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"Ecological Systems Under Pressure: Challenges and Solutions"



Resurvey of vegetation across a network of Italian protected areas, The Ecological Dynamics in Italian protected areas Network (ECODIPA-net) vegetation resurvey project

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Plant communities are threatened by habitat destruction, climate change, invasive species, pollution, and land-use changes. Protected areas (PAs) are considered essential in mitigating the impacts of such drivers, maintaining local biodiversity and natural processes by limiting direct anthropogenic impacts at the local scale. However, global and broad-scale drivers influence plant communities also in PAs, whose vegetation shifts may reveal long-term trends that distinguish between natural fluctuation and human-driven impacts. In this context, resurvey of vegetation, i.e., the repeated sampling of past vegetation surveys conducting relevés in the same sites and with comparable methods, is gaining increasing popularity as a cost-effective and powerful approach for the direct study of fine-scale vegetation changes over time.

In Italy resurvey studies have been carried out on a local scale investigating different ecosystems, without efforts towards a national harmonization and a lack of focus on PAs. To address this issue, we launched the collaborative network Ecological Dynamics of Italian Protected Areas (ECODIPA-net), to build a nationwide database of vegetation plot resurvey in Italian National and Regional Parks (NRP). The database includes 1376 resurvey plots across 29 Italian NRP with historical information dating as back as 1934 but is mostly concentrated during the 70s and 80s. The resurveys have been carried out during spring-summer 2024 and 2025 by the members of the network.

The preliminary results include community, habitats, and species trends in time and shows the vegetation dynamic trends in Italian PAs. Results indicate an increase in time in the overall species richness, particularly at high altitudes; moreover, alien species and red-list species increases and decreases, respectively. At the individual species level an increase of woody vegetation types and the increase of species connected to the ongoing climatic and land use changes is evident.

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