ARPHA Conference Abstracts 9: e202987
doi: 10.3897/aca.9.e202987

OPEN ACCESS

Conference Abstract

Evaluating impacts of plant invasions in mountains

Arnau Bosch-Guiu[‡], Julian W. Zeller[§,|,‡], Pablo Gonzalez-Moreno[¶], Paula Gervazoni[‡], Theresa Henke[‡] Cristina Acosta-Muñoz[¶], Suneeta Bhatta[#,¤], Lucas Borges de Lima[«], Ricardo Enrique Hernández Lambraño[¶], James Hardwick[»], Ileana Herrera[^,˅], Yves Klinger[¦], Adrián Lázaro-Lobo[?], Alba-Cristina Linares[‡], Eduard López-Guillén[ς], Javier Martínez-Fuentes[ς], Maria Magdalini Mertzimeki[ς], Gaia Micco[‡], Sara Navarro-López[¶], Kevin Panchana[^], Zarah Pattison[»], Stephanie Payne-Smith[¢], Petr Pyšek[#], Katherine Onoszko[‡], Beñat Orbea[ς], Wolf-Christian Saul[ℓ], Ross Shackleton[ϑ], Sandy-Lynn Steenhuisen[¢] Ana Novoa[‡,#]

‡ Estación Experimental de Zonas Áridas (EEZA-CSIC), Almería, Spain
§ Freie Universität Berlin, Berlin, Germany
| University of Florence, Florence, Italy
¶ Universidad de Córdoba, Córdoba, Spain
# Czech Academy of Sciences, Průhonice, Czech Republic
¤ Charles University, Prague, Czech Republic
« University of São Paulo, São Paulo, Brazil
» University of Stirling, Stirling, United Kingdom
^ Universidad Espíritu Santo (UEES), Samborondón, Ecuador
˅ Instituto Nacional de Biodiversidad (INABIO), Quito, Ecuador
¦ Justus Liebig University Giessen, Gießen, Germany
? Universidad de Oviedo, Oviedo, Spain
ς Institut Botànic de Barcelona (IBB-CSIC), Barcelona, Spain
¢ University of the Free State, QwaQwa, South Africa
ℓ IGB & Freie Universität Berlin, Berlin, Germany
ϑ University of Lausanne, Lausanne, Switzerland

Corresponding author: Arnau Bosch-Guiu (abosch@eeza.csic.es)

Received: 05 Jun 2026 | Published: 05 Jun 2026

Citation: Bosch-Guiu A, Zeller JW, Gonzalez-Moreno P, Gervazoni P, Henke T, Acosta-Muñoz C, Bhatta S, Borges de Lima L, Lambraño RE, Hardwick J, Herrera I, Klinger Y, Lázaro-Lobo A, Linares A-C, López-Guillén E, Martínez-Fuentes J, Mertzimeki MM, Micco G, Navarro-López S, Panchana K, Pattison Z, Payne-Smith S, Pyšek P, Onoszko K, Orbea B, Saul W-C, Shackleton R, Steenhuisen S-L, Novoa A (2026) Evaluating impacts of plant invasions in mountains. ARPHA Conference Abstracts 9: e202987.
https://doi.org/10.3897/aca.9.e202987

© Bosch-Guiu A et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Mountain regions worldwide harbour key and unique biodiversity, yet they are increasingly threatened by multiple human pressures projected to intensify throughout the 21st century. While invasive species are widely recognized as one of the main drivers of global biodiversity loss, until recently, their pressure in alpine and montane systems remained relatively low. But recent evidence suggests that this situation is changing. Climate warming, land-use change, pollution, and increasing rates of alien species introductions are enabling invasive plants to expand into previously less disturbed mountain habitats. Understanding the mechanisms behind this process is essential for predicting future invasions and preventing their impacts.

In this study, we assess the magnitude and mechanisms of the negative environmental impacts caused by alien plant species in mountain ecosystems worldwide. Specifically, we obtained a list of 564 species recorded as naturalized across 18 mountain regions, from standardized road surveys along elevational gradients conducted by the Mountain Invasion Research Network (MIREN). We evaluated these species using the Environmental Impact Classification for Alien Taxa (EICAT), an objective and transparent method recognized by the IUCN. EICAT classifies alien species according to the severity of their impacts on native species populations and allows for the classification of the mechanisms driving these impacts. Documented impacts occurring in both mountain and non-mountain ecosystems were included in the assessment.

Our preliminary results suggest that empirical evidence on the environmental impacts of most alien plant species remains limited or entirely lacking, particularly in mountain environments. For the species with available information, the most frequently reported impact mechanisms include competition with native species as well as indirect effects mediated through interactions with other organisms (such as disruption of pollinator networks) and allelopathic effects. Overall, this study provides a global overview of the potential impacts of alien plants in mountain ecosystems and establishes a robust scientific foundation for prioritization and the development of targeted management recommendations.

Keywords

Alien plant species, EICAT, environmental impacts, mountain areas

Presenting author

Arnau Bosch-Guiu

Presented at

Neobiota 2026, the 14th International Conference on Biological Invasions

Funding program

Coordinated project PRISMA (PID2023-152653OB-C21 and PID2023-152653OA-C22) funded by MCIN/ AEI/10.13039/501100011033/ and “ERDF A way of making Europe".

Hosting institution

Estación Experimental de Zonas Áridas (EEZA-CSIC), Almería, Spain.

Conflicts of interest

The authors have declared that no competing interests exist.