

BOOK OF ABSTRACTS

International Conference

Forest fire ecology and restoration strategies in mountain regions

22nd – 23rd October 2026
Faculty of Engineering, Aula Magna
Campus NOI Techpark Bozen-Bolzano

Organised by

unibz Kompetenzzentrum für Nachhaltigkeit
Centro di Competenza per la Sostenibilità
Competence Centre for Sustainability

unibz Fakultät für Agrar-, Umwelt- und Lebensmittelwissenschaften
Facoltà di Scienze agrarie, ambientali e alimentari
Faculty of Agricultural, Environmental and Food Sciences

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ACCREDITATION

Event accredited by the Order of Agronomists and Forestry Doctors of the Autonomous Province of Bolzano.

COVER

Forest burnt by the 2025 wildfire above Laces/Latsch (Val Venosta/Vinschgau, South Tyrol). UAV image, 27 August 2025.

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SESSION 2 · RESILIENCE OF MOUNTAIN FORESTS UNDER CHANGING FIRE REGIMES

ORAL PRESENTATION · 22 OCTOBER 2026, 10:20

FROM ASHES TO OLD-GROWTH FORESTS: HOW DO LONG-TERM CHANGES IN FOREST STRUCTURE AFFECT UNDERSTORY PLANT DIVERSITY IN YELLOWSTONE NATIONAL PARK?

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The increasing frequency and intensity of wildfires are having a profound and lasting impact on forest structure, succession, and biodiversity. Understanding these processes is essential for predicting successional trajectories and developing management and conservation strategies. We aim to investigate the long-term (> 140 years) dynamics of understory plant diversity following wildfires and assess how post-fire changes in forest structure influence these diversity patterns in Lodgepole pine forests of Yellowstone National Park, USA. We surveyed 25 forest stands representing five post-fire successional stages, including old-growth forests. At each plot, we measured forest structure, canopy features, and plant diversity (richness, composition, and between-community beta diversity) to assess how post-fire succession shapes forest structure-diversity relationships. Additionally, we assessed the association between successional stages and beta-diversity. Species richness and compositional diversity exhibited a U-shaped pattern along post-fire successional stages, with greater diversity observed in the early and late phases of forest succession. Between-community beta diversity did not show any trend with increasing temporal distance. Species turnover was the dominant component of beta diversity variation. Forest structure and canopy features influenced plant diversity. Deadwood amount and heterogeneity-related variables (e.g., variability of Leaf Area Index) had a positive relationship with species richness and compositional diversity. These findings suggest that maintaining or enhancing structural heterogeneity through deadwood retention, canopy structural complexity, and variability in tree size can promote plant diversity in fire-affected forests. Conservation strategies should recognize the ecological value of early and late successional stages and avoid management practices that reduce structural complexity.

KEYWORDS Beta diversity, Compositional diversity, Forest succession, Temporal distance decay.