

Competitive Capability of *Robinia pseudoacacia* with Native Species in an Old-Growth Broadleaf Forest

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Air temperature and CO₂ concentration increasing over recent decades have determined novel environmental conditions which might act as a potent agent of natural selection among species, resulting in a competition between invasive over co-occurring native species. An enhanced phenotypic plasticity may play an important role in successful colonization of new habitats by invasive species. The objective of the present research was to analyze the competitive capability of *Robinia pseudoacacia* with the co-occurring species in a broadleaf deciduous forest (Natural Reserve Siro Negri, Italy) by the analysis of plasticity. The results show that the mean plasticity index (mean of morphological, anatomical, physiological traits) is the highest for *Q. robur* (0.39), followed by *R. Pseudoacacia* (0.38), *A. campestre* (0.34), *C. avellana* (0.33), and *P. alba* (0.29). Moreover, the highest *R. Pseudoacacia* morphological plasticity (0.56) contributes to its adaptability. Considerations can be made for the conservative management of the forest carried out since the establishment of the Reserve, which has probably limited the presence of *R. pseudoacacia* until 1980 when it became established. Thus, it is important to maintain this type of management in the future since creating gaps could allow a greater seed regeneration of *R. pseudoacacia* over *Q. robur* because of the higher growth rate. Consequently, land use is a fundamental determinant in shaping vegetation composition with important implications for forest management. In particular, forests with old-growth characteristics, like the one investigated, are important reference sites for more natural management approaches involving in a broad range of ecosystem functions and services.