3.2 = The use of herbarium specimens in evaluating plant extinction risks: some considerations on Sicilian endemics

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Herbarium specimens provide verifiable and citable evidence of the occurrence of plant taxa at a given place and time. Thus they caΩn be used to identify native ranges, and document which plants are occurring, and where, through time. They provide information on rare, extirpated, or extinct species that can no longer be found in nature. Furthermore, they can serve as a means of locating rare or possibly extinct species, recollecting in the area(s) reported on labels. Thus, herbarium specimens can be used as primary sources of data to have evidence-based extinction risk assessments.
Each extinction risk assessments is an evidence-based hypothesis of the current level of extinction risk of a particular taxon, to be refined, updated, corrected or refused, if more specimens are discovered, or when the scientific identification of one or more specimens is updated in light of new knowledge.
Some data are available from herbarium labels, but often they have to be retrieved *ad hoc*. Most specimen databasing projects aim at including metadata, as coarse-level geographical information, latitude and longitude coordinates (when available), collector name, collection number, date. Finally, the information absent in the label but gleaned directly from the specimen or the label is rarely included in major databases. Spatial data is certainly the herbarium-derived information most widely applied to extinction risk assessments.
Specimens collected less than 30 years old include often latitude and longitude coordinates, providing a best estimate of the collection site. Older specimens are less likely to include coordinates, but latitude and longitude can usually be retrieved from the textual locality information on the specimen. Temporal data are often present on herbarium specimens in the form of collection dates (even if only year for some older specimens) and are usually captured in digitization initiatives. These data are useful for inferring the existence of a particular plant at a particular period. Population size is rarely documented on herbarium labels, aside from generalized descriptions e.g., 'rare', 'common', '100 specimens are to be collected', which are of use as supporting evidence, but not directly applicable to the criteria.
The main problem with Mediterranean collections is the reduced number of data available in order to make statistical analysis. This happens also with endemics that are usually over-sampled. The combined use of large and local collections, both modern and historical, can be of help. In addition, the presence of a taxon in a herbarium collection or in a floristic list rarely provides information about the number of individuals occurring in the locality. However, herbarium specimens are more reliable in comparison with bibliographic references, because their identification can be checked. The study of historical herbarium specimens can give some indications on their native status, as for *Astragalus thermensis* Vals., *Ipomoea stolonifera* (Cirillo) J.F.Gmel., and *Centaurea acaulis* L. in Sicily and help in distinguishing if they need to be protected or can be considered aliens.
Herbarium studies can be very informative for species with wide distribution that are more easily prone to local extinctions, as for instance *Anacamptis palustris* (Jacq.) R.M.Bateman, Pridgeon & M.W.Chase. For narrow endemics, there are more problems. For some taxa, their distribution has decreased since their description, as for *Erica sicula* Guss. subsp. *sicula* and *Adenostyles alpina* subsp. *nebrodensis* (Wagenitz & I.Müll.) Greuter. For some others, their distribution is increased as for *Orobanche chironii* Lojac. and *Petagnaea gussonei* (Spreng.) Rauschert. These cases does not represent actual enlargements of distribution, but just an increase in knowledge. For *O. chironii*, the new localities have been found in conservative environments and in protected areas, so that is was possible to reduce the risk category to which these plants are assigned; for *P. gussonei*, the new localities were found in human-modified and threatened environments, increasing the level of attention required for conservation.

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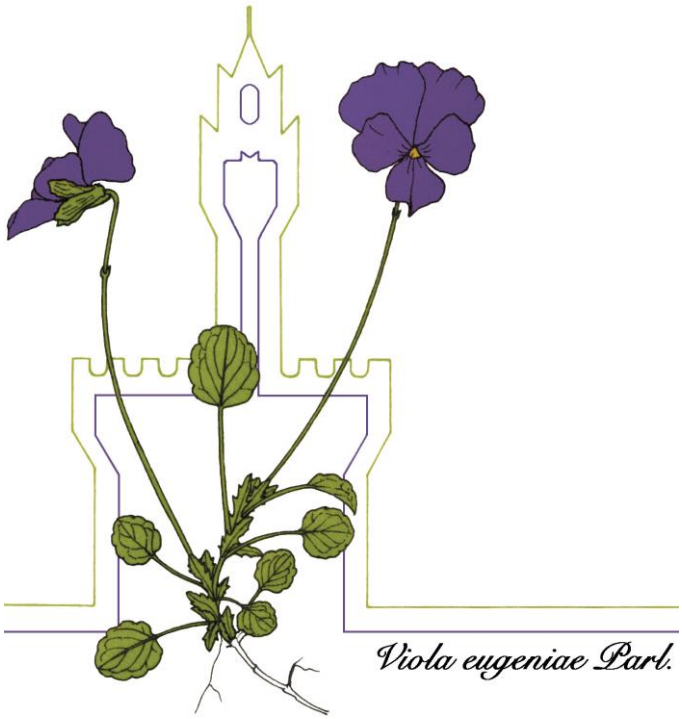

ABSTRACTS

KEYNOTE LECTURES, COMMUNICATIONS, POSTERS

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