STSM "**Compilation of distribution data of Ambrosia species in Italy and Europe"**

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Applicant

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Host institution

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Purpose of STSM

The aim of the current STSM was to produce useful distribution maps of *Ambrosia* sp. other than *A. artemisiifolia* along the time axis since species introduction in Europe, thus analyzing the history of spread of *A. psilostachya*, *A. tenuifolia*, *A. trifida* and *A. maritima*, whose status and history is still unresolved. Maps are useful to future paper about the introduction history and spread in the European range of the above-mentioned Ambrosia species, also contributing to enlighten the distribution area and dynamics of the nowadays almost extinct *A. maritima*. Moreover the STSM aims to strengthen the collaboration among scientists that joined in the taxonomy group of SMARTER.

Description of the work carried out during STSM

The activity has been mainly divided in a technical part regarding the integration of the spatial database with new records from herbaria and the implementation of distribution maps, while the other part focused on outputs and their preliminary interpretation. Regarding the first part, specimens were taxonomically analyzed, avoiding problems of misidentification through in - depth comparisons based on preliminary identification key elaborated by Prof. Karrer and the taxonomy group of SMARTER. New sites have been added thanks to further exams of herbarium labels. The spatial dataset has been structured in order to have a flexible, not overloaded but complete database suitable for elaborations. This part of the work was supported by the very experienced Prof. Niklfeld (Univ. of Vienna). Once maps were elaborated, the discussion about the output has been shared with other experts of the taxonomy group of SMARTER. A skype meeting was organized and preliminary interpretations have been discussed mainly focusing on further publications.

Description of the main results obtained

All collected herbarium data has been analyzed and georeferenced. Currently the spatial dataset is constituted by about 1510 occurrences from 25 herbaria in Italy and the collections in Kew Gardens London, Barcelona, Leiden, Geneva, Paris, GBIF, Vienna (W, WU), Zagreb and Granada. All records are supported by +/- detailed information about year of collection, collectors, locality of collection and herbarium code. Data of the European distribution of *A. psilostachya*, *A. tenuifolia*, *A. trifida* and *A. maritima* have been obtained, allowing to trace temporally and spatially the history of their spread in Europe. About *A. maritima*, at now the only species considered not alien to Europe (Mediterranean endemism), the work focused on the reconstruction of its historical distribution, as it is currently recorded in only two sites, while others disappeared or are not confirmed by long time. Discussion about distribution maps and the interpretation of data along the time axis permitted to fix the time of entrance in Europe of alien ragweeds other than *A. artemisiifolia*. Then the main habitats have been discussed allowing obtaining

a preliminary list of their environmental requirements and several hypotheses about the main vectors of introduction and spread have been done. Last criticisms have been highlighted.

Future collaboration with host institution

Some left over doubts need to be resolved mostly about *A. maritima* and *A. tenuifolia* distribution, partially about *A. psilostachya*. Further researches will investigate scarcely visited areas suitable for these species and where they were collected in Europe. Foreseen investigations will be useful to keep an updated database, but mostly to collect specimens useful to solve some critical issues about taxonomy.

Foreseen publication/articles resulting from the STMS

It is foreseen to publish articles about: the distribution of *Ambrosia* species other than *A. artemisiifolia* in Europe, the risk of extinction of the Mediterranean endemic *A. maritima,* the distribution of target species in Italy with an analysis of examined herbarium specimens.