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ABSTRACT	In the framework of the project "Extension of EURISCO for Crop Wild Relatives (CWR) <i>in situ</i> data and preparation of pilot countries' data sets", a list of taxa and related populations were identified, to be monitored and assessed in terms of conservation status. Information were collected and organized according to the guidelines of the EURISCO database. The project partners identified and contacted the relevant Institutions to facilitate access to the CWR material.
KEYWORDS	Country/region: Italy Crop(s): <i>Allium, Asparagus, Astragalus, Barbarea, Brassica, Dactylis, Elymus, Festuca, Hordeum, Ipomoea, Lactuca, Malus, Onobrychis, Secale, Thinopyrum, Trifolium, Triticum, Vicia</i> Subject: Extension of EURISCO for Crop Wild Relatives (CWR) <i>in situ</i> data and preparation of pilot countries' data sets: Italy

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

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Background

Italy was involved in the project "Extension of EURISCO for Crop Wild Relatives (CWR) *in situ* data and preparation of pilot countries' data sets". The main objectives were:

- Identification and prioritization of CWR species with socio-economic importance for conservation;
- Collection and verification of *in situ* occurrence data for prioritized taxa;
- Collaboration with relevant institutions to facilitate access to CWR material and promote conservation efforts;
- Establishment of a framework for population monitoring and inclusion of key data in EURISCO.

Data on the occurrence in Italy of populations of selected CWR species were retrieved from international databases such as GBIF, Genesys and the Mediterranean Germplasm Database (MGD), as well as from literature (Landucci et al. 2014; Magrini et al. 2016) and recent in-house records. During the first part of the project, CWR populations were identified in the Apulia and Basilicata regions as well as in the Autonomous Province of Trento, as part of the surveillance activities (Final Technical Report of Agreement L22ROM226).

The German Federal Ministry for Food and Agriculture offered to fund further activities, to be carried out in 2024, aiming at further strengthening data collection and processing at national level in the pilot countries and expanding activities to other countries. Under this new grant, the Italian project partners agreed to add new population data of the taxa already assessed during the previous part of the project, extend the research to additional species included in the lists of priority taxa or belonging to the gene pool of species of significant agronomic interest and provide guidelines for access to *in situ* material - Pilot protocol for one of the data providers.

Results

CNR-IBBR

In 2024, a total of 46 CWR populations were recorded in southern Italy, belonging to the genera *Elymus* (*E. repens* L., 4 populations/occurrences), *Hordeum* (*H. marinum* Huds., 4), *Ipomoea* (*I. sagittata* Poir., 2), *Thinopyrum* (*T. acutum* DC. Banfi, 8; *T. elongatum* Host D.R. Dewey, 3; *T. junceum* L. A. Love, 20) and *Vicia* (*V. bithynica* L., 2; *V. cracca* L., 2; *V. sativa* L., 1). The entire set of data occurrences was collected in the Apulia region, except for one record (*V. sativa* L.) present in the neighbouring Basilicata region. Almost all recorded populations are located in Sites of Community Importance (SCI), Natura 2000 sites, and areas protected by national or regional authorities.

The genera *Elymus* and *Thinopyrum* are wild relatives of wheat belonging to the tertiary gene pool, a valuable resource for increasing genetic diversity and protecting wheat from diseases and abiotic/environmental stress factors (Baker et al. 2020; Khan et al. 2022; Plotnikova and Knaub 2024).

The recorded *Elymus* wild populations are mainly located in the Bosco Difesa Grande SCI in the centre of Apulia, with each population distributed near a lake (“Splendore”, “d’Olmo” or “Matera” lakes, respectively); only one population was recorded in the north of Apulia, in the locality Palude Frattarolo – Manfredonia (FG). *Thinopyrum* wild populations were found in coastal areas from the Gargano promontory to the Adriatic and Ionian coasts, mostly SCI. Only one *T. junceum* and three *T. acutum* populations were found outside Protected Areas.

Hordeum marinum populations were identified in Protected Areas located in the north and the south of the Apulia region, within the Gargano National Park, Zone Umide della Capitanata SCI (three populations), and the Saline di Punta della Contessa Regional Park, Stagni e Saline di Punta della Contessa SCI (one population).

The new recorded wild populations of *Ipomea sagittata* are both located in the south of Apulia, in localities Le Cesine – Vernole (LE), and Paludi di Rauccio – Lecce. Both sites are SCI located in Protected Areas (Le Cesine Nature Reserve and Bosco e Paludi di Rauccio Regional Park, respectively).

Finally, the *Vicia* wild populations recorded are western-distributed and located in the Alta Murgia National Park (2 populations), Terra delle Gravine Regional Park (2 populations), and Chiese Rupestri del Materano Park (1 population).

A distribution map of the CWRs populations recorded in 2024 is shown in Figure 1.

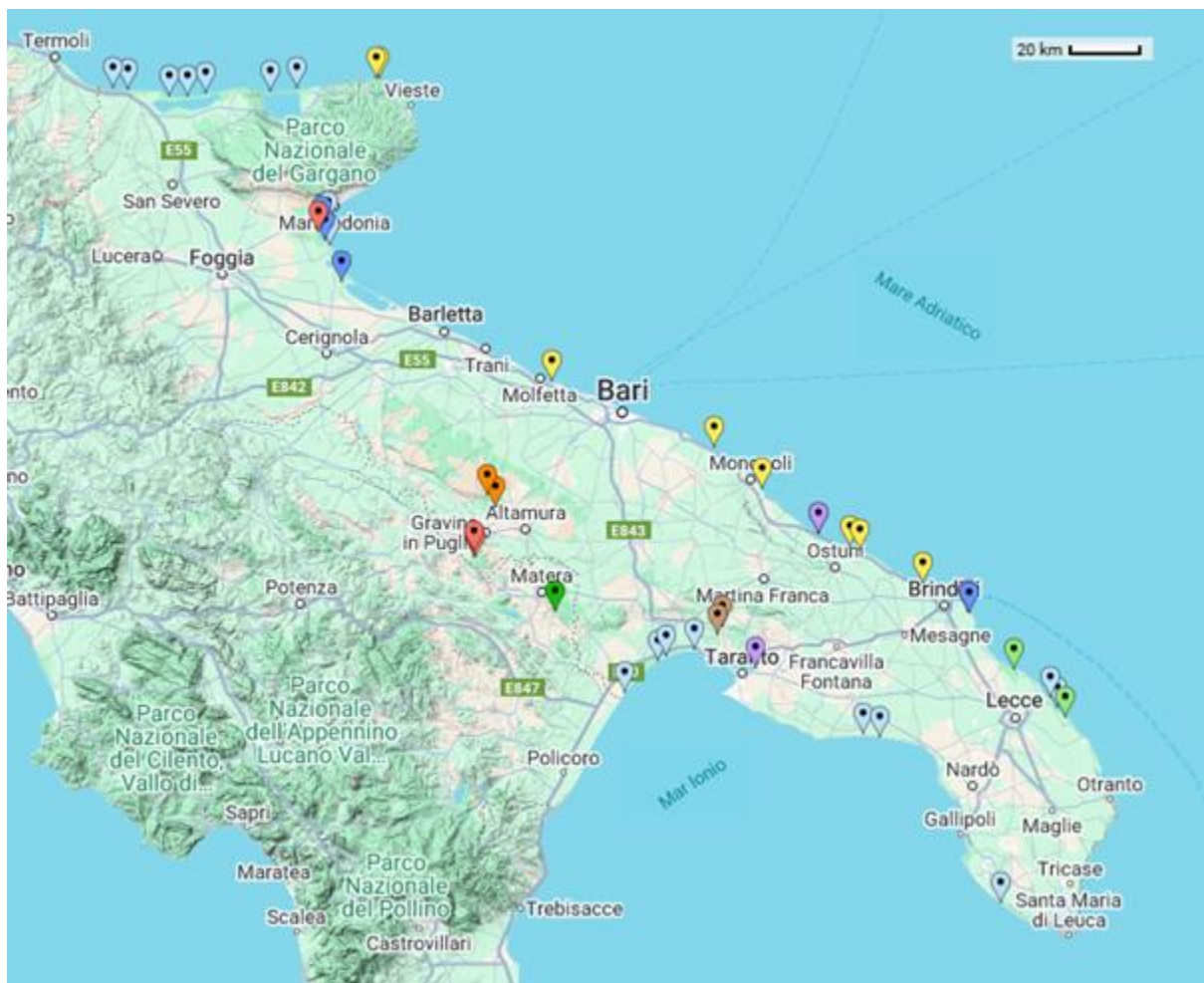


Figure 1. Distribution map of the CWRs populations recorded in 2024 in Southern Italy. Different taxa are represented by symbols different coloured on the map: *E. repens* (red), *H. marinum* (dark blue), *I. sagittate* (light green), *T. acutum* (yellow), *T. elongatum* (purple), *T. junceum* (light blue), *V. bithynica* (orange), *V. cracca* (brown), *V. sativa* (dark green).

University of Perugia - DSA3

The flora of the Majella National Park, with which the University of Perugia has begun an important collaboration, was originally collected by the park authority. The plant species list was then compared with those included in the prioritized list of Crop Wild Relatives (CWR) published by Ciancaleoni et al. (2021) to identify the priority taxa for conservation and use present in the park. The comparison revealed the presence of a total of 24 priority taxa: 16 characterised by "A" priority and 8 by "B" (Table 1). Specifically, according to the description in the aforementioned study, the "A" priority category includes native and non-native (allochthone) taxa that are wild progenitors of crops of European and national importance for food, which require specific protection and/or monitoring measures. Taxa in this category are present in at least one of the most recent National Red Lists (Orsenigo et al. 2020; Orsenigo et al. 2018; Rossi et al. 2016) or in the IUCN Red List (IUCN 2020). The "B" category, on the other hand, includes endemic or subendemic taxa that, although not necessarily requiring specific protection measures, need to be monitored due to their restricted distribution range.

Table 1. List of priority CWR taxa for conservation in Italy, categories A and B (Ciancaleoni et al. 2021), present in the Majella Park.

Taxa	Priority
<i>Allium calabrum</i> (N.Terracc.) Brullo, Pavone & Salmeri	A
<i>Allium trifoliatum</i> Cirillo	A
<i>Astragalus aquilanus</i> Anzal.	A
<i>Allium lusitanicum</i> Lam.	A
<i>Asparagus acutifolius</i> L.	A
<i>Astragalus sempervirens</i> Lam.	A
<i>Barbarea bracteosa</i> Guss.	A
<i>Barbarea vulgaris</i> R.Br. (<i>Barbarea vulgaris</i> W.T. Aiton)	A
<i>Diplotaxis tenuifolia</i> (L.) DC.	A
<i>Eruca vesicaria</i> (L.) Cav.	A
<i>Lathyrus odoratus</i> L.	A
<i>Malus sylvestris</i> (L.) Mill.	A
<i>Onobrychis viciifolia</i> Scop.	A
<i>Rorippa amphibia</i> (L.) Besser	A
<i>Rorippa sylvestris</i> (L.) Besser subsp. <i>sylvestris</i>	A
<i>Vicia altissima</i> Desf.	A
<i>Allium calabrum</i> (N. Terracc.) Brullo, Pavone et Salmeri	B
<i>Astragalus glycyphyllos</i> L.	B
<i>Brassica gravinae</i> Ten.	B
<i>Dactylis glomerata</i> L. subsp. <i>hispanica</i> (Roth) Nyman	B
<i>Festuca alfrediana</i> Foggi et Signorini subsp. <i>ferrariniana</i> Foggi, Parolo et Gr. Rossi	B
<i>Festuca cinerea</i> Vill.	B
<i>Festuca inops</i> De Not.	B
<i>Trifolium pratense</i> L. subsp. <i>semipurpureum</i> (Strobl) Pignatti	B

In collaboration with the park authority, a total of 26 populations of the species *Asparagus acutifolius* (3 populations), *Barbarea vulgaris* (2), *Brassica gravinae* (2), *Dactylis glomerata* (2), *Festuca cinerea* (1), *Festuca inops* (1), *Malus sylvestris* (2), *Onobrychis viciifolia* (7), and *Trifolium pratense* (6) were identified within the Protected Area. Additionally, the presence of the “Habitats Directive” 92/43/EEC (European Commission, 1992) and of “A” priority (Ciancaleoni et al. (2021)) species *Astragalus aquilanus* was reported outside the park, in the locality of Piano La Roma - Casoli (CH). It is worth noting that seed samples from this population are already conserved *ex situ* in the park's germplasm bank (accession numbers MSB LIFE 16A03_A, MSB LIFE17A02_A, MSB LIFE19A01_A). Currently, no active conservation measures are in place for any of the populations listed. The approximate distribution of the populations is shown in Figure 2.



Figure 2. Approximate distribution of the populations of interest taxa, Majella National Park boundaries are marked in red. Populations located close to each other may be represented by a single symbol. Different taxa are represented by symbols of different colors on the map.

CREA-FL

The CREA Research Centre for Forestry and Wood of Trento has proposed, in 2024, to integrate the EURISCO database of CWR with some new populations of two species distributed in the territory of the province of Trento, Italy. One of them, *Lactuca alpina* (L.) A.Gray (*Asteraceae*), had already been subject of the previous EURISCO updating made in 2023 (Final Technical Report on Agreement L22ROM226). The species *Allium ursinum* L. (*Alliaceae*) was chosen as a new taxon to be introduced in the EURISCO database. This edible species is traditionally harvested in the wild and its leaves are consumed fresh or boiled as a delicacy in the North-Eastern regions of Italy, as well as in other European countries (Oszmiański et al., 2013). In particular, in the North-Eastern regions of Italy, its leaves are cooked to prepare several dishes offered by local restaurants or processed to obtain an edible sauce preserved in oil which is sold by local food suppliers. With regard to conservation issues, the species is listed as “Least concern” in the IUCN Red List, but together with the annotation that “population trends in Europe are unknown”, and, consequently, the assessment of its conservation status in Europe “needs updating” (IUCN, 2025). All parts of the plant, including bulbs, are harvested in the wild in many European countries (Đurić et al., 2012), and in Poland the species has been partially protected since 2004 and is listed in the “Red list of plants and fungi in Poland” (Sobolewska et al., 2015). Since this species is also used as a medicinal plant, and is therefore extensively harvested in many European countries, it seems to be worth considering that at European level, the ongoing monitoring of exploited populations is recommended for plants that are highly collected from the wild, such as *Allium ursinum* (Allen et al., 2014).

Several natural populations of the species present in the territory of the Trentino-Alto Adige region were over harvested in the past years, as testified by the local press (Il Trentino, 2024) and are actually at risk of extinction [Fondazione Museo Civico di Rovereto, Rovereto (TN), Italy: personal communication]. *Allium ursinum* L. is not reported in the prioritized list of Crop Wild Relatives for Italy published by Ciancaleoni et al. (2021), nevertheless it is reported in the complete prioritized list of CWR/Wild Harvested Plants taxa made by Landucci et al. (2014), due to the fact it is a native taxon to Italy related to important crops. For all the aforementioned reasons, the introduction of *Allium ursinum* L. in the EURISCO database for Crop Wild Relatives seems to be extensively justified.

With regard to *Lactuca alpina* (L.) A.Gray, five new populations, with respect to the previous project of 2023, were proposed in 2024 for their inclusion in EURISCO (Table 2).

Table 2. List of proposed accessions for their inclusion in EURISCO by CREA-FL of Trento.

Species	Site (Municipality)	Protected area
<i>Lactuca alpina</i> (L.) A.Gray (Asteraceae)	Castello di Fiemme (TN)	none
<i>Lactuca alpina</i> (L.) A.Gray (Asteraceae)	Borgo Chiese (TN)	none
<i>Lactuca alpina</i> (L.) A.Gray (Asteraceae)	Passo Rolle (TN)	PNPPSM ⁽²⁾
<i>Lactuca alpina</i> (L.) A.Gray (Asteraceae)	Cles (TN)	PNAB ⁽¹⁾
<i>Lactuca alpina</i> (L.) A.Gray (Asteraceae)	Zambana (TN)	none
<i>Allium ursinum</i> L. (Alliaceae)	Brentonico (TN)	none
<i>Allium ursinum</i> L. (Alliaceae)	Storo (TN)	none
<i>Allium ursinum</i> L. (Alliaceae)	Strembo (TN)	PNAB ⁽¹⁾
<i>Allium ursinum</i> L. (Alliaceae)	Samone (TN)	none
<i>Allium ursinum</i> L. (Alliaceae)	Monte Rovere (TN)	none

⁽¹⁾ PNAB: Parco Naturale Adamello Brenta, Strembo (TN), Italy

⁽²⁾ PNPPSM: Parco Naturale Paneveggio Pale di San Martino, Primiero San Martino di Castrozza (TN), Italy

All these five populations are located in the territory of the Province of Trento. The information related to these populations derives from CREA-FL internal database: some of these populations were indeed subject of investigation in the past years (Fusani et al., 2010). Among them, two populations, namely Passo Rolle and Cles, were included in the territory of a protected area, respectively the Parco Naturale Paneveggio Pale di San Martino, a regional protected area established and regulated by the Autonomous Province of Trento (PNPPSM; <https://parcopan.org/>), and the Parco Naturale Adamello Brenta (PNAB; <https://www.pnab.it/>), this last being already described in the previous report of this project (Final Technical Report on Agreement L22ROM226). These *L. alpina* populations were monitored by CREA-FL in the past years, in all cases before 2012, and an update of their monitoring should be needed to verify their consistency. The distribution of *L. alpina* populations is illustrated in Figure 3.

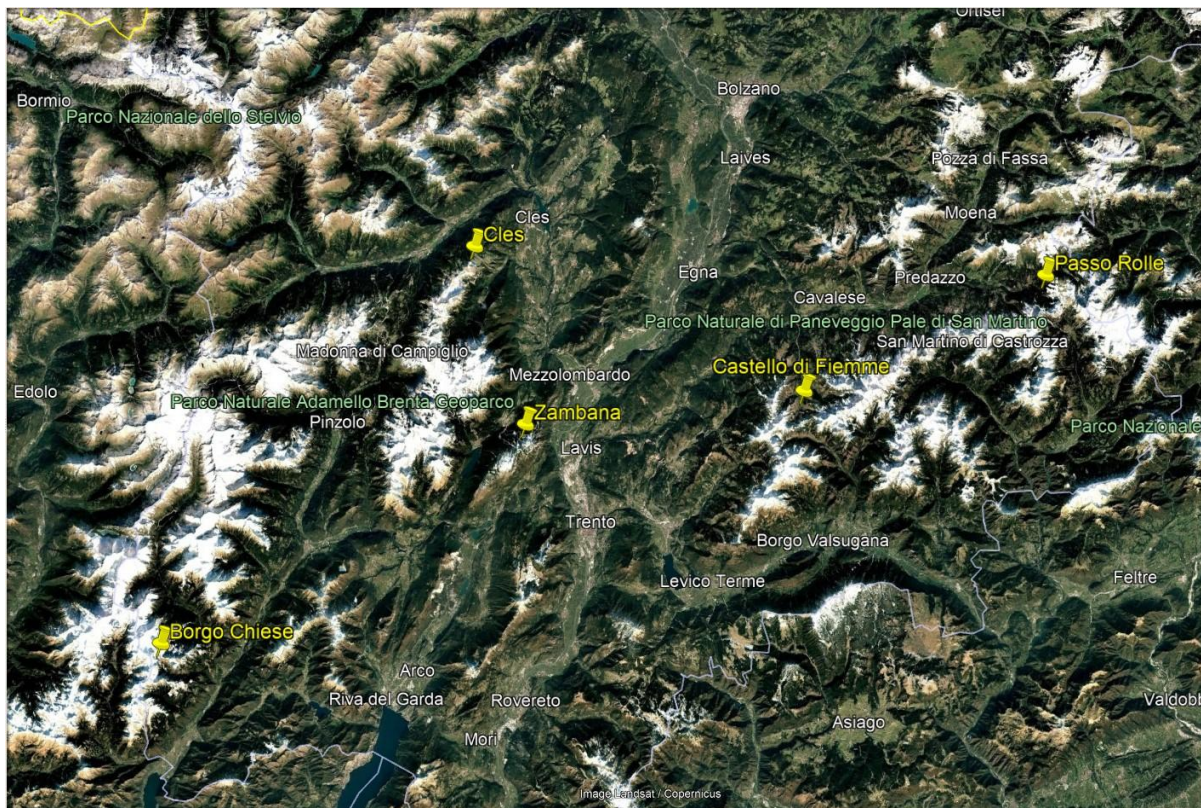


Figure 3. Growing sites of *Lactuca alpina* populations proposed for inclusion in EURISCO CWR database.

With regard to *Allium ursinum* L., the five populations proposed for inclusion in EURISCO are listed in Table 2 as well. The information related to one of them, namely Brentonico, derives from CREA-FL internal database: the last monitoring of this population dates back to 2022, and the same population is actively conserved *ex situ* by CREA-FL at its headquarters in Trento, both *in vivo* and as seeds. The information on the remaining populations were kindly provided by the Fondazione Museo Civico di Rovereto (FMCR; <https://www.fondazionemcr.it/>). Among the five populations, just one of them, namely Strembo, is included in the territory of a protected area, that is the Parco Naturale Adamello Brenta (PNAB; <https://www.pnab.it/>). The distribution of *A. ursinum* populations is illustrated in Figure 4.

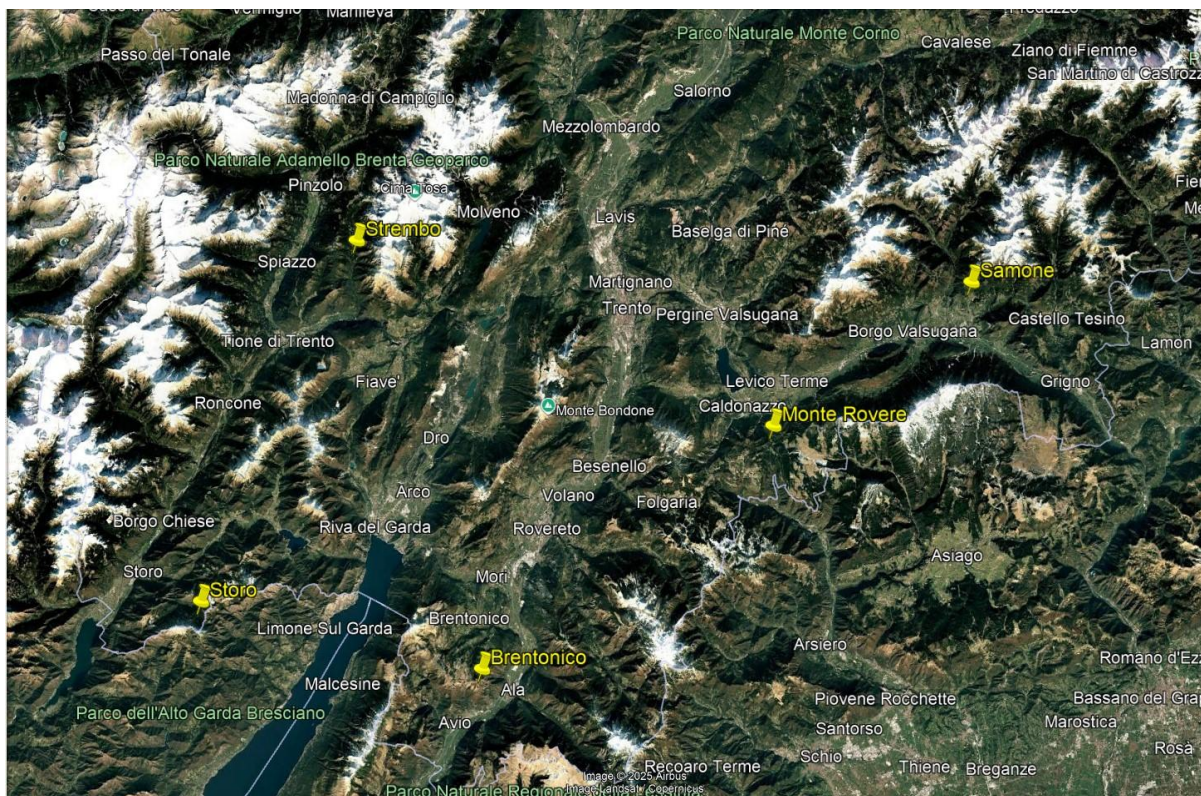


Figure 4. Growing sites of *Allium ursinum* populations proposed for inclusion in EURISCO CWR database.

Concerning the guidelines for the access to *in situ* material of the populations of *L. alpina* and *A. ursinum* previously described, it is worth remembering that an agreement with the Parco Naturale Adamello Brenta, whose territory includes one population of both species, respectively, was already achieved in 2023. This agreement establishes the collaboration between the same institution and CREA for the initiatives organized within the scope of this project with regard to the population of *L. alpina* already included in the EURISCO CWR database in 2023. Hopefully, the same agreement could be extended to the two new populations growing in the territory of the same protected area here described. By the same way, an agreement could be reached with the other institution, the Parco Naturale Paneveggio Pale di San Martino, where one more *L. alpina* population here described is growing.

Nevertheless, with the aim to obtain access to the plant genetic resources here described, that is the proposed population for their inclusion in EURISCO, the Protocol hereafter described must be followed. Indeed, with the aim of collecting the propagation material, that is the seeds, of every plant species growing wild in the territory of the province of Trento, there is the need to obtain permission, in conformity to the provincial laws for the protection of local flora which are in force (LP 11/2007 and DPP 26 October 2009 n. 23-25/Leg). According to these regulations, a request for the collection of any part of plant, including seeds, must be addressed to the local authority, that is one of the 16 “Comunità di Valle” (“Valley Communities”, <https://www.provincia.tn.it/Amministrazione/Comuni-e-Comunita-di-valle>) in which the territory of the Province of Trento is subdivided, explaining the motivation of harvest. Furthermore, if the harvest is foreseen within the territory of a Protected Area, a request must be addressed also to the Institution in charge, in our case to the two aforementioned Natural Parks. The agreement obtained from the Natural Park is not sufficient alone to obtain permission to harvest.

It is worth considering that, at the moment of writing this report, a regulation for the collection of Medicinal and Aromatic Plants (MAPs) is being defined at national level, as a consequence of the administrative order Ministerial Decree DM 21th January 2022, promulgated by the Italian Ministry of Agricultural, Food and Forestry Policies, now Ministry of Agriculture, Food Sovereignty and Forestry

(https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2022-05-18&atto.codiceRedazionale=22A02923&elenco30giorni=true). Even if this regulation is specifically addressed to MAPs, it will represent the first national law aimed at regulating the collection of plants from *in situ* conditions; currently, indeed, the regulation is delegated to regional authorities, as in the case of the Province of Trento. Based on the new regulation, attending a professional training course for the collection of plants will be necessary to obtain permission to harvest any part of plants, seeds included. As far as we know, the setting up of these training courses is in progress in several regions of Italy, and in the province of Trento courses have already started.

Conclusions

As part of the project “Extension of EURISCO for Crop Wild Relatives (CWR) *in situ* data and preparation of pilot countries' data sets”, the Italian partners have identified and added to the Italian CWR inventory in EURISCO 97 populations in the prioritized list of CWR (Ciancaleoni et al. 2021) or part of the gene pool of important crop species and a valuable source of useful genetic diversity, which are “in principle available” in the identified locations at the time of writing this Report. We have now a total of 97 populations belonging to 18 genera (*Allium*, *Asparagus*, *Astragalus*, *Barbarea*, *Brassica*, *Dactylis*, *Elymus*, *Festuca*, *Hordeum*, *Ipomoea*, *Lactuca*, *Malus*, *Onobrychis*, *Secale*, *Thinopyrum*, *Trifolium*, *Triticum*, *Vicia*) represented by 30 species and/or subspecies.

All populations are georeferenced and uploaded, along with available Passport Data, in EURISCO. To this end, all involved Protected Areas and other sites have been included in the FAO WIEWS System.

An agreement has been signed with the Adamello Brenta Natural Park on access to CWR populations and guidelines for collecting material are described for the territory of the Province of Trento. These documents could be taken as models to be proposed to managers of other Institutions/Parks to get access to CWR *in situ* populations, also in base of the definition of the regulation established under Ministerial Decree DM 21th January 2022.

The project "Extension of EURISCO for Crop Wild Relatives (CWR) *in situ* data and preparation of datasets of pilot countries' data sets" has made significant progress in the conservation and accessibility of CWR in Italy. Through extensive data collection, population monitoring and collaboration with key Institutions, the project has identified priority taxa and recorded numerous wild populations in various Protected and non-protected Areas. These activities can be extended in the future both from a geographical and a taxonomic point of view.

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