

Submitted Abstract

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Abstract

The mutualistic association between mycorrhizal fungi and plants shapes plant communities. However, in the context of increasing human pressure on natural ecosystems, much remains to be learned about the impact of anthropogenic disturbances on the biogeography of mycorrhizal types.

Making use of a unique database of plant community surveys from 1980 plots along mountain roads in 11 mountain regions across the globe we investigated the impact of anthropogenic disturbance on the distribution of mycorrhizal types across ecosystems.

We found that roadside disturbance significantly increased the proportion of arbuscular mycorrhizal (AM) associated plant cover compared to adjacent undisturbed vegetation, and especially so in locations dominated by ectomycorrhizal (EM) and ericoid-mycorrhizal (ErM) plant communities.

Furthermore, non-native plant species, themselves often AM-associated, were more successful in both natural and disturbed environments dominated by AM associations.

We conclude that changes in mycorrhizal association types caused by anthropogenic disturbance play an important role in mediating the impact of human activity on mountain ecosystems, promoting AM-dominated systems and consequently weakening biotic resistance against non-native species invasion. These results have important implications for vegetation restoration worldwide, as they suggest that roadside disturbance changes the fundamental make-up of EM- and ErM-dominated plant communities.