Effects of the geographical scale in hybrid detection at extensive contact zones between *Quercus faginea* and *Q. pyrenaica.*

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In the present climate change scenario, the question of to what extent horizontal gene flow among interbreeding species is of adaptive value represents an intriguing research topic. The aim of this study is to illustrate the importance of an accurate selection of the study scale for the correct identification of two oak species widely distributed in the Western Mediterranean (*Q. faginea* and *Q. pyrenaica*) and their hybrids. To this aim, we selected three plots each representing either an apparent monospecific assembly of one of the parentals or of hybrid individuals (through visual identification), distributed at three different geographic scales (fine/medium/large). We used AFLPs (Amplified Fragment Length Polymorphism) to investigate species limits and population structure through multivariate and Bayesian methods. In a first step, the three plots corresponding to each geographical scale level were analyzed separately, to be then treated as a unique data set in a second step. The obtained results revealed incongruence between both approaches and strong effects of scale. We then tested for spatial autocorrelation through Mantel tests and encountered that our data taken altogether show a pattern of isolation by distance. A subsequent Spatial Autocorrelation Analyses confirmed that the average genetic distance between pairs of individuals is smaller than random expectations when individuals are separated by distances <65 km. Although aware of the fact that our study represents just a preliminary approach, we demonstrate: (i) to our knowledge, for the first time, that introgressive homoploid hybridization is active and has historically modelled the evolution of the studied taxa; (ii) the necessity of including methodological improvements that may allow overcoming the limitations of assigning individuals to genetic categories when study-plots are selected for studies aimed to evaluate responses of oaks to environmental changes along geographic gradients.

Keywords: AFLPs, hybridization, population genetic structure, *Quercus faginea*, *Quercus pyrenaica*, spatial autocorrelation.