



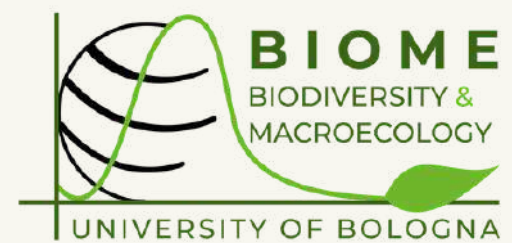
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Developing databases with orchids as target group

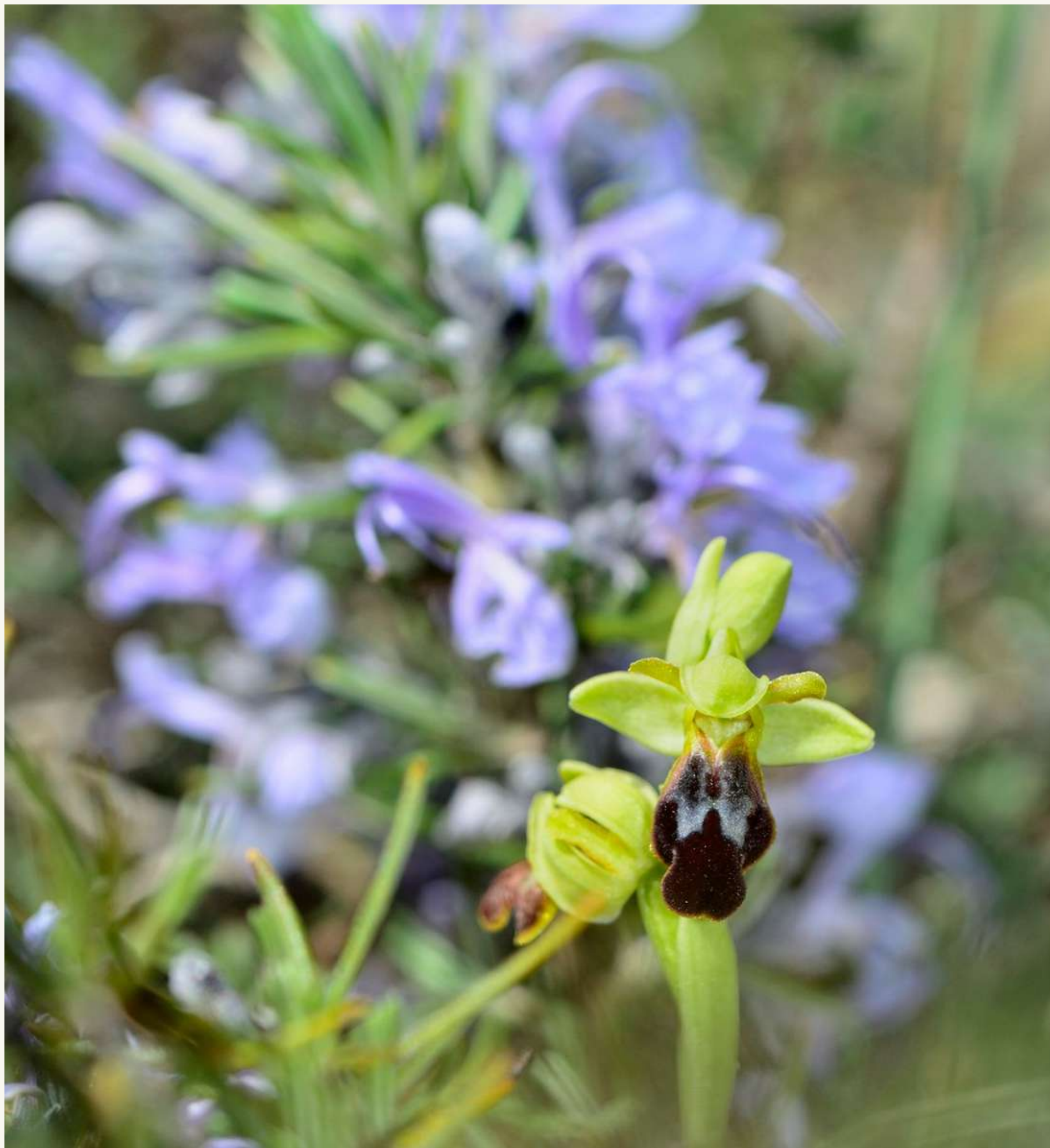
A link between biogeography and biological conservation



Michele Lussu

Centro Interuniversitario per la Biodiversità Vegetale Big Data -
PLANT DATA Alma Mater Studiorum Università di Bologna, LifeWatch ERIC

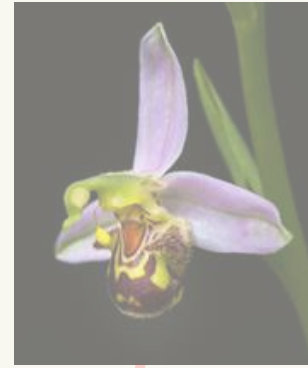




Why orchids?



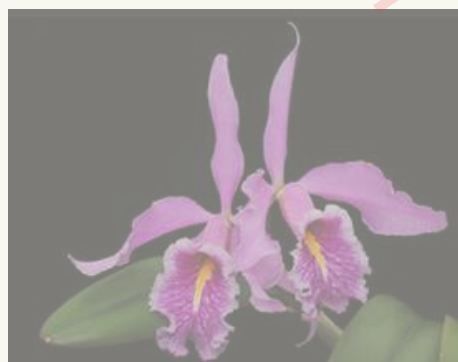
Calypso bulbosa



Ophrys apifera



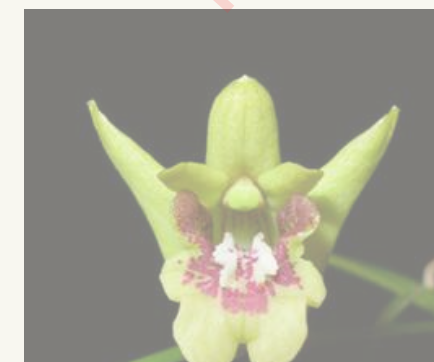
Cypripedium calceolus



Cattleya maxima



Disa unicolor



Dendrobium closterum

Research lines

Biogeography

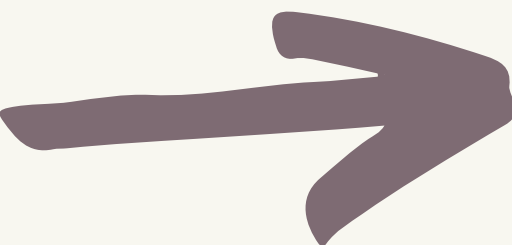
Conservation Biology

Aim

Create a dataset of orchids of the Mediterranean Basin

Framework

DATA PROVIDERS



DATA HARMONIZATION



SERVICES



Who are the data providers?

Who are the data providers?

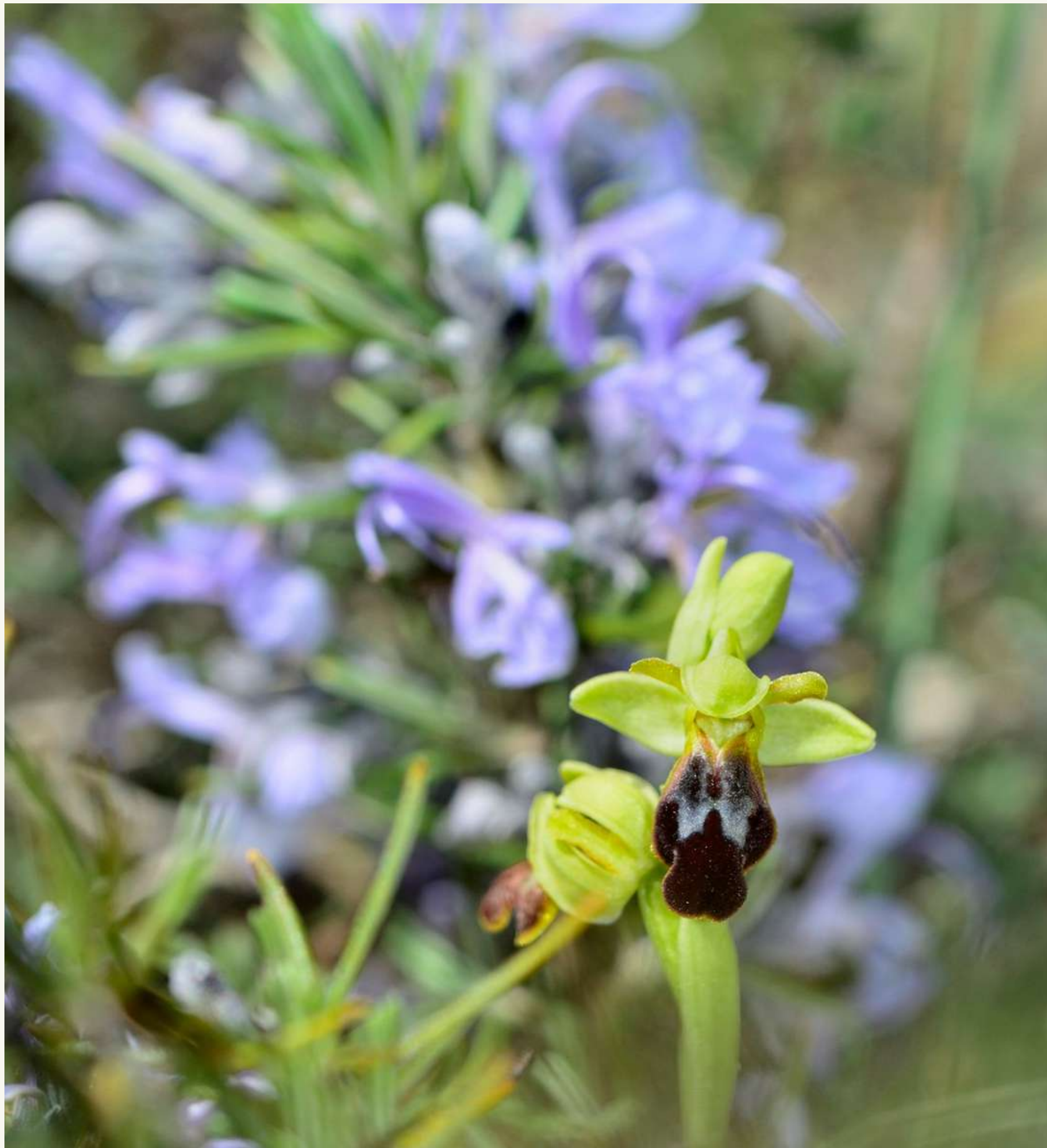


Who are the data providers?

COLLEAGUES!

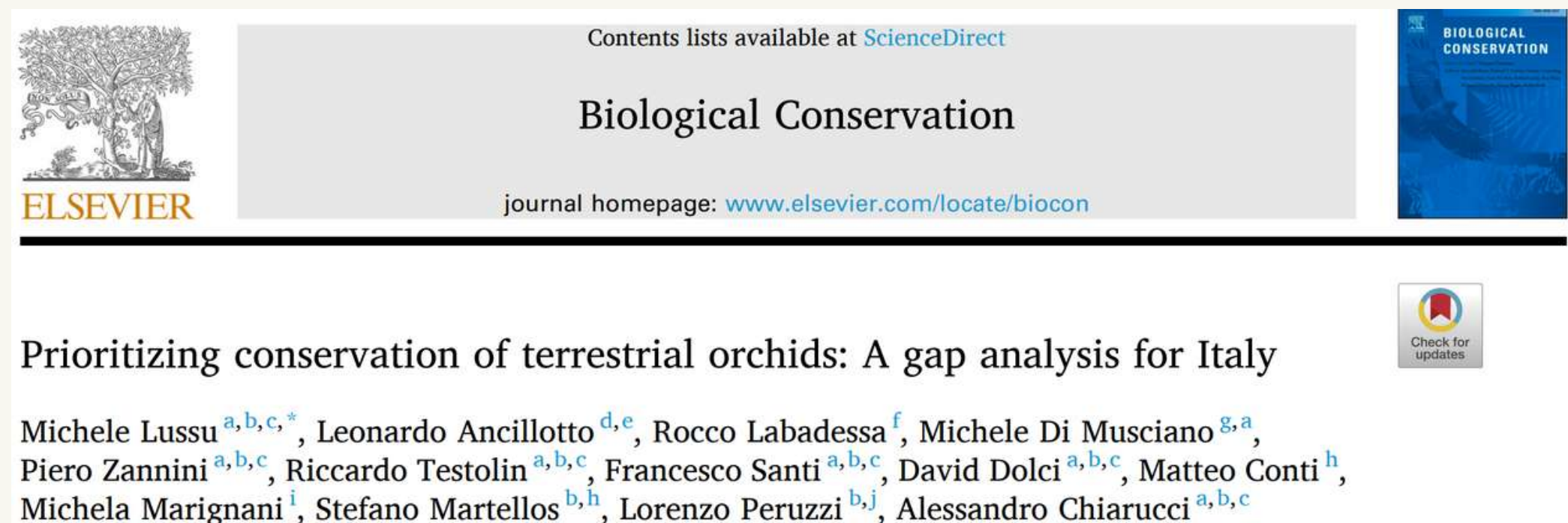


THE IMPORTANCE OF CREATING A NETWORK OF PEOPLE AND DEVELOPE
TOGETHER WORKING GROUPS



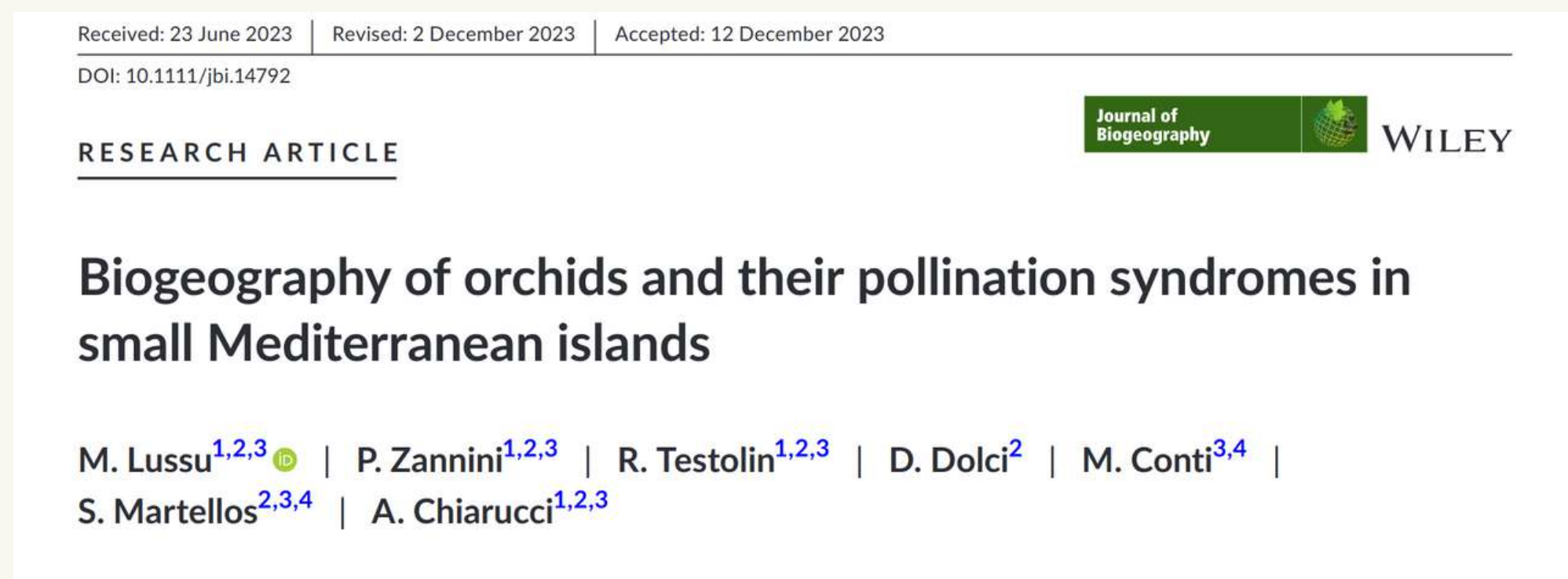
OUR RESULTS (SO FAR)

Our publications



how the actual Italian PAs network protect orchids

SARS and pollination syndromes





Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon



Prioritizing conservation of terrestrial orchids: A gap analysis for Italy

Michele Lussu^{a,b,c,*}, Leonardo Ancillotto^{d,e}, Rocco Labadessa^f, Michele Di Musciano^{g,a},
Piero Zannini^{a,b,c}, Riccardo Testolin^{a,b,c}, Francesco Santi^{a,b,c}, David Dolci^{a,b,c}, Matteo Conti^h,
Michela Marignaniⁱ, Stefano Martellos^{b,h}, Lorenzo Peruzzi^{b,j}, Alessandro Chiarucci^{a,b,c}



main question:

how the actual Italian PAs network protect orchids

Data gaining and cleaning

- duplicates, as well as records with low spatial resolution, were discarded;
- records collected before the year 1945 were excluded as well
- In the cases of two or more records of the same species occurring at a distance < 100 m, we only took into account the most recent one, in order to avoid counting the same individual twice, or more



GBIF

Global Biodiversity
Information



iNaturalist



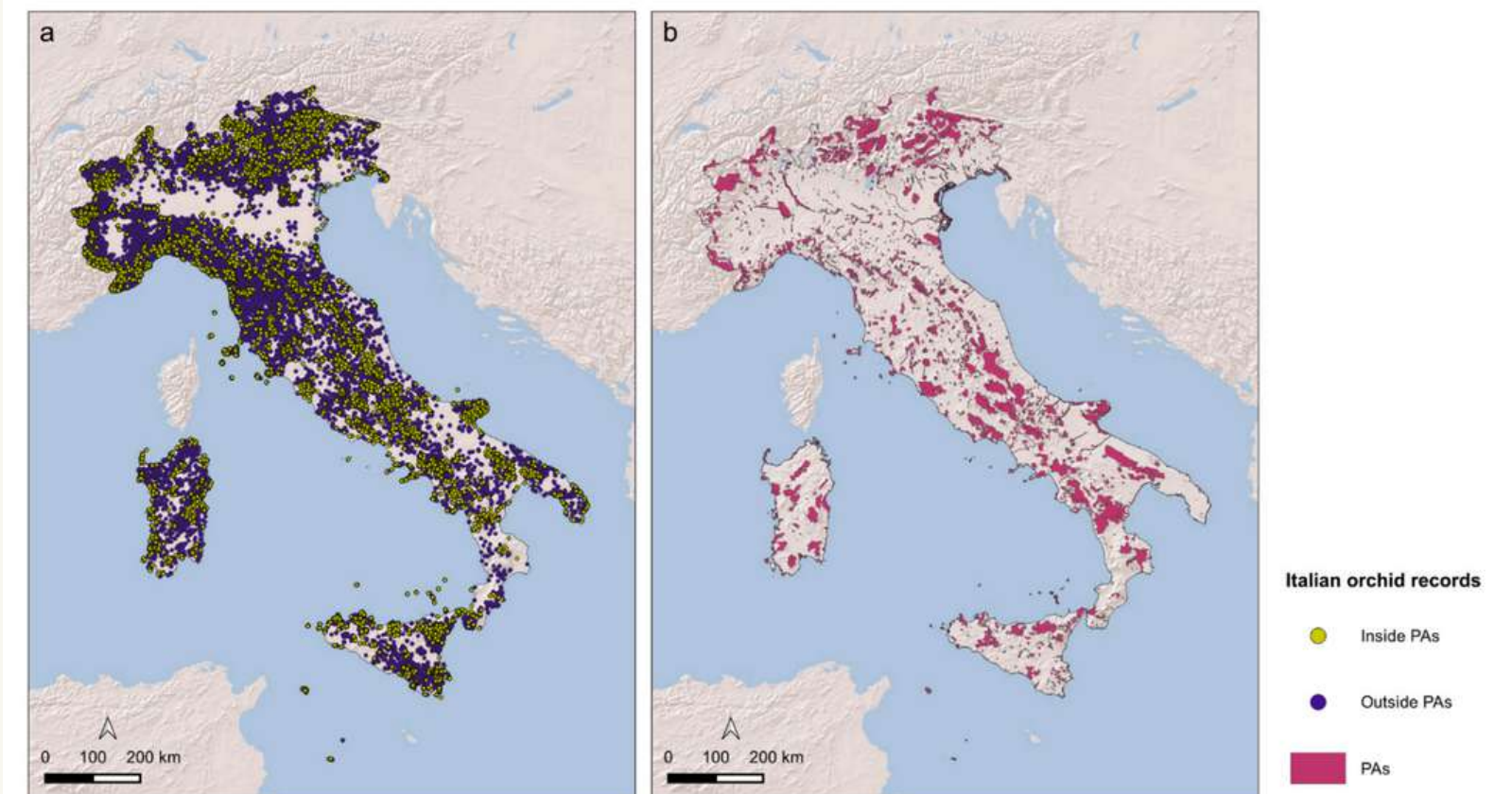
our final dataset

239 taxa

71,693 occurrence

M. Lussu et al.

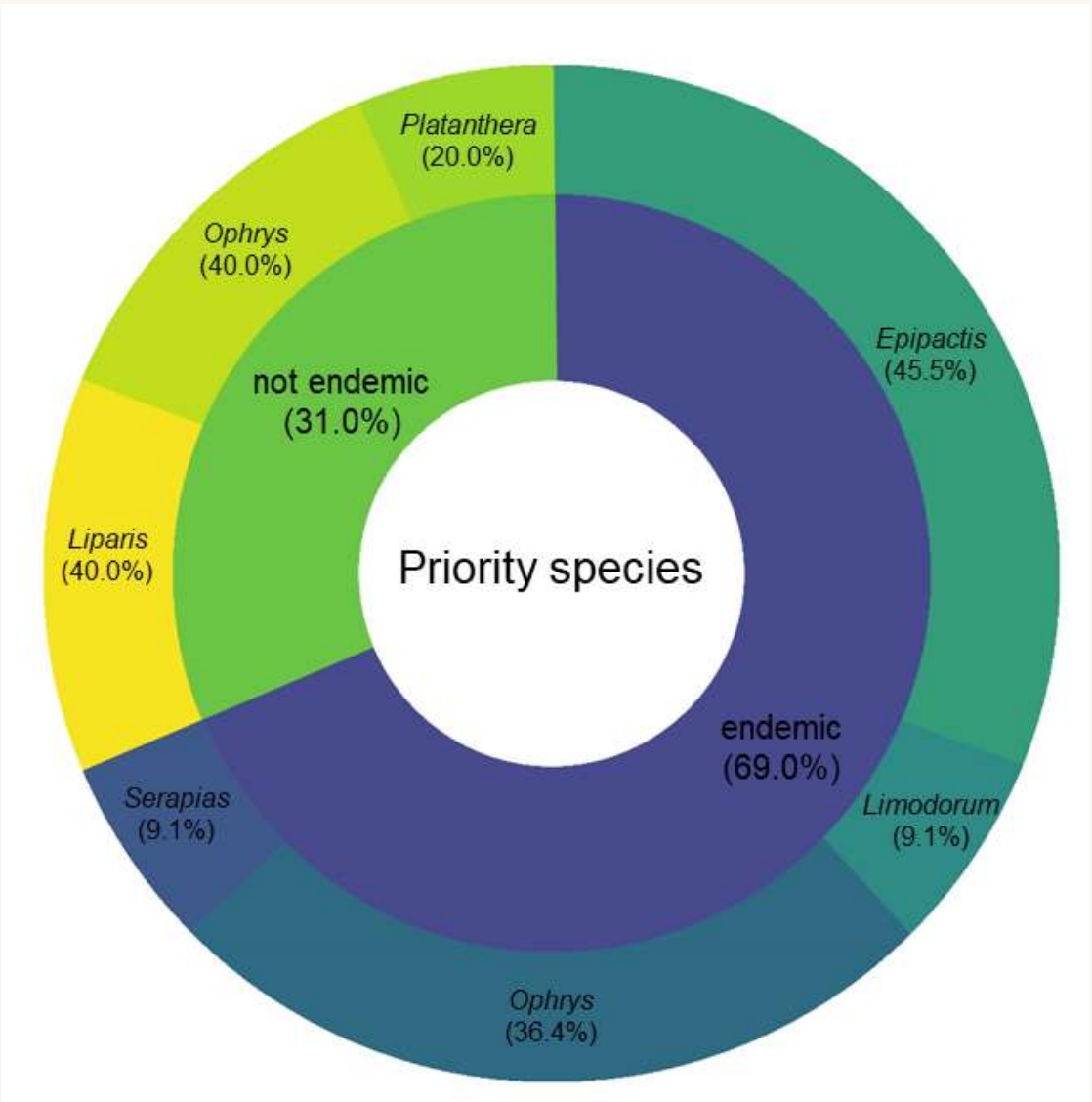
Biological Conservation 289 (2024) 110385



Distribution of occurrences of orchid species (a) and surface of protected areas (b) in Italy.

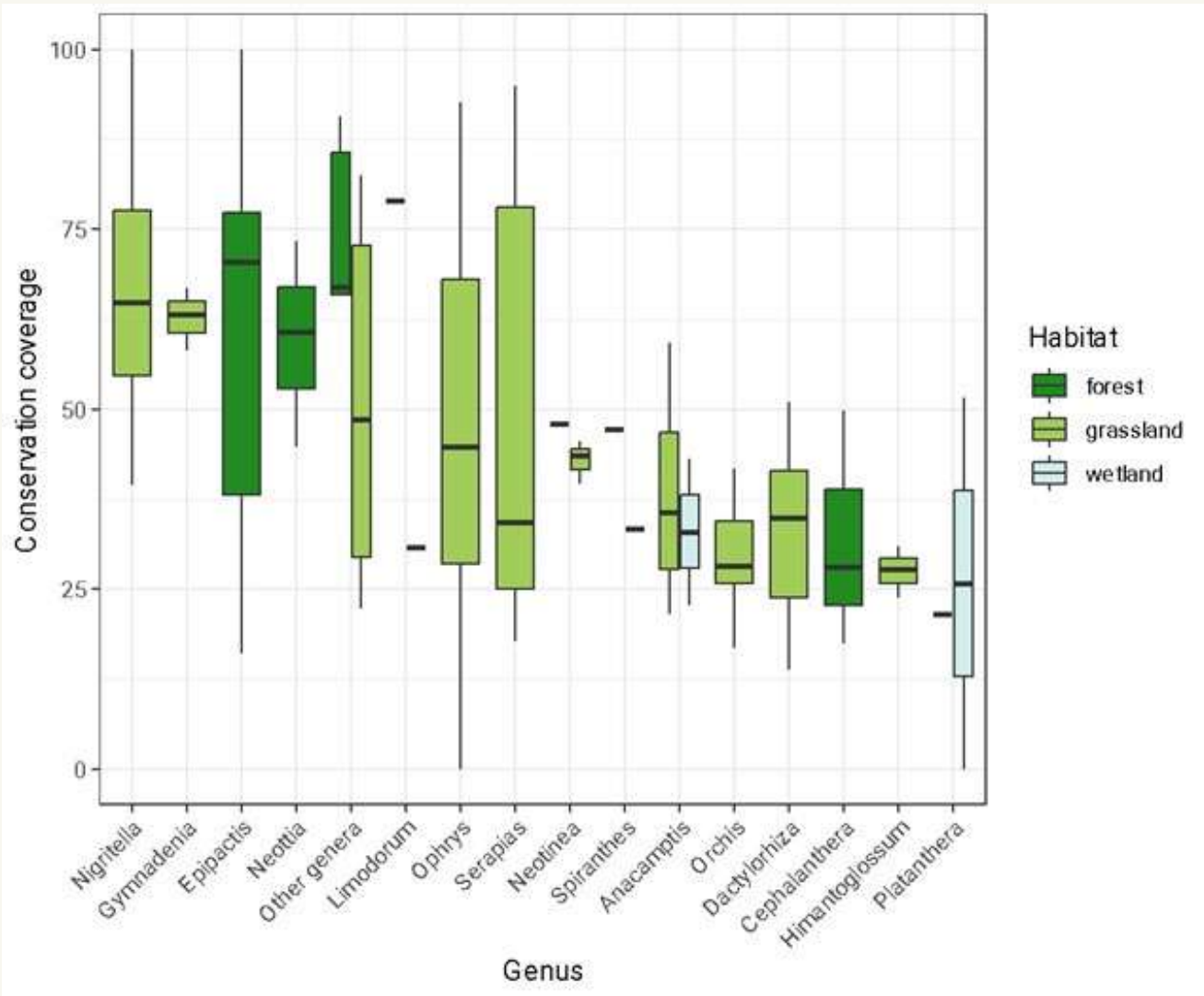
Main results

only **47.7%** of records
fall within PAs




Proportion of the species with highest conservation priority.

We found significant **grassland** and **wetland** as negative factors that affect orchid occurrences, while **forest** was detected to be a positive driver




Boxplot showing variability in spatial conservation coverage (as percent of occurrences falling within protected areas) of orchid species recorded in Italy, grouped for genus and favored habitat and organized in decreasing order according to mean.


this dataset is currently available




[Data](#)[Support](#)[About](#)

 Sign in with ORCID


Michele Lussu and Alessandro Chiarucci. 2023. [Italian Orchis occurrence](#). urn:node:METACAT_TEST. urn:uuid:1effc5b5-a0ab-4a91-ac82-ddb459a663e5.

 Citations


0


 Downloads

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 Assessment report

Files in this dataset Package: resource_map_urn:uuid:bf12059f-e028-484c-b6e4-0d57e1e3e349

 Name	File type	Size	Download All 
 Metadata: Italian_Orchis.xml	EML v2.2.0	57 KB	Download 
 italian_orchids_records.csv	More info text/csv	17 MB	Download 

General

Identifier

urn:uuid:1effc5b5-a0ab-4a91-ac82-ddb459a663e5

Abstract

Orchids play a key role in ecosystem functioning and offer critical insights into plant evolution, biogeography, ecological adaptation and conservation planning. Our data set is the first to produce a national orchid inventory, covering the entire Italian territory. We collected 71,693 records for 195 species of orchids occurring in Italy, number of records per species ranged from 1 (e.g., the endemic *Ophrys gravinensis*) to 3,163 (*Dactylorhiza maculata*), averaging 385 ± 631 records per species. Out of the 195 species, 70 are endemic to Italy (36%), and 5 (2.6%) are listed within Annex II of the Habitats Directive. Nine species (4.6%) are classified as threatened (either VU or EN) by the IUCN European Red List, 11 as Near Threatened (5.6%), 3 as Data Deficient (1.5%), 76 as Least Concern (39.0%), and 95 not assessed (48.7%). Overall, orchid species showed on average 47.7 ± 24.0 % of records within protected areas, with 4 and 2 species featuring 100% and 0% within the network of protected areas, respectively. A total of 32 species showed <5 independent recent records. The main aim of the orchid data set was to make these occurrence data accessible for international researchers to develop ecological and macroecological studies, from local to regional scales, with focal IUCN listed species. We anticipate that the Italian orchid data set will be valuable for studies on a wide range of ecological processes, such as trophic cascades, fishery pressure, the effects of habitat loss and fragmentation, and the impacts of species invasion and climate change.

work in progress

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RESEARCH ARTICLE

Journal of
Biogeography
WILEY

Biogeography of orchids and their pollination syndromes in small Mediterranean islands

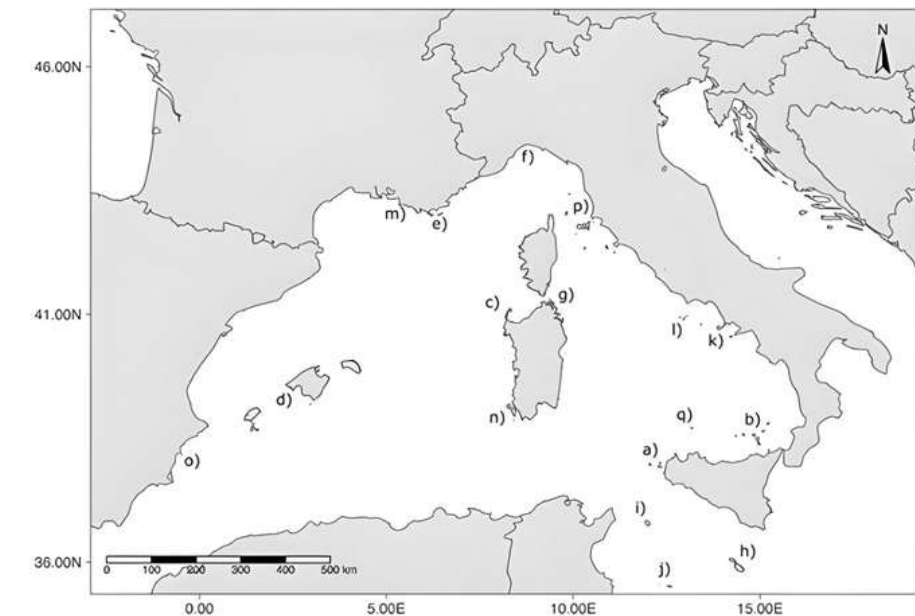
M. Lussu^{1,2,3} | P. Zannini^{1,2,3} | R. Testolin^{1,2,3} | D. Dolci² | M. Conti^{3,4} |
S. Martellos^{2,3,4} | A. Chiarucci^{1,2,3}

113 islands

39 VOLCANIC
75 CONTINENTAL

In this study, we investigated the distribution of orchid pollination syndromes across different islands and their relationship with species-area relationship

FIGURE 1 Map of the archipelagos and islands of the Central-Western Mediterranean basin: (a) Aegadian Islands, (b) Aeolian Islands, (c) Asinara Archipelago, (d) Balearic Islands, (e) French Islands, (f) Spezzino Archipelago, (g) Maddalena Archipelago, (h) Maltese Islands, (i) Pantelleria, (j) Pelagian Islands, (k) Phlegraean Islands, (l) Pontine Islands, (m) Riou Archipelago, (n) Sulcis Archipelago, (o) Tabarca, (p) Tuscan Archipelago, (q) Ustica [single column].



work in progress

Our goal is to build a dataset that includes all orchid occurrences of Mediterranean islands (2217)





Take home messages

the development of appropriately structured datasets is essential to make the biological information usable

the creation of new and heterogeneous groups allows us to approach the research from different but complementary perspectives



THANK YOU

