

# JRC research related to biodiversity and ecosystem services

Ole P. Ostermann, 2014

As the European Commission's in-house science service and the only service responsible for direct research, the Joint Research Centre (JRC) provides independent scientific advice and support to policy. Biodiversity loss and ecosystem services degradation are critical threats to economic, social, cultural and physical wellbeing. Halting such loss is central to the EU Biodiversity Strategy to 2020, and to Europe's compliance with the CBD Aichi targets. Two examples illustrate this work:

## Linking land cover data and crop yields for mapping and assessment of pollination services in Europe

Pollination is a key ecosystem service as many crops, but in particular fruits and vegetables, are partially dependent on pollinating insects to produce food for human consumption. The JRC assessed how pollination services are delivered at the European scale. We used this assessment to estimate the relative contribution of wild pollinators to crop production. We developed an index of **relative pollination potential**, and we linked it to regional statistics of crop production. At aggregated EU level, the absence of insect pollination would result in a **reduction of about 30%** of the total production of crops which are partially dependent on insect pollination.

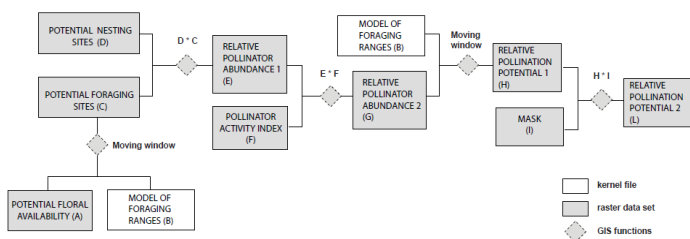


Figure 1. Flow chart outlining the setup of the pollination model which results in the calculation of the relative pollination potential.



Photo credit: M.L. Paracchini

"Linking Land Cover Data and Crop Yields for Mapping and Assessment of Pollination Services in Europe", Grazia Zulian, Joachim Maes and Maria Luisa Paracchini, *Land* (2013), vol. 2, pp. 472-492; doi:10.3390/land2030472

## Gateways to alien invasions in the European seas

The spatial pattern of initial **introductions of marine alien species** in the European Seas (including the entire Mediterranean) was investigated. These data are very useful for informing and supporting national policy and management decisions necessary to prevent future introductions of marine alien species.

Marine alien species may become invasive and displace native species, cause the loss of native genotypes, modify habitats, change community structure, **affect food-web properties** and ecosystem processes, impede the provision of ecosystem services, impact human health, and cause substantial economic losses.

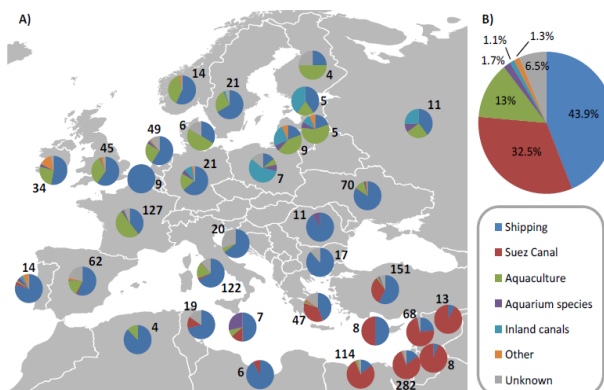


Figure 2. (A) Proportion of marine alien species (N = 1383) introduced for the first time in European waters through **different pathways of introduction**, per recipient country (i.e. countries of initial introduction in Europe). For clarity, data are shown for countries with more than two recorded first introduction events (numbers shown next to the charts). (B) European total of first introduction events per pathway of introduction.

"Gateways to alien invasions in the European seas", Ana Luisa Nunes, Stelios Katsanevakis, Argyro Zenetos and Ana Cristina Cardoso, *Aquatic invasions* (2014), vol. 9, no. 2 pp. 133-144, doi: http://dx.doi.org/10.3391/ai.2014.9.2.02

### Contact

Dr Ole P. Ostermann  
European Commission · Joint Research Centre  
Institute for Environment and Sustainability  
21027 Ispra, Italy  
Tel: +39 0332 785360 · Email: [ole.ostermann@irc.ec.europa.eu](mailto:ole.ostermann@irc.ec.europa.eu)  
<https://ec.europa.eu/irc/en/research-topic/ecosystems-and-biodiversity>

<https://ec.europa.eu/jrc>

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