Comparative study of conifer and beech forests ecology. Preliminary evidences for forest structure and bird populations from Central Italy

Florian Kletty[1], Martin Mudoy-Deverlanges[1], Jan-Niklas Trei[2,3], Alain Malengreau[4], Camilla Wellstein[5], Mario Cipollone[3], and Kevin Cianfaglione*[1]

[1]ICL, Junia, Université Catholique de Lille, LITL, F-5900 Lille – université catholique de lille (FGES) – France

[2]Georg-August-Universität Göttingen, Department of Conservation Biology – Allemagne

[3]Rewilding Apennines ETS, Gioia dei Marsi (AQ) – Italie

[4]NGO Natagora, Namur – Belgique

[5]Faculty of Agricultural, Environmental and Food Sciences, Free University of Bozen-Bolzano – Italie

Résumé

The study area is characterized by forests of different history, structure and quality. Spontaneous beech forests and conifer-reforested areas represent a very important historical and cultural heritage. However, their ecological significance is severely understudied and underestimated.
Both forest types can potentially meet the criteria to be protected areas, or be considered as priority habitats following European community standards. However, current policies are influencing the incessant increase in forests harvesting and tampering. Their exploitation is often promoted because they are considered of low importance based on misconceptions, especially in case of conifer-reforested areas.

The aim of this study is to characterize the ecological value of beech and coniferous forests with low anthropogenic pressure for many years, by a multidisciplinary approach. In this preliminary work, we characterized these forests, their ecological functionality, the interconnections and their possible role in the landscape mosaic.

The analyses concerned the forest composition and structure, as well as bird occurrence. Three study sites for each beech and coniferous forest type were selected. Forest structure was assessed through tree and vegetation layers characterization, and by dead wood evaluation. Bird presence was analyzed through an acoustic study, using audio recorders placed in triplicates on each site over a period of 24 hours.

Both conifers and beech forest typologies hold species indicating a complex ecological structure, like saprophytic plants. Significant amounts of dead wood are present in both forest types, with the highest quantities in coniferous forests. Sound analysis of the recordings indicates that avian diversity and related community composition is similar, between beech and conifer forests. However, the frequencies of occurrence seem different between beech and coniferous forests, for some bird species. This is particularly the case for *Picidae*, which are

*Intervenant

more frequently detected in conifer formations than in beech forests. The higher dead wood amounts in coniferous forests may explain the higher woodpeckers' occurrence, which are indicators of the ecological quality/complexity of forest environments.
Conifer reforestation and beech forests have different characteristics. These forests under long low man pressure are both of high ecological value, worthy of further studies and needing a greater attention in their management.

Mots-Clés: beech forest, vegetation, conifer reforestation, biodiversity, birds, flora, deadwood, bio, complexity