* sp., *Polygonum aviculare* L., *Vulpia ciliata* Dumort., *Datura stramonium* L., *Rostraria cristata* (L.) Tzvelev, *Mentha* sp., etc.



Fig. 2. *Bromus catharticus*, Shkumbin River Elbasan (Photos: E. Gjeta, R. Pllumi).

It was first published in Vahl & Forsskål (1791), where was cited: *Gramen bromoides catharticum,* vulgò guilno in Feuillee, 1714 habitat in Lima. Feuillee (1714) reports it in his publication, among the other medicinal plants, by giving its root infusion preparation and uses, a simple description of the plant organs and the area where he found it. Since then the name of *B. catharticus* was used by several publications and studies (e.g. Hitchcock 1927, 1934; Raven 1960; Pinto-Escobar 1976; Peterson & Planchuelo 1998. In POWO (2026) it has 68 taxonomic synonyms.

The native range of *B. catharticus* is Venezuela to S. South America (POWO 2026). It has been introduced to North America from South America (Pavlickf 2021) and occasionally cultivated, locally naturalized in South Europe and casual elsewhere (Tutin & al. 1980; Euro+Med 2006+). It is reported to be considered invasive in Bosnia and Hercegovina, without any evident impact observed (Maslo 2023) and in Verlove (2012) as present in Belgium with ephemeral introduction, introduced with cereals (as important introduction vectors), birds etc., without being able to naturalize in this country. Its invasion potential possibly is result of the urban and agricultural environmental transition impacts (Kovář 2018).

It is a widespread species, growing in the temperate regions, humid and sub–humid areas, warm and sunny places, disturbed habitats, roadside, riverbanks etc. and has been

mainly introduced with cereals, used as a fodder, and for medical purposes. The reproduction is by seeds, which are dispersed by animals and wind (Peterson & Planchuelo 1998; Maslo 2012, 2023; Verloove 2012; POWO 2026). *B. catharticus* has a greater reproductive isolation, a short life cycle, high percentage of cleistogamy and a wide geographic distribution (Naranjo 1992), that must be taken into consideration for its invasion potential in our country.

Conclusion

In the riparian and adjacent areas of the river Shkumbin there were recorded *Nicotiana glauca* and *Bromus catharticus,* marking the first documented occurrence of these casual alien species in the Albanian flora. Listed as an ornamental plant, *N. glauca* may have escaped from cultivation, introduced via seeds presence in the soil of other ornamental plants in Elbasan or the presence of diverse vehicles at the site it was found indicates they may have served as vectors for seeds transportation and introduction. Its development into a mature plant indicates a potential for further spread.

Conversely, *B. catharticus* introduction is likely originated from nearby agricultural areas used for cultivation of the vegetables, corn, wheat, alfalfa etc.

Regarding their dispersal mechanism, ecology, distribution range, invasive potential etc. both species pose a significant invasive risk and threat to the country native flora. Consequently, further investigation, data collection, monitoring are required for fully evaluation of their alien status, introduction pathways and long-term impact on Albania's biodiversity.

References

Barina, Z., Mullaj, A. Pifkó, D. Somogyi, G. Meco, M. & Rakaj, M. 2017: Distribution atlas of vascular plants in Albania. – Budapest.

— Somogyi, G. Pifkó, D. & Rakaj, M. 2018: Checklist of vascular plants of Albania. – Phytotaxa **378(1):** 001-339. https://doi.org/10.11646/phytotaxa.378.1.1

CHM 2020: Invasive Alien Species. Biological Diversity of the State of Palestine. Palestine National Clearing-House Mechanism Website. – https://ps.chm-cbd.net/invasive-alien-species#:~:text=Within%20the%20State%20of%20Palestine,and%20subsequently%20released%20or%20escaped. [accessed 1/8/2025]

Graham, R. 1828: Description of several New or Rare Plant which have flowered in the neighbourhood of Edinburgh, and chiefly in the Royal Botanic Garden, during the last three months. Exhibiting a View of the Progressive Discoveries and Improvements in the Sciences and in the Arts. Conducted by Robert Jameson. – Edinburgh New Philos. J. **5:** 175.

Euro+Med 2006+ [continuously updated]: Euro+Med PlantBase – the information resource for Euro-Mediterranean plant diversity. – http://www.europlusmed.org [accessed 30/7/2026]

Feuillee, L. 1714: Histoire des Plantes Medicinales. Planche I. L'Académie Royale des Sciences. Paris. – J. Observ. Phys. Math. Bot. **2:** 705-707.

GBIF Secretariat 2023. GBIF Backbone Taxonomy. Checklist dataset. – https://doi.org/10.15468/39omei accessed via GBIF.org [accessed 30/7/2026]

Hitchcock, A. S. 1927: The Grasses of Ecuador, Peru and Bolivia. – Contrib. United States Herb. Dept. Bot., Smithsonian Inst. **24(8):** 315.

— 1934: New species and Changes in Nomenclature of Grasses of the United States. – Amer. J. Bot. **21(3):** 127.

IPNI 2026: International Plant Names Index. – http://www.ipni.org [accessed 17/7/2026]

Julve, Ph. 2024 ff.: Baseflor. Botanical, ecological and chorological index of the flora of France. – https://www.tela-botanica.org/bdtfx-nn-44079-description [accessed 21/12/2025]

Knapp, S. 2024: *Nicotiana* L. – *Nicotiana glauca* Flora of North America FNA Assoc. **14:** 361-401. https://floranorthamerica.org/Nicotiana [accessed 24/8/2026]

Kovář, P. 2018: Invasion of Schrader´s Bromegrass (*Bromus catharticus*) and expansion of the Cairo suburban land: are they in coincidence? – Sciendo J. Landsc. Ecol. **11(3):** 186-190. https://doi.org/10.2478/jlecol-2018-0019

Lososová, Z. Axmanová, I. Chytrý, M. Midolo, G. Abdulhak ,S. Karger, D. N. Renaud, J. Van Es, J. Vittoz, P. & Thuiller, W. 2023: Seed dispersal distance classes and dispersal modes for the European flora. – Glob. Ecol. Biog. **32(9):** 1485-1494.

Maslo, S. 2012: Rescue grass *Bromus catharticus* Vahl. - a new alien species in the flora of Bosnia and Herzegovina. – Herbologia **13(1):** 31-36.

— 2023: A proposal for updating the list of invasive alien plant species in Bosnia and Herzegovina. –Phytol. Balc. **29(3):** 412-413.

Naranjo, C. A 1992: Estudios biosistematicos en species de *Bromus* (Seccion *Ceratochloa, Poaceae I)*. I. Sistemas reproductivos y barreras de aislamiento. – Darwiniana **31:** 1-4.

Pavlickf, L. E. 2021: *Bromus* L. *Bromus* sect. *Ceratochloa* (P. Beauv.) Griseb. – FNA **24:** 193, 199. https://floranorthamerica.org/Bromus [accessed 18/8/2025]

Peterson, P. & Planchuelo, A. M. 1998: *Bromus catharticus* in South America (*Poaceae*: *Bromeae*). – Novon **8:** 53-60.

Pils, G. 2016: Illustrated Flora of Albania. – St. Stefan.

— 2024: Illustrated Flora of Albania. Version 1.01. https://gerhardpils.wixsite.com/flora-of-albania/flor [accessed 18/8/2025]

Pinto-Escobar, P. 1976: Nota sobre el ejemplar tipo de "*Bromus catharticus*" Vahl. – Caldasia **11(54):** 9-16.

POWO 2026: Plants of the World Online. – https://powo.science.kew.org/ [accessed 30/7/2026]

Qiriazi, P. 2001: Gjeografia fizike e Shqipërisë. – Tiranë

Qosja, Xh. Paparisto, K. Vangjeli, J., Ruci, B. & Mullaj, A. 1996: Flora e Shqipërisë, **3.** – Tiranë.

Raven, P. H. 1960: The Correct Name for the Rescue Grass. – Brittonia **12(3):** 219-221.

Saarela, J. M. Peterson, P. M. & Valdés-Reyna, J. 2014: A taxonomic revision of *Bromus* (*Poaceae*: *Pooideae*: *Bromeae*) in México and Central America. – Phytotaxa **185(1):** 1-147. https://doi.org/ 10.11646/phytotaxa.185.1.1

Saliaj, O. 2025: "Studimi i larmisë së florës urbane të qytetit të Tiranës dhe evidentimi i llojeve me aftësi të lartë që ndikojnë në zbutjen e ndotjes urbane" Tiranë. – PhD thesis.

Swearingen, J. & Bargeron, C. 2016: Invasive Plant Atlas of the United States. –https://www.invasive.org/collections/viewcollection.cfm?coll=111353 [accessed 18/11/2025]

Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H. & al. 1972: Flora Europaea, **3.** – Cambridge.

—, —, —, —, — & al. 1980: Flora Europaea, **5.** – Cambridge.

Vahl, M. & Forsskål, P. 1791: Symbolae botanicae, sive plantarum, tam earum, quas in itinere, imprimis orientali, **2.** – Copenhagen.

Vangjeli, J., Ruci, B., Mullaj, A., Paparisto, K. & Qosja, Xh. 2000: Flora e Shqipërisë, **4.** – Tiranë.

Verloove, F. 2012: A revision of *Bromus* section *Ceratochloa* (*Pooideae*, *Poaceae*) in Belgium. – Dumortiera **101:** 30-45.

— 2025: *Nicotiana glauca* On: Manual of the Alien Plants of Belgium. – https://alienplantsbelgium.myspecies.info/content/nicotiana-glauca# [accessed 1/8/2025]

Addresses of the authors:
Ermelinda Gjeta (https://orcid.org/0000-0002-1097-666X)[1], Rodeta Pllumi (https://orcid.org/0009-0002-4417-9957)[2], Zoltán Barina (https://orcid.org/0000-0003-3117-7186)[3], Oresta Saliaj (https://orcid.org/0000-0002-0312-6528)[1] & Alma Gjerani[2],
[1]Flora and Fauna Research Centre, Natural Sciences Faculty, Tirana University, Tiranë, Albania.
[2]Biology Department, Natural Sciences Faculty, University of Elbasan "Aleksandër Xhuvani", Elbasan, Albania.
[3]Independent Researcher, Hungary.
*Corresponding author: ermelinda.gjeta@fshn.edu.al