Extension of EURISCO for Crop Wild Relatives (CWR) in situ data and preparation of pilot countries' data sets (CWR-EURISCO)

Results of Italian partners activities

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***In situ* Crop Wild Relatives in EURISCO Project Meeting**
18–19 June 2024, Sadovo, Bulgaria

The Italian partners

Institute of Biosciences and Bioresources (IBBR-CNR)

- *Bari (Apulia), mainly interested in CWR occurring in South Italy*

Università degli Studi di Perugia,
Dipartimento di Scienze Agrarie Alimentari e Ambientali

- *Perugia (Umbria), in CWR occurring in Central Italy*

Council for Agricultural Research and Economics (CREA),
Research Centre for Forestry and Wood

- *Trento (Trentino-Alto Adige), in CWR occurring in North Italy*

CREA - UDG4 - Institutional Affairs and International relations

Selection of CWR species

Selecting criteria:

- Presence in the prioritized list of wild plants of socio-economic interest for Italy of Landucci et al. (2014) and updated by Ciancaleoni et al. (2021)
- Occurrence in the Apulian region territory

A total of 6 species belonging to 3 different *Genera*

- *Triticum biunciale* (a)
- *Vicia giacominiana* (b)
- *Hordeum bulbosum* (c)
- *Vicia serinica* (d)
- *Triticum uniaristatum* (e)
- *Triticum ventricosum*

Ciancaleoni, S., Raggi, L., Barone, G., Donnini, D., Gigante, D., Domina, G., Negri, V., 2021. A new list and prioritization of wild plants of socioeconomic interest in Italy: toward a conservation strategy. Agroecol. Sustain. Food Syst. 45, 1300–1326. https://doi.org/10.1080/21683565.2021.1917469

Landucci, F., Panella, L., Lucarini, D., Gigante, D., Donnini, D., Kell, S., Maxted, N., Venanzoni, R., Negri, V., 2014. A prioritized inventory of crop wild relatives and wild harvested plants of Italy. Crop Sci. 54, 1628–1644. https://doi.org/10.2135/cropsci2013.05.0355

In situ populaitons occurrence data retrieval

The database of the CNR's Mediterranean Germplasm Genebank to:

- check the presence of CWR in different Italian Regions
- determine the geographical coordinates of populations and date of acquisition

Data on the presence of CWR were also collected from:

- a literature review (Landucci et al. 2014 and others)
- from recent results of research projects of the other partners

Activities carried out to:

1. **Confirm presence of populations *in situ* and verify geographical coordinates**
   - **sites preferably located in parks & Natura 2000 sites**

The exploration missions

1. **S. Maria Leuca Regional Natural Park** (Porto Badisco, Costa Otranto)
    - *V. giacominiana* (3 populations)
2. **Alta Murgia National Park** (Bosco di Bitonto)
    - *H. bulbosum* (1 population)
3. **Natura 2000 site IT9120008** (Bosco Difesa Grande)
    - *T. ventricosum* (1 population)
    - *T. uniaristatum* (1 population)
4. **Costa Merlata**
    - *T. biunciale* (1 population)

5. **Appennino Lucano-Val d'Agri-Lagonegrese National Park** (Monte Papa)
- *V. serinica* (1 population)

A total of 10 populations confirmed proposed for the inclusion in the EURISCO database

Possible future activities

- To establish a network of data providers
  - contact was made with the managers of the Alta Murgia National Park
  - The park administration already actively collaborating with the IBBR-CNR, which will facilitate the definition of an access policy for the PGR designated in the park area

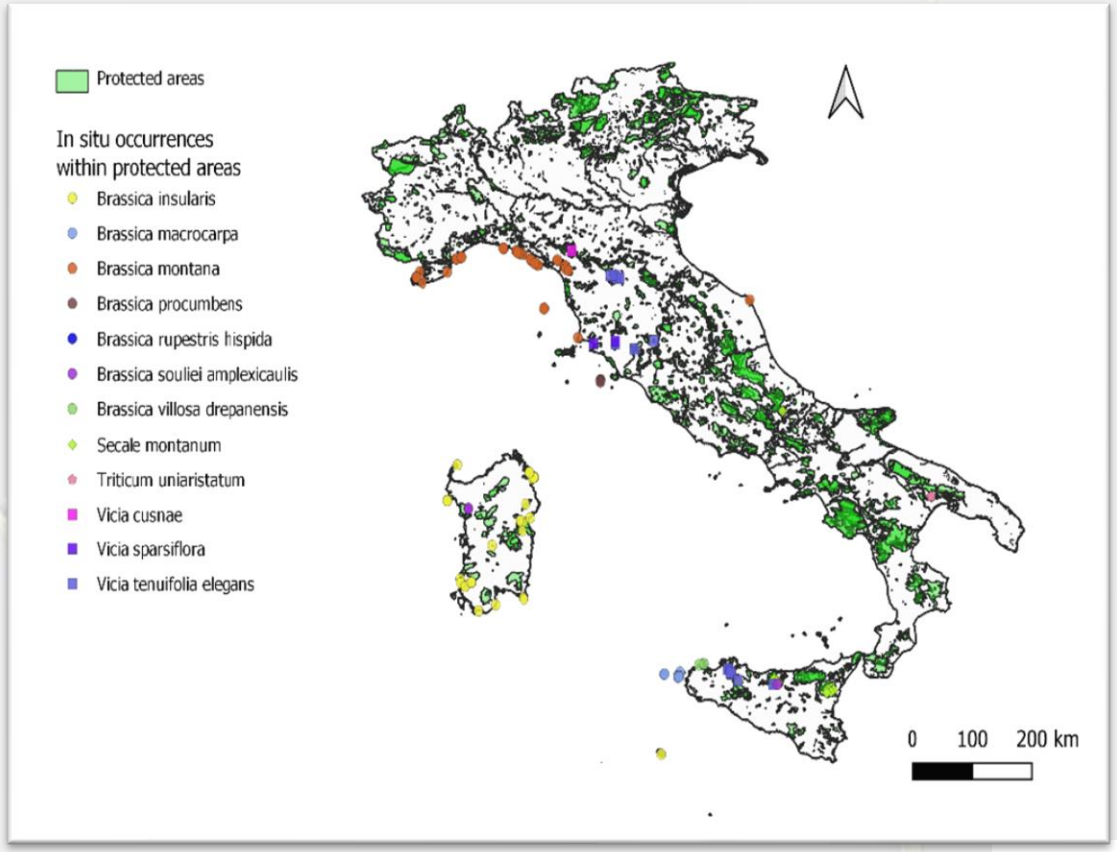
The continuation of the project will make it possible to add:

- new populations of the taxa already assessed
- new species of the genera *Vicia* and *Hordeum*

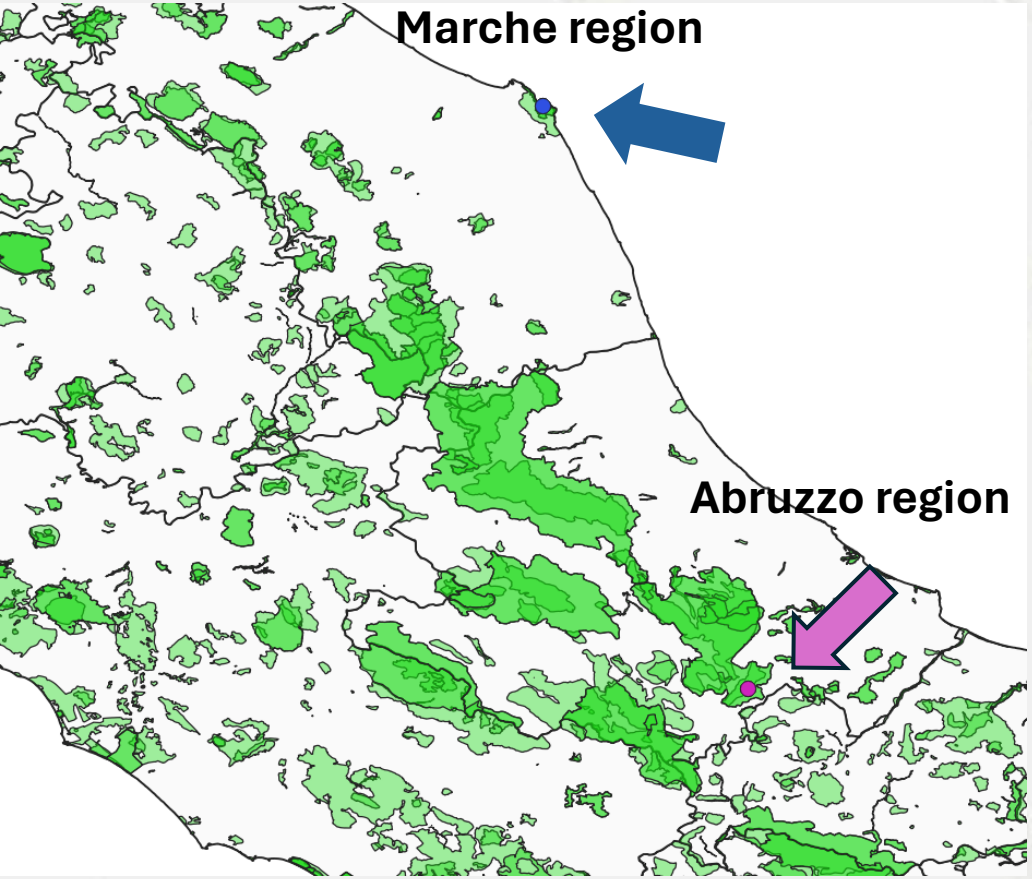
Key CWR species in protected areas in Italy

Activities carried out

Species	Total	Within protected areas
Brassica glabrescens	1	0
Brassica insularis	64	30
Brassica macrocarpa	10	9
Brassica montana	70	43
Brassica procumbens	4	3
Brassica rupestris hispida	2	1
Brassica souliei amplexicaulis	2	2
Brassica villosa drepanensis	12	2
Cynara cardunculus flavescens	1	0
Malus crescimannoi	1	0
Secale montanum *	25	19
Triticum uniaristatum	4	3
Vicia cusnae	2	1
Vicia dalmatica	1	0
Vicia giacominiana	1	0
Vicia sparsiflora	4	2
Vicia tenuifolia elegans	20	14
TOTAL	224	129



Target taxa



Brassica montana

- Marche region, Parco del Conero (http://www.parcodelconero.org/)

Secale montanum

- Abruzzo region, Parco nazionale della Majella (https://www.parcomajella.it/)

Activities carried out:

- Park managers contacted
- Availability of the materials requested for the inclusion in the Catalog

Secale montanum

For *Brassica montana* in Parco del Conero

- No detailed information obtained for inclusion in the Eurisco catalog.

Secale montanum Parco nazionale della Majella

A population that meets the parameters for inclusion in the Catalog

- The Station is located at the location Serra Tre Monti, Gamberale (Chieti) at an altitude of approximately 1800
- The Population consist of around 400-500 individuals growing among large rocky outcrops
  - discourage grazing by the livestock present in the surrounding areas

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Original Research Article

Priority areas for the establishment of genetic reserves to actively protect key crop wild relative species in Italy

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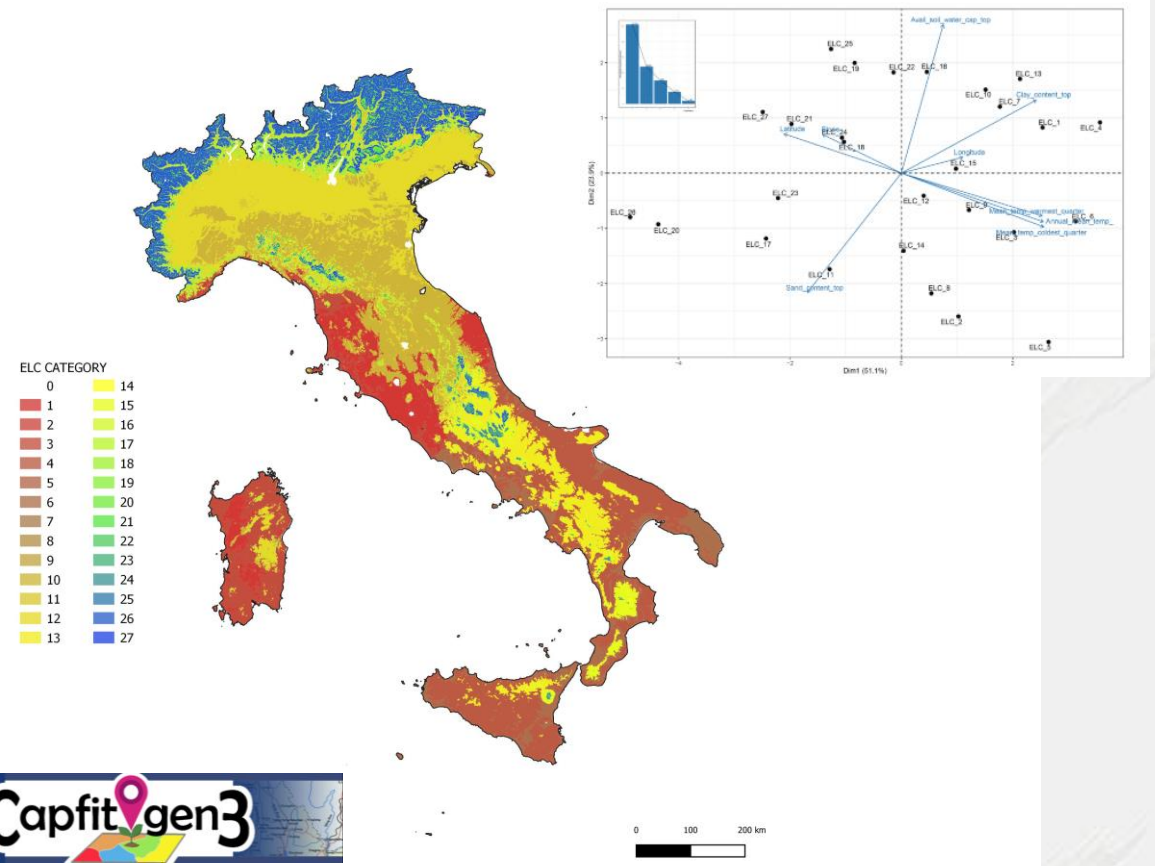
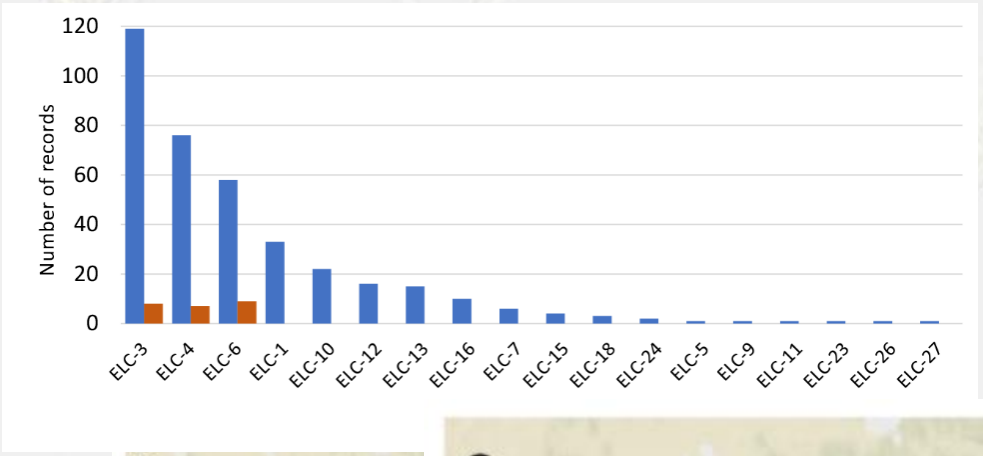
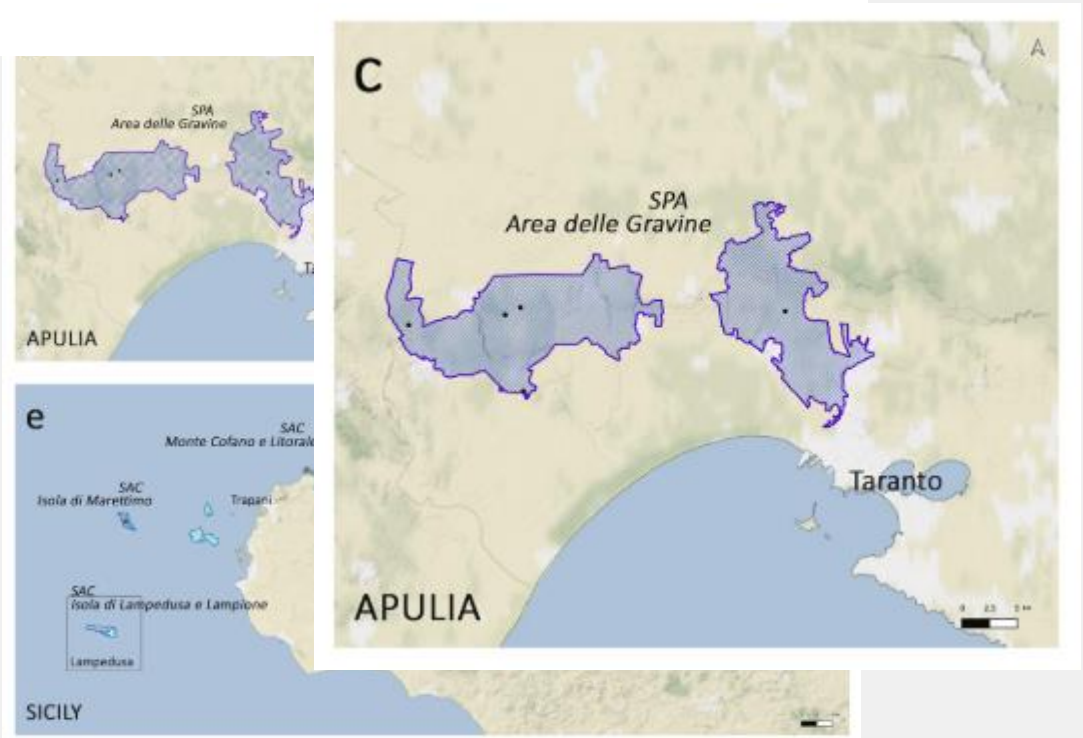


Possible future activities





Activities carried out by CREA-FL of Trento

***Lactuca alpina* (L.) A.Gray, sin. *Cicerbita alpina* (L.) Wallr. (Asteraceae)**

Rationale for considering *L. alpina* a CWR to be included in EURISCO:

- Belongs to the genus *Lactuca* L.
  - Listened in the prioritized list of CWR taxa by Landucci et al. (2014)
- Harvesting in the wild, risk of endangering in the collection sites
  - edible shoots collected in North-East of Italy
- Possible use in breeding (Dorè et al., 1996; Van der Veken et al., 2019)

Doré, C. et al. In situ gynogenetic haploid plants of chicory (Cichorium intybus L.) after intergeneric hybridization with Cicerbita alpina Wallr.. Plant Cell Reports 15, 758–761 (1996). https://doi.org/10.1007/BF00232223

Van der Veken, J. et al. Cichorium intybus L. × Cicerbita alpina Walbr.: doubled haploid chicory induction and CENH3 characterization. Euphytica 215, 134 (2019). https://doi.org/10.1007/s10681-019-2435-0

Data recovery on L. alpina *populations in Italy*

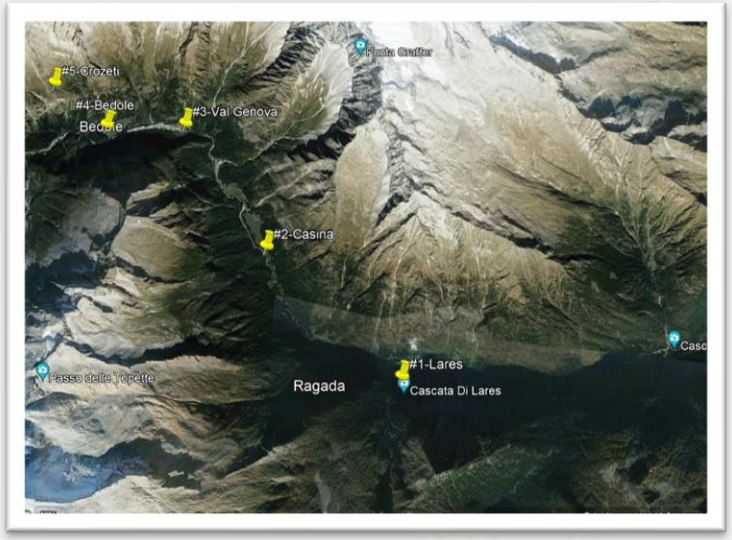
- Data from freely accessible databases (GBIF etc) compared to data retrieved from local databases (MCR, CREA)

Database	N° occurrences	N° reliable occurrences	Inside TN province	Notes
Global Biodiversity Information Facility (GBIF)	184	30	2	not included in protected areas
Genesys	7	-	-	ex-situ accessions
Mediterranean Germplasm Database (MGD)	0			
MCR- Museo Civico di Rovereto (TN, Italy) (1)	477	477	477	
CREA of Trento (TN, Italy)	8	8	8	

(1) Courtesy of Dr. Prosser F., Fondazione Museo Civico di Rovereto, Rovereto (TN), Italy (https://www.fondazionemcr.it/)

- **Check of the occurrence of the existing populations**
  - ***in situ* monitoring inside the territory of the Province of Trento, North-East Italy**
  - **sites reachable in the same day from the CREA headquarters**

Adamello Brenta Natural Park (TN)



- **Val Genova (2 August, 2023): 5 populations**
  - population #4 (Bedole) was included in EURISCO
- Val Nambrone (31 August, 2023): 0 populations
  - a population previously recorded in 2005 was not found

Population #4 (Bedole)

- **Quite big in size,100 individual plants**
- **Easily accessible**
  - near refuge “A. Collini al Bedole”
- **Managed by an Institution**
  - Parco Naturale Adamello Brenta (TN, Italy)
  - Agreement signed for participation to initiative

Possible future activities

- Proposal of additional *Lactuca alpina* populations in a wider territory (i.e. Trentino-Alto Adige region, North-East Italy) for inclusion in EURISCO
- Proposal of additional species of the genera *Allium* L. and *Lactuca* L.
  - *Allium ursinum* L. (Alliaceae)
- Number of populations and species to be proposed depending on the available fundings
- Same methodology adopted of 2023:
  - Check the occurrence of the species/populations in the existing databases (GBIF and others)
  - In situ monitoring of populations inside the territory of the Trentino-Alto Adige Region, North-east Italy
  - Contacting the local Institutions in charge for the Building the network of data providers
  - Inclusion of selected populations in EURISCO

Conclusions

- Italian partners have created and transmitted a database with information on CWR populations in situ in four Italian regions to be included in EURISCO
  - *Vicia giacominiana*: 3 populations
  - *Hordeum bulbosum*: 1 population
  - *Triticum ventricosum*: 1 population
  - *Triticum uniaristatum*:1 population
  - *Triticum biunciale*:1 population
  - *Lactuca alpina*: 1 population
  - *Secale montanum*: 1 population

The Italian partners have created and submitted a database with information on CWR populations in situ in four Italian regions, which are available in EURISCO

Possible constrains

In accordance with the objectives of the project,
the populations to be listed in EURISCO
must in principle be accessible on request

The definition of policies is the most delicate point and the biggest limit for the expansion of the network of data providers

Space for discussion and proposal of common strategies

Thanks for attention

Italian National Research Council

DIPARTIMENTO DI SCIENZE AGRARIE, ALIMENTARI E AMBIENTALI

crea Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria