



SMARTER (EU-COST FA 1203)

**Sustainable management of
Ambrosia artemisiifolia in Europe**

<http://ragweed.eu>

International Ragweed Day - June 27, 2015

27th June 2015 marks the International Ragweed Day to increase understanding and awareness of the problem this invasive weed causes all over the world. Common ragweed, *Ambrosia artemisiifolia*, is a worldwide invasive weed originating from North-America, causing great damage to society via its highly allergenic pollen (typically from August to October in the Northern Hemisphere), and as a hard-to-control crop weed, with recently estimated cost of c. 4.5 billion Euro per year for Europe. Climate change and ragweed seed dispersal will further increase airborne concentrations of ragweed pollen by four times until 2050, thereby heightening the incidence and prevalence of ragweed allergy.

The EU-COST Action (FA1203) on Sustainable management of *Ambrosia artemisiifolia* in Europe (SMARTER) (<http://ragweed.eu>) was launched in 2012 with the aim to initiate and coordinate long-term management options to reduce ragweed in Europe. More than 250 scientists from 33 countries collaborate in this project that serves as a model for implementing integrated control measures against invasive alien species across Europe.

The first Saturday of the summer was chosen for the International Ragweed Day because it is early in the growing season of the plant and thereby gives enough time for preparations of actions.

Current developments in the EU-COST Action SMARTER

The EU-COST Action SMARTER brings together health care professionals, aerobiologists, ecologists, economists, and atmospheric and agricultural modellers to test and evaluate sustainable management strategies against ragweed across Europe. One long-term control method that has not been implemented in Europe is classical biological control, i.e. the release of specialist natural enemies originating from the native range to control invasive species. One possible biocontrol agent of ragweed is *Ophraella communa*, a leaf beetle native to North America and currently used to successfully control the noxious weed in China and Japan. In 2013, this beetle was found in Southern Switzerland and Northern Italy, where it had been accidentally introduced. The map showing the presence of the beetle has now been updated for 2014 (Fig. 1). European COST Action SMARTER responded to this discovery by launching an *Ophraella* Task Force to develop and conduct data collections to quantify the spread of *O. communa* and its potential impacts on ragweed biomass, pollen and seed production as well as the likelihood of non-target effects by *O. communa* on native European or cultivated plant species. In parallel with the occurrence and spread of this beetle, levels of airborne ragweed pollen had significantly decreased in the Milan area, which could not be explained by climate, land use or management and therefore might be due to *Ophraella*.

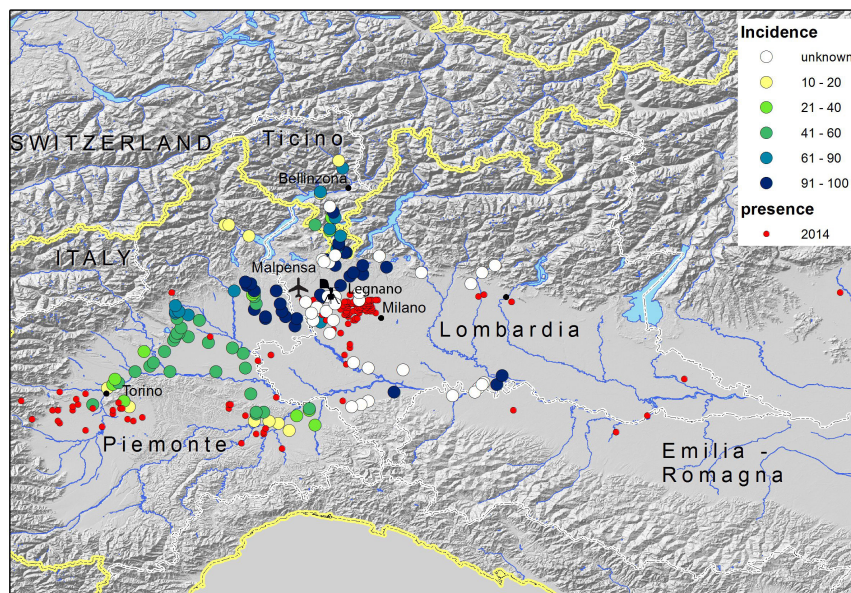


Figure 1: Incidence and densities of the leaf beetle *Ophraella communa* in Southern Switzerland and Northern Italy in 2013 and the presence of the beetle recorded in 2014. Malpensa airport, the presumed port of entry and Legnano pollen monitoring site, where the meteorological data were collected, are also shown.

A recently conducted modeling approach (Sun et al., in prep.) indicates, that this beetle has the potential to cover a significant part of the ragweed infested areas (Fig. 2), but that additional agents will be needed.

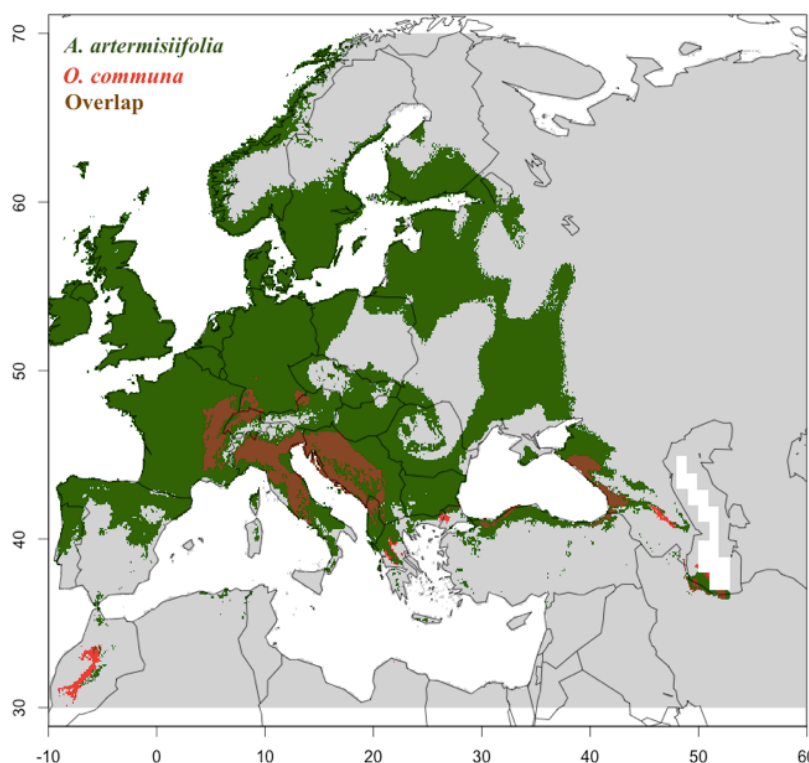


Figure 2: Suitable habitats in Europe for *Ambrosia artemisiifolia* and the accidentally introduced ragweed leaf beetle *Ophraella communa* based on species distribution models fitting occurrences jointly for their native (North America) and introduced ranges (Europe, Japan and China).

The performance of ragweed populations differ from site to site: from low to high density, slow to fast growth, more or less seed production, etc. European COST Action SMARTER has initiated the “Task Force Population Dynamics” to study what determines

these differences. It currently consists of 25 teams that intensively measure the performance of 50 *Ambrosia* populations across the European continent from France to Armenia. They differ in climate, invasion history, and habitat, and will be followed for 3 years. This is the first and biggest international demographic field study on ragweed. The results are expected to help designing climate- and habitat-specific management guidelines. They can also contribute to predicting how ragweed will drive in new areas when expanding in future.

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Further reading

<http://www.internationalragweedsociety.org/IRD/IRD2015.html>

http://www.cost.eu/COST_Actions/fa/Actions/FA1203

<http://www.unifr.ch/ecology/groupmueller/>

http://www.unifr.ch/ecology/groupmueller/assets/files/SMARTER_flyer_final-version.pdf

<http://ragweed.eu/>

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