



FA1203: Sustainable management of *Ambrosia artemisiifolia* in Europe (SMARTER)

Short Term Scientific Mission Report

Morphological and synecological deterioration of European Ambrosia species in the northern Mediterranean

STSM details

COST STSM Reference Number: COST-STSM-FA1203-34492

Timing of STSM: 20-06-2016 to 27-08-2016

Applicant details

Ao. Univ.-Prof. Mag. Dr. Gerhard Karrer

University of Natural Resources and Life Sciences in Vienna (BOKU), Austria (AT)

gerhard.karrer@boku.ac.at

Host details

Prof. Dr. Sandra Citterio, Università degli studi di Milano, Department of Earth and Environmental Sciences, Milano (IT), sandra.citterio@unimib.it.

Summary of the STSM

In a first visit from 20th to 24th of June to Trieste, Padua and Milano specimens of Ambrosia species from the local herbaria were reviewed. 2 excursions together with Italian colleagues served for knowledge exchange about the morphology and distribution of Ambrosia species in Italy. By the way we could find the easternmost populations of the leaf beetle *Ophraella cummuna* feeding on *A. spirostachya*. The final meeting at the Univ. of Milano enabled the review of all other available specimens from Italian herbaria either on base of the specimens or pictures of specimens. Doing so it got evident that *A. maritima* was documented rather often throughout Italy by 100 years ago but never was found after the Second World War. During the second travel from 8th to 27th of August I started to meet 2 colleagues for searching Ambrosia populations along the Tyrrhenian coast between Carrara and Livorno. We could sample several populations of *A. psilostachya* with respect to population genetics and pollen production. In the library of Florence I could find an old pharmaceutical textbook from 1583 describing *A. maritima* and its medical use and habitat preferences. Continuation of the search for populations of *A. maritima* along the Adriatic coast proofed its extinction there also the area expansion of *A. psilostachya* down to the Gargano peninsula. The old findings near Pozzuoli, on Ischia island and in the bay of Torrent could not be verified. I searched also for *A. maritima* along the coast of Corfu island in Greece, but the former findings from 1991 could not be verified. On the way to Zagreb I searched also for *A. maritima* along the coast through Albania, Montenegro and the Dalmatian coast. *A.* could not be verified. But I could collect the first *A. artemisiifolia* population in Montenegro and some very southern populations of *A. artemisiifolia* in Croatia (Peljesac, Korcula). In Zagreb I

reviewed all *Ambrosia* specimens from all available herbaria. In discussions with colleagues from Croatia it got evident that all 'recent' findings of '*A. maritima*' in Croatia were wrong identifications. Thus the species is extinct also to Croatia.

Purpose of the STSM

1. Checking and reviewing all the specimens of *Ambrosia* taxa in the herbaria based on the given descriptions in the literature.
2. Documenting all the further findings of specimens other than the widespread *Ambrosia artemisiifolia*
3. Producing maps of the European distribution of *Ambrosia psilostachya*, *A. maritima*, *A. tenuifolia*, *A. tomentosa*, *A. trifida*.
4. Comparing and documenting morphological characters of all species to come up with a morphological table to be discussed in the taxonomy group of the SMARTER action.
5. Strengthen the collaboration between the WGs of SMARTER, i.e. of WG 2, WG 3 and WG 4.
6. Intensifying the collaboration between members of WG2 and other Italian botanists.

Description of the work carried out during the STSM

- a. One part of the STSM consisted of the review of all available specimens in the herbaria of Trieste, Padua, Milano, and 3 Zagreb herbaria.
- b. The second part was the review of all other herbarium collections of about 15 different herbaria from Italy based on specimens sent to Milano or pictures of specimens (joint work with Sandra Citterio, Rodolfo Gentili and Chiara Montagnani in Milano).
- c. A third part was on the one hand the check of almost all former growing places of *A. maritima* throughout Italy and the Eastern Adriatic coast (Croatia to Greece). On this occasion several populations of *A. psilostachya* and *A. artemisiifolia* were collected for population genetic studies that are planned together with the Italian colleagues and the INRA group from Dijon.

Description of the main activities and results obtained

The STSM comprised of 2 parts.

First part consisted on a visit to 2 herbaria in Northern Italy (Trieste Univ. and Padua University) from 20th-25th of August when altogether 45 different specimens were reviewed. Some misidentifications were found i.e. in the Trieste herbarium that made clear that the authors of the *Flora d'Italia* (Pignatti 1977) made some mistakes in providing data about the distribution of *Ambrosia maritima* in recent time. Furthermore I met a local botanist and the responsible persons for collecting all the distribution data in Italy, Rodolfo Gentili and Chiara Montagnani, for common field work. This was followed by a stay at the Univ. degli studi di Milano, where I studied all specimens and digitized images that were available to fill the database of Italian ragweeds with reviewed data. In the field nearby the river mouth of the Po river several new stands of *A. psilostachya* were detected and collected for population genetic studies. 3 of the sampled populations were infested rather intensively by the leaf beetle

Ophraella communis, which turned out to be the easternmost occurrences known at that time. These informations were fed into the database of the TF *Ophraella* of WG2 in SMARTER. Options about further cooperations were detected in collaborating on a paper about the distribution of *Ambrosia* species beside *A. artemisiifolia* (*A. maritima*, *A. psilostachya*, *A. trifida*, *A. tenuifolia*) in Italy.

The second part of the STSM (6th to 27th of August 2016) started with sampling of *Ambrosia psilostachya* on former growing places of *A. maritima* along the Tyrrhenian coast between Carrara and Livorno together with R. Gentili and C. Montagnani. This was followed by a study in the library of Univ. Florence searching for very old literature about the former medical use of *A. maritima*. After that the Adriatic coast between Ravenna and Gargano region as well as the surrounding of Pozzuoli, the island of Ischia and the beaches near to Torrent were checked for former growing places of *A. maritima*. The desired species got obviously extinct but several sites were occupied by *A. psilostachya* instead. I.e., the very southern site of Lido di Lesina were of special interest.

After changing to Greece I searched Korfu, Albania, Montenegro and Croatia for former growing places of *A. maritima*. I could not find it anywhere but some interesting new findings of *A. artemisiifolia*. I.e., the first population documented for Montenegro in the bay of Kotor at sea level and findings on Peljesac peninsula and Korcula island.

The STSM was finished in Zagreb with a visit to 3 herbaria comprising ragweed specimens. All recent samples and fotos of *Ambrosia* specimens are put to the database of the distribution map of *Ambrosia* species from Europe that is collected by the taxonomy group.

This STSM contributes seriously to the collaborative activity of WG 2, WG 3 and WG4 to provide good descriptions and an elaborated determination key.

Further use of data within SMARTER

All the checked herbaria and online-sources turned out to consist of about 20 % misidentifications of Ragweed species in Europe and worldwide. Based on the renewed and very detailed distribution data future control work on known populations will be enabled. Furthermore such data provide are essential base for modelling future spread.

Foreseen publications/articles resulting from the STSM

The results integrated into the taxonomy group will enrich the expected paper and leaflets produced by this group. Sampling of *Ambrosia* spp. Will be integrated part of new population genetic studies and new phylogenies.

Confirmation by the host institution of the successful execution of the STSM

Copy of the host e-mail sent to Dr. Maurizio Vurro, the Training Coordinator of the COST Action FA1203, will be attached.

Vienna, 20.09.2016

Gerhard Karrer