

ReSurveyEurope

Project Metadata Form

When contributing data to ReSurveyEurope, please fill in this form for each resurvey project and send it to Ilona Knollová (ikuzel@sci.muni.cz) together with the database. A resurvey project is understood as repeated sampling of a certain type of vegetation in a certain study area using specific methods.

- PROJECT NAME (identical with the Resurvey Project name given in the database):

Resurvey Foreste Casentinesi National Park

- FULL PROJECT NAME (use if the full project name is longer than used in the database):

- REFERENCE (publication or URL or DOI of the dataset if published online):

-Zangheri P., 1966. Romagna fitogeografica (5). Flora e vegetazione del medio ed alto appennino romagnolo. Forni ed.

-Lelli, C., Nascimbene, J., Alberti, D., Agostini, N., Zoccola, A., Piovesan, G., & Chiarucci, A. 2021. Long-term changes in Italian mountain forests detected by resurvey of historical vegetation data. Journal of Vegetation Science, April 2019, jvs.12939.
<https://doi.org/10.1111/jvs.12939>

- DATA OWNER: person(s), institution(s):

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- METHODS (description of sampling design and methods):

Resampling of 22 historical forest vegetation plots recorded between 1934 and 1961. In each original quasi-permanent plot, three plots were sampled to improve the reliability of the comparison. In this way, each original plot corresponded to a triplet of resampled plots (e.g. original plot 1 corresponds to the triplet of resurveyed plots 1A, 1B, and 1C). As thresholds, we located the replicates between 50 and 200 m from each other. Since we did not have geographic coordinates or exact points on a map associated with the original survey, we first used locality name to identify a site for each original plot. Then, by means of a Digital Terrain Model with a grid resolution of 20 m, we applied a stratified approach using the topographic information (i.e., elevation, slope and aspect) of each original plot to identify the points where the new sampling

should be performed. To minimize errors due to phenological differences, we repeated the survey in the same season as the original one. We also considered the list of species originally recorded, and particularly, tree species composition for a coarse selection of the potential sites where the original plots were recorded. To visually compare vegetation cover we used recent satellite imagery (Imagery ©2018 NASA, TerraMetrics; “openlayer” plugin, QGIS Development Team, 2019) and historical aerial photographs from the original sampling years (map source: website of the Tuscan Region). With aerial photographs taken in the years 1954 and 1963, we checked the presence of roads or paths in the years of the historical surveys, to assess the original accessibility of the sampling sites. For the original forest canopy structure and composition, we did a direct comparison in the field looking at sites with occurrence of, at least, the dominant species of the original plots. Finally, 22 historical plots were localized with a high confidence level and three replicates were performed for each historical record, with a final dataset of 88 plots (22 original plots and 66 resampled plots).

- ENVIRONMENTAL DATA (list of environmental data measured):

Data sets contain:

- a full compilation of vascular plant occurrences with abundance in BB scale
- plots' latitude and longitude and information on the precision of the coordinates
- sampling date (ideally the precise date, minimum the year)
- plot size
- vegetation cover,
- elevation, inclination, orientation,
- habitat type

- MANIPULATED PLOTS (description of the treatment if the plots were manipulated, e.g. mowing twice a year, fertilizing by NPK once a year, post-fire succession)

Pietro Zangheri divided the historical plots into three main categories, i.e., *Fagetum*, *Castanetum*, and *Quercetum* considering their physiognomy, dominant tree species, and species composition, according to the phytosociological approach (Braun-Blanquet, 1964). At the time of the original survey, oak forests were managed as coppices (Zangheri, 1966), while chestnut stands were managed as orchards for fruit production or, rarely, as coppices. Regarding the beech forests, Zangheri divided the plots in two different groups: the first group included *plots within fully functional forest stands*, located in the central part of the Foreste Casentinesi National Park along the Apennine ridge, and in Sasso Fratino, and with high forest structure already at the time of the historical survey; the second group included *plots within degraded forest stands*, located in marginal areas at lower elevations, and coppiced at the time of the historical survey. All these forest stands underwent management cessation in the following decades

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