Ethnobotanical survey in the Graecanic Area of Reggio Calabria (Southern Italy): a treasure chest of biodiversity and traditions at risk of extinction

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Research

Abstract

Background: In many rural areas of the Mediterranean, spontaneous plants play an essential role in everyday sustenance. However, knowledge of the use of spontaneous plants is gradually disappearing owing to socioeconomic changes that do not allow the enhancement of ethnobotanical traditions. The aim of this work was to collect, preserve, and enhance the ethnobotanical knowledge of the Graecanic Area of Reggio Calabria (Southern Italy), a marginal area rich in traditions and ethnobotanical knowledge that are at risk of extinction.

Methods: Data related to the botanical species known and used by the Graecanic populations were collected and analysed.

Results: In total, 632 records concerning current and past ethnobotanical use were gathered based on interviews with 24 informants. A total of 157 taxa belonging to 50 different families were identified, along with 22 subspecies and 3 genera utilised for ethnobotanical purposes. The most frequently mentioned families were Asteraceae (105 interviews and 26 taxa), Lamiaceae (69 interviews and 12 taxa), and Apiaceae (56 interviews and 8 taxa). The most frequent use was related to nutrition (263 interviews and 83 taxa). The most used taxon was *Clinopodium nepeta* (L.) Kuntze subsp. *nepeta*, known as **nipiteddha** in dialect, cited by 14 informants for 5 different uses and totalling 34 interviews, showing high values for CV (0.72) and RFC (0.58).

Conclusions: These findings highlight the significance of ethnobotanical knowledge in preserving cultural traditions and promoting sustainable local practices, while also identifying potential new quality products.

Keywords: Traditional Knowledge; Wild Plants; Cultural Heritage; Food Plants; Medicinal Plants; Wild Resources.

Background

Cultural practices involving the utilization of plants for food, medicine, and rituals have long been a cornerstone of human societies, underscoring the necessity for the preservation of traditional knowledge and fostering sustainable resource management (Balick and Cox 2020, Cruz-Garcia 2012). These practices contribute not only to biodiversity conservation but

also to environmental sustainability and food security (Kumar *et al.* 2021, Pei *et al.* 2009, Shisanya 2017). Furthermore, the innovative potential of traditional plant uses offers valuable insights for sustainable agriculture and natural resource management, promoting ecosystem resilience and safeguarding biodiversity (Ali *et al.* 2024, Caneva *et al.* 2013, Ulian *et al.* 2020). Ancient plant varieties are noteworthy for their contributions to both sustainability and human health, as they frequently exhibit distinctive agronomic and nutritional advantages (Abenavoli *et al.* 2021, Perrino 2022).

Documenting and researching ethnobotanical knowledge may also lead to the discovery of new chemical compounds useful for drug development and therapeutic products (Domingo-Fernández *et al.* 2023, Chaachouay & Zidane 2024, Süntar 2020). Many plants traditionally used in folk medicine contain active compounds with potential applications in modern medicine (Jamal 2023, Liu *et al.* 2023, Savo *et al.* 2019). These ethnobotanical practices constitute an invaluable intangible heritage, critical for preserving cultural diversity, advancing the sustainable development of local communities and discover new plant uses (Bhattacharya 2024, Caneva *et al.* 2013, Novais *et al.* 2004, Sõukand *et al.* 2024). Wild plants continue to be used today, not merely as a continuation of past traditions but also for their significant nutraceutical and dietary benefits (Khan *et al.* 2024, Pardo de Santayana *et al.* 2010, Sicari *et al.* 2021). Wild vegetables are prized for their high mineral and vitamin content (Ansari *et al.* 2005, Mahmoud *et al.* 2024, Pardo-de-Santayana *et al.* 2007).

Ethnobotanical research holds relevance in Mediterranean regions, where the rich local flora is closely tied to the traditional practices of indigenous communities (Caruso 2022, Heinrich *et al.* 2009, Otero *et al.* 2013, Plieninger *et al.* 2023). In the Mediterranean context, the use of spontaneous plants has been extensively documented in various ethnobotanical studies, highlighting the wealth of traditional knowledge passed down through generations (Hadjichambis *et al.* 2008, Rivera *et al.* 2006, Savo *et al.* 2019). In many rural Mediterranean communities, wild plants are used not only for daily nutrition but also as medicinal remedies for a range of human and animal ailments, as well as for cultural and religious practices (Azaizeh *et al.* 2006, Castagna *et al.* 2021, Pardo-De-Santayana *et al.* 2005, Passalacqua *et al.* 2006, Rivera *et al.* 2005).

Italy has a long and very rich ethnobotanical tradition (Pieroni & Giusti 2009, Motti *et al.* 2019, Motti 2021). Calabria, located in the far south of Italy, is a region rich in biodiversity and ancient cultural heritage that reflect the millennia-long history of its inhabitants and their territories (Gentile *et al.* 2022, Musarella *et al.* 2019, 2024, Passalacqua *et al.* 2006, 2007, Patti *et al.* 2024c,d). However, this traditional knowledge is gradually fading due to socioeconomic, landscape and cultural changes affecting the region (Maruca *et al.* 2019, Spampinato *et al.* 2022). Previous studies have shown that traditional plant-related practices, while still prevalent, are steadily vanishing as younger generations lose interest (Idolo *et al.* 2010, Kalle & Sõukand 2016, Kidane & Kejela 2021, Pawera *et al.* 2020). Particularly significant from an ethnobotanical perspective are the marginal areas of Southern Italy, where cultural traditions are closely tied to the history of human settlement (Alhajj Ali *et al*. 2024). Among these areas is the Graecanic Area of Calabria, located on the Ionian side of the Metropolitan City of Reggio Calabria. This territory is distinguished by its strong cultural and linguistic identity, with roots dating back to ancient Magna Graecia (8th century BC). During the Magna Graecia period, Greek culture dominated the entire Eastern Mediterranean. Today, the Graecanic Area of Reggio Calabria is concentrated in the Aspromonte mountains at the southernmost tip of the Italian Peninsula (Calabria region) and in Salento, located in the Puglia region (Pieroni & Cattero 2019). The Greek ethnic communities currently residing in Southern Italy are a remnant of the stable and autonomous Greek colonial settlements founded in antiquity. When the Greeks established these colonies, they brought with them traditional crops such as olives and grapes (Dalby 1998, Lombardo 1995, Sallares 1991), which was a common practice during migrations and trade exchanges, as populations often transported their own crops (Prance 2005).

The Graecanic communities have developed a deep symbiotic relationship with their local flora, utilizing a wide variety of wild plants for food, medicine, veterinary care, craftsmanship, and rituals (Pieroni & Cattero 2019).

At present, pastoralism and subsistence farming remain traditional means of livelihood in the region. However, economic transformations, emigration, and natural disasters—such as the devastating floods and earthquakes of 1951 and 1971—have led to a gradual abandonment of these activities and a sharp decline in population. Over time, new coastal settlements, known as "*la marina*", have emerged, prompting many residents to leave the mountain villages and relocate there (Kish 1953). Despite these changes, the gathering of wild plants continues to play an important role in the traditional diet and remains a vital element of Graecanic culture.

The inhabitants of the Graecanic Area, unlike the surrounding Italian population, are characterized by their use of the ancient *"Grecanico*" language (Martino 1980, Spampinato *et al.* 2017), as well as a distinct culture and history as an ethnic and linguistic minority (Alessio 1939, Rohlfs 1974). This distinction is largely due to the geographical isolation of the villages and

the marginality of the territory, which has helped preserve many aspects of their historical, cultural and landscape heritage (Condemi *et al.* 1999, Spampinato *et al.* 2022). It preserves a valuable heritage of ethnobotanical knowledge but is increasingly threatened by the forces of modernization and cultural homogenization (Nebel *et al.* 2006, Nebel & Heinrich 2009, 2010).

The primary aim of this study is to collect, preserve, and promote the ethnobotanical knowledge of the Graecanic Area of Reggio Calabria (GARC), documenting the traditional uses of wild plants and assessing their potential for the development of new quality products, thereby ensuring that the knowledge and traditions linked to the local flora are not lost.

Materials and Methods

Study area

The study area for this ethnobotanical investigation is the Graecanic Area situated on the Ionian side of the Metropolitan City of Reggio Calabria, in Southern Calabria (Italy) (Fig. 1). This region is distinguished by a strong cultural and anthropological identity that has withstood various global changes for centuries (Nebel *et al.* 2006).

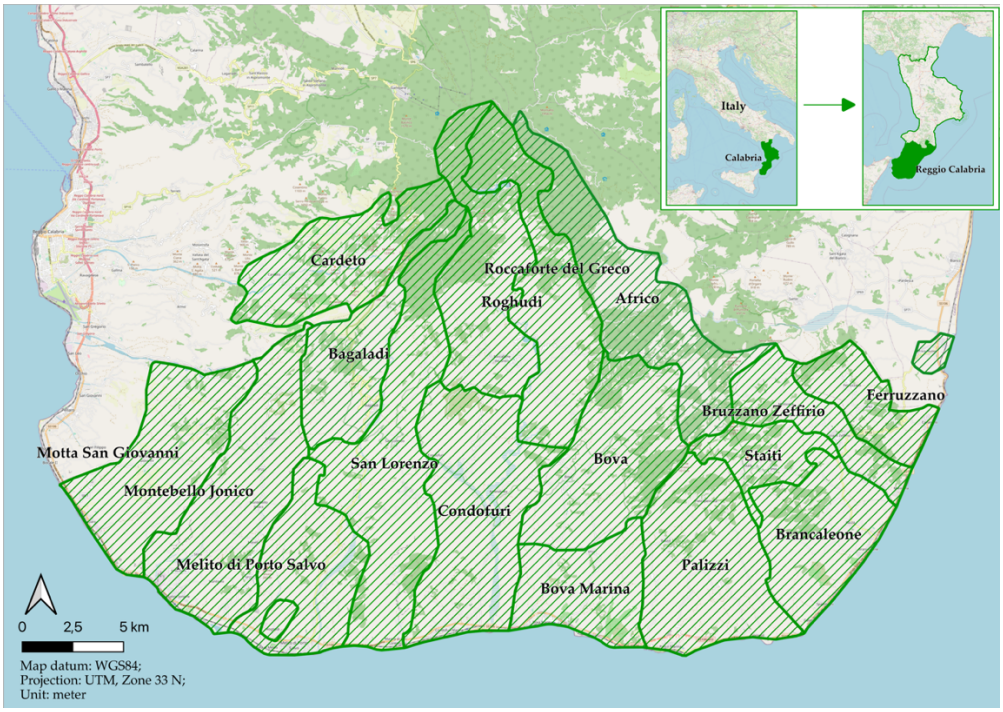

Figure 1. Highlight in green are the borders of the municipalities belonging to the Graecanic area of the Metropolitan City of Reggio Calabria (Calabria, Southern Italy): Africo, Bagaladi, Bova, Bova Marina, Brancaleone, Bruzzano Zeffirio, Cardeto, Condofuri, Ferruzzano, Melito di Porto Salvo, Montebello Jonico, Motta San Giovanni, Palizzi, Roccaforte del Greco, Roghudi, San Lorenzo, Staiti.

Ethnobotanical survey

Ethnobotanical information for the GARC was collected during 2022 and 2023 through semi-structured field interviews with residents. We focused on individuals living in rural areas, relatively insulated from the effects of globalization, who continue to practice the traditional use of wild plants and are not influenced by personal studies or mass media, relying solely on their cultural heritage. Additional informants were identified through word of mouth and recommendations from local agricultural businesses.

The interviews were conducted in compliance with the Ethical Code of the International Society of Ethnobiology (ISE), which promotes ethical practices and equitable relationships (ISE 2006). Following the methodology of Musarella *et al.* (2019), interviews were held in both Italian and the local dialect, allowing respondents to express themselves freely without feeling judged. Information was gathered on plant taxa and their parts used, local dialect names, frequency of use, and methods of preparation and purposes. During fieldwork, we also collected plant samples and took photographs to ensure accurate species identification.

In the laboratory, collected samples were dried by pressing them between sheets of newspaper and placing them in a heater at 42 °C. Once dried, the specimens were catalogued into a herbarium and identified using *"Flora d'Italia"* (Pignatti *et al.* 2017a,b, 2018, 2019). The samples were subsequently deposited at the Herbarium of the Mediterranean University of Reggio Calabria (REGGIO), as per Thiers (2024). For updated scientific nomenclature, we referred to Bartolucci *et al.* (2024) for native species and Galasso *et al.* (2024) for allochthonous taxa. The origin of the allochthonous taxa was verified according to Galasso *et al.* (2024).

The life form of the taxa was classified following Raunkiaer's life-form criteria (Raunkiaer 1934), while chorological types were determined based on Pignatti (1982). For the chorological categories "Cryptogenic" and "Allochthonous", the glossary of Pyšek *et al.* (2009) was consulted.

Ethnobotanical data were stored in a database using Microsoft Access®, with a digital copy containing all fields from the ethnobotanical interview forms. The results were exported to Microsoft Excel® for statistical analysis. Medicinal uses were categorized into nine distinct groups of diseases and disorders according to the classification system by Cook (1995).

Data analysis

Quantitative indices were calculated to statistically analyse the significance of each taxon or family within the overall data set, with the aim of highlighting their ethnobotanical value. To quantify the importance of the taxa in the study area, we applied the following indices:

Cultural Importance Index (CI), in accordance with Tardío and Pardo-de-Santayana (2008) and Whitney *et al.* (2018), which calculates the cultural significance of plants using the formula:

$$CI = \sum_{u=u_i}^{u_{NC}} \sum_{i=i_1}^{i_N} UR_{ui}/_N \quad (1)$$

where:
-UR_{ui} is the number of use categories for each taxon;
-N is the total number of informants.

Cultural Value (CV), according to Reyes-García *et al.* (2006), calculates the cultural value of taxa as:

$$CV = \frac{U_s}{U_{tot}} * \frac{FC}{N} * \left[\sum_{u=u_1}^{u_{NC}} \sum_{i=i_1}^{i_N} UR_{ui}/_N \right] \quad (2)$$

where:
-U_s is the number of uses for taxon 's';
-U_{tot} is the total number of potential uses considered in the study;
-FC is the number of informants mentioning the taxon;
-N is the total number of informants;
-UR_{ui} is the sum of all Use Reports (UR) for the taxon, divided by N.

Family Importance Value (FIV) according to Vitalini *et al.* (2013), represents the frequency with which a botanical family is mentioned by informants, calculated as:

$$FIV = \frac{FC_{(family)}}{N} \quad (3)$$

where:
-FC (family) is the number of informants citing a given family;
-N is the total number of informants.

Frequency of Citation (FC) according to Prance *et al.* (1987), calculates how frequently a taxon is cited by informants.
Plant Part Value (PPV) according to Chaachouay *et al.* (2019), highlights the most used plant part in interviews using the formula:

$$PPV = \frac{RU_{plant\ part}}{RU} \quad (4)$$

where:
-$RU_{plant\ part}$ is the sum of records for that plant part;
-RU is the total numbers of records for all plant parts.

Relative Frequency of Citation (RFC), according to Tardío and Pardo-de-Santayana (2008), functions similarly to FC but is normalized to the total number of informants, producing a value between 0 and 1:

$$RFC = \frac{FC}{N} = \frac{\sum_{i=i}^{i_N} UR_i}{N} \quad (5)$$

where:
-FC is the number of informants citing the taxon;
- N is the total number of informants.
Relative Importance Index (RI), also from Tardío and Pardo-de-Santayana (2008), measures the relative importance of each taxon as:

$$RI = \frac{RFC_{(max)} + RNU_{(max)}}{2} \quad (6)$$

where:
-$RFC_{(max)}$ is the maximum RFC value, calculated by dividing FC by the maximum FC across all taxa;
-$RNU_{(max)}$ is the maximum value of the Relative Number of Use Categories, calculated by dividing the number of uses for the taxon by the maximum number of uses across all taxa.
Use Value (UV), according to Tardío and Pardo-de-Santayana (2008), is calculated as:

$$UV = \sum_{i=i}^{i_N} \sum_{u=u_i}^{u_{NC}} UR_{iu}/_N \quad (7)$$

where:
-UR_{ui} represents the number of use categories for each taxon;
-N is the total number of informants.

While the formulas for CI and UV appear similar, the data are grouped differently. For CI, Use Reports (URs) are first aggregated by use categories (i.e., the number of informants citing each use) and then summed. For UV, URs are first aggregated by informants (i.e., the number of uses cited by each informant) and then summed.

The indices CI, CV, RI, and UV were calculated using R software (v2024.04.2+764) (R Core Team 2021) with the EthnobotanyR package (v0.1.9) (Whitney 2022) following the guidelines of Tardío and Pardo-de-Santayana (2008). The indices FC, FIV, PPV, and RFC were calculated using Microsoft Excel®.

Additionally, a chord diagram was generated using the "EthnoChord" function within the EthnobotanyR package, which visualizes the medicinal information collected and highlights the most relevant species (Haq *et al.* 2022, Whitney *et al.* 2018).

Results

A total of 632 records documenting current and past ethnobotanical uses within the GARC were collected. Twenty-four individuals were interviewed (informants), comprising 15 men (63%) and 9 women (37%), ranging from 21 and 82 years of age. The informants were grouped into three age categories, and their ethnobotanical knowledge was assessed by comparing the number of interviews conducted and the taxa mentioned (Fig. 2). Notably, most informants were aged 61-82 years (19 individuals), contributing the highest number of interviews (515) and cited taxa (141).

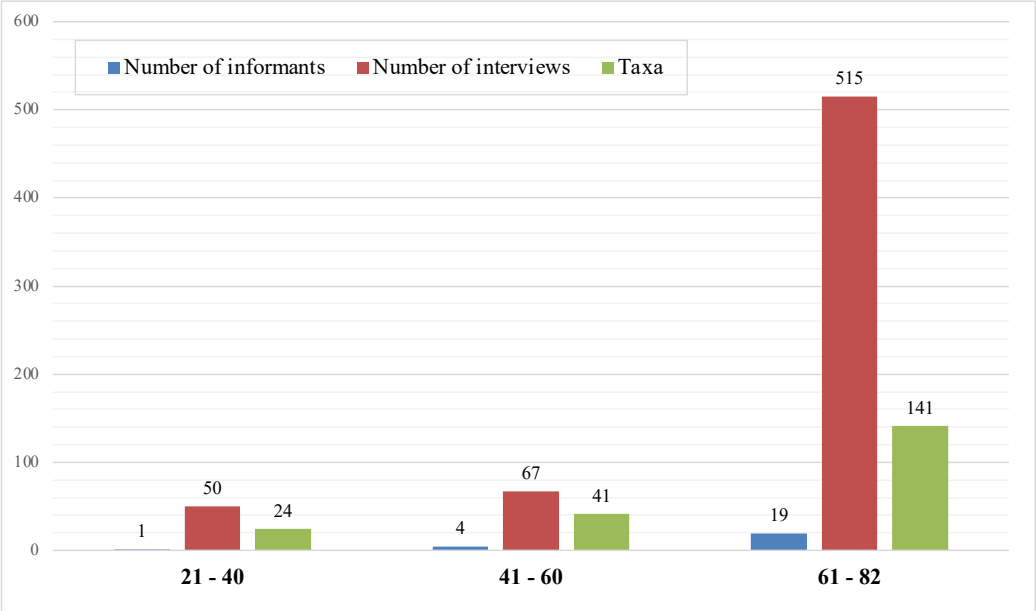

Figure 1. Distribution of the informants and their ethnobotanical knowledge in three age groups: 21-40, 41-60 and 61-82. The relationship between age and ethnobotanical knowledge was established through the number of interviews and the number of taxa.

Although most of the knowledge comes from older adults, it was noted that younger individuals, such as a 21-year-old, still contributed valuable insights, with 50 interviews discussing 24 different taxa.
Informants were also categorized by municipality of residence (Tab. 1). The municipality of Condofuri had the highest number of informants (11) and interviews (253), followed by Bova with 4 informants and 134 interviews, and Bruzzano Zeffirio with 3 informants and 78 interviews.

Table 1. Number of interviews and informants by municipality within the Graecanic Area of Reggio Calabria (Southern Italy).

	Municipalities	N° of interviews	N° of informants
1	Bova	135	4
2	Bova Marina	47	3
3	Bruzzano Zeffirio	78	3
4	Condofuri	253	11
5	San Lorenzo	58	1
6	Staiti	61	3
TOT	**6**	**632**	**24**

In total, 157 taxa from 50 different families were identified, along with 22 subspecies and 3 genera used for ethnobotanical purposes. Table 2 lists the families, the number of taxa, the number of informants, and the Family Importance Value (FIV). The most cited families were Asteraceae (105 interviews, 26 taxa), Lamiaceae (69 interviews, 12 taxa), and Apiaceae (56 interviews, 8 taxa).

Table 2. List of the all the botanical families sorted in alphabetical order. For each family, the following information is provided: the number of interviews (out of a total of 632), the number of taxa (out of a total of 157), the Frequency of Citation (FC), and the Family Importance Value (FIV).

N°	Family	N° of interviews	N° of taxa	FC (family)	FIV (%)
1	Acanthaceae	1	1	1	4.17
2	Amaranthaceae	15	2	9	37.50
3	Anacardiaceae	23	2	8	33.33
4	Apiaceae	56	8	15	62.50
5	Apocynaceae	4	1	3	12.50
6	Araceae	3	2	2	8.33
7	Asparagaceae	15	6	10	41.67

8	Asphodelaceae	9	2	6	25.00
9	Asteraceae	105	26	21	87.50
10	Boraginaceae	15	3	9	37.50
11	Brassicaceae	14	8	10	41.67
12	Cactaceae	23	1	7	29.17
13	Capparaceae	6	1	4	16.67
14	Cistaceae	2	1	2	8.33
15	Crassulaceae	1	1	1	4.17
16	Cucurbitaceae	2	2	2	8.33
17	Dipsacaceae	1	1	1	4.17
18	Ericaceae	8	2	6	25.00
19	Euphorbiaceae	5	2	4	16.67
20	Fabaceae	51	14	18	75.00
21	Fagaceae	16	4	8	33.33
22	Hypericaceae	4	1	3	12.50
23	Iridaceae	1	1	1	4.17
24	Juglandaceae	3	1	2	8.33
25	Juncaceae	2	1	2	8.33
26	Lamiaceae	69	12	17	70.83
27	Lauraceae	23	1	11	45.83
28	Linaceae	3	2	2	8.33
29	Lythraceae	3	1	3	12.50
30	Malvaceae	6	2	5	20.83
31	Moraceae	13	2	8	33.33
32	Myrtaceae	4	1	2	8.33
33	Oleaceae	13	3	8	33.33
34	Orobanchaceae	1	1	1	4.17
35	Oxalidaceae	1	1	1	4.17
36	Papaveraceae	1	1	1	4.17
37	Pinaceae	1	1	1	4.17
38	Poaceae	33	10	14	58.33
39	Polygonaceae	6	3	5	20.83
40	Portulacaceae	4	1	4	16.67
41	Resedaceae	1	1	1	4.17
42	Rosaceae	26	6	12	50.00
43	Rubiaceae	1	1	1	4.17
44	Rutaceae	10	3	5	20.83
45	Scrophulariaceae	6	2	4	16.67
46	Solanaceae	3	3	2	8.33
47	Tamaricacae	1	1	1	4.17
48	Typhaceae	7	1	3	12.50
49	Urticaceae	10	2	9	37.50
50	Vitaceae	1	1	1	4.17
TOT	**50**	**632**	**157**	**-**	**-**

The FIV index confirms the following as the most used families: Asteraceae (87.50%), Lamiaceae (70.83%), and Apiaceae (62.50%).

Figure 3 presents the life forms spectrum of the taxa, showing that Hemicryptophytes (33%), Chamaephytes (31%), and Therophytes (15%) were the most frequent, consistent with previous studies from the Tyrrhenian side of Calabria (Patti *et al.* 2024c).

The chorological spectrum (Fig. 4) shows a predominance of Mediterranean chorotypes *sensu lato* (51%), with further division into Stenomediterranean (30%) and Eurimediterranean (21%). Other significant chorotypes include Eurasian (19%) and a smaller percentage of cultivated (10%), alien (4%), and endemic plants (4%).

Regarding the origin of the taxa (Fig. 5), the native ones accounted for the majority (81%), while alien (16%) and cryptogenic ones (3%) were also detected.

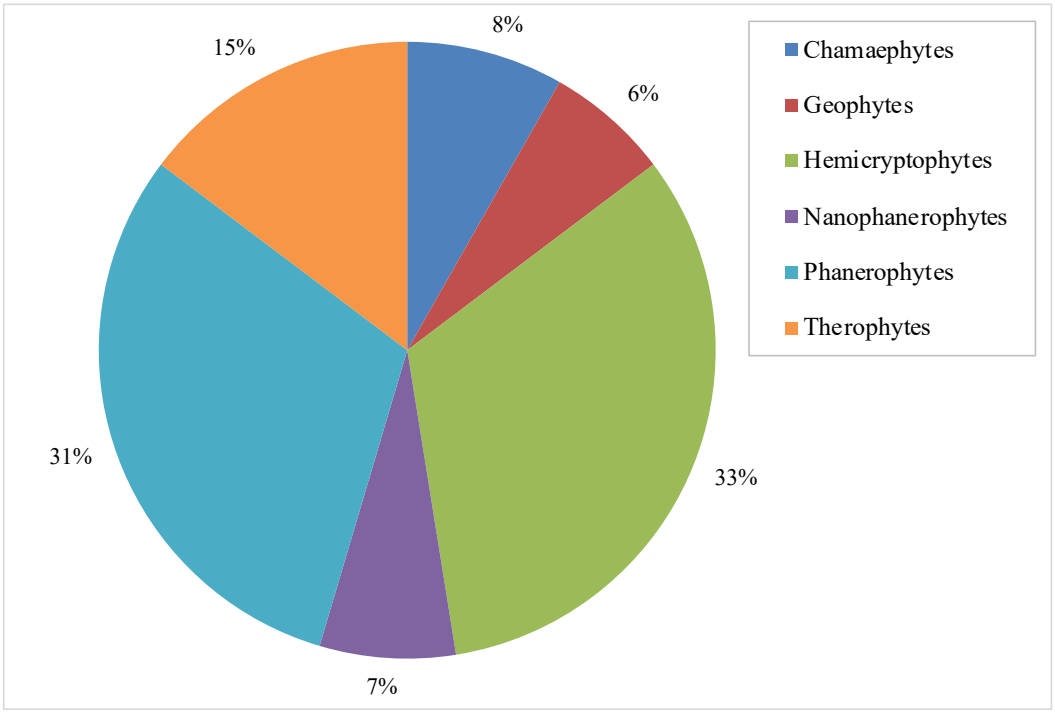

Figure 2. Life forms spectrum of the taxa recorded during the interviews detected the Graecanic Area of Reggio Calabria (Southern Italy) according to Raunkiaer (1934).

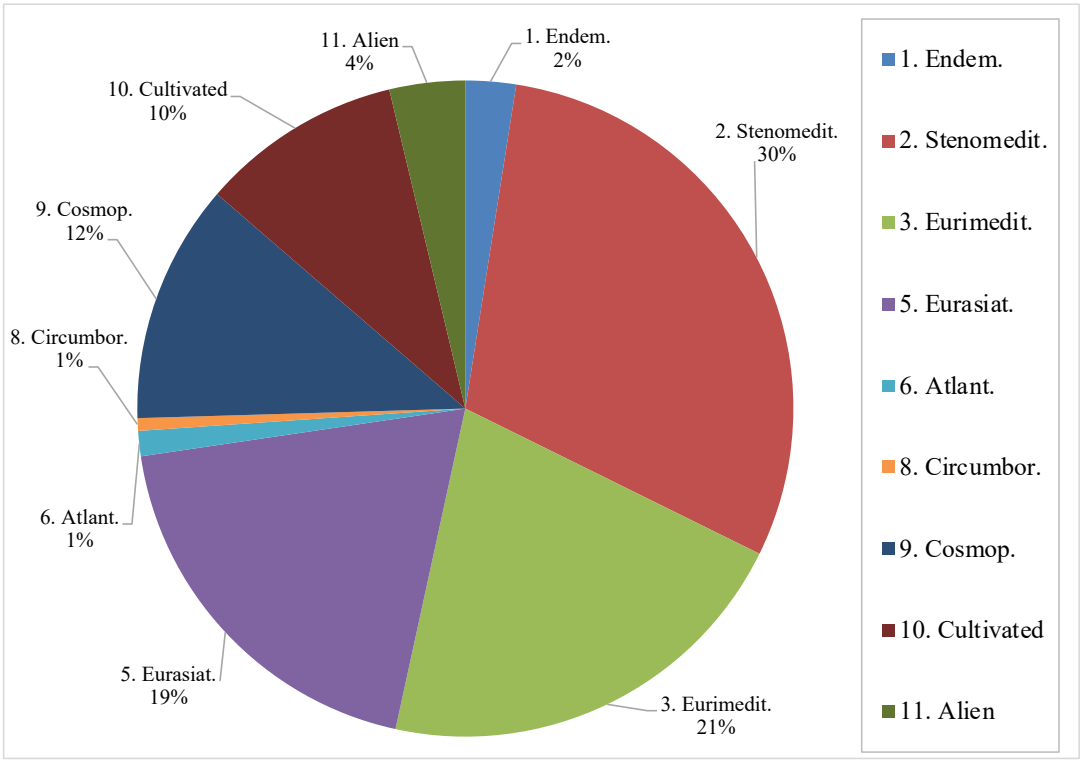

Figure 3. Chorological spectrum of the taxa recorded from the interviews detected the Graecanic Area of Reggio Calabria (Southern Italy) according to Pignatti (1982).

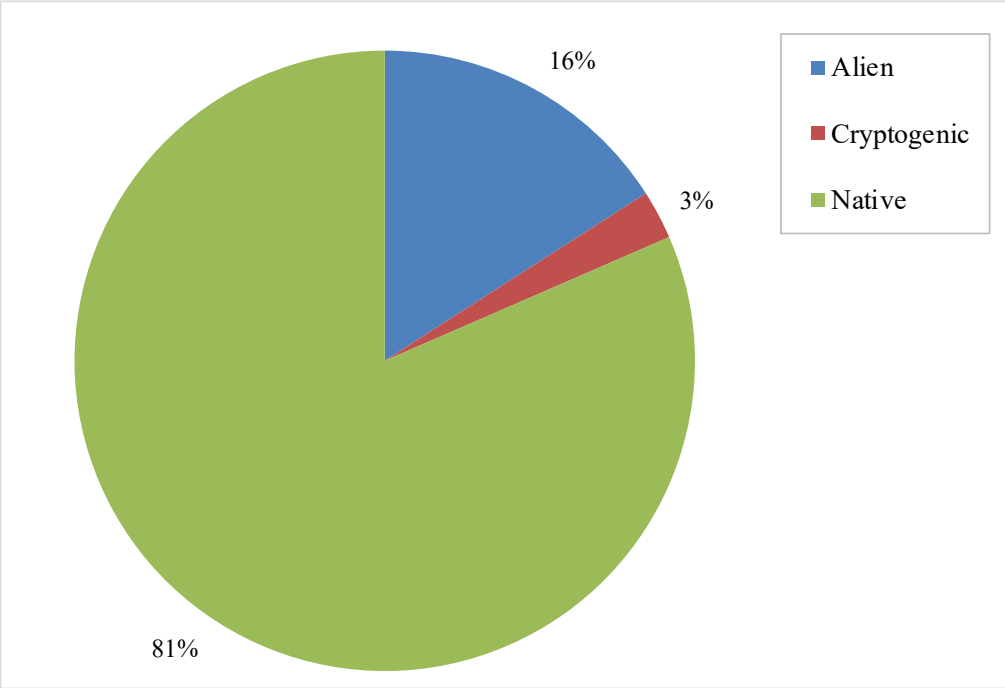

Figure 4. Origin of ethnobotanical taxa detected within the Graecanic Area of Reggio Calabria (Southern Italy). The origin is in accordance with Galasso *et al*. (2024).

Plant parts used were recorded during interviews (Fig. 6). The most used parts were leaves (213 interviews), fruits (109), and stems (107).

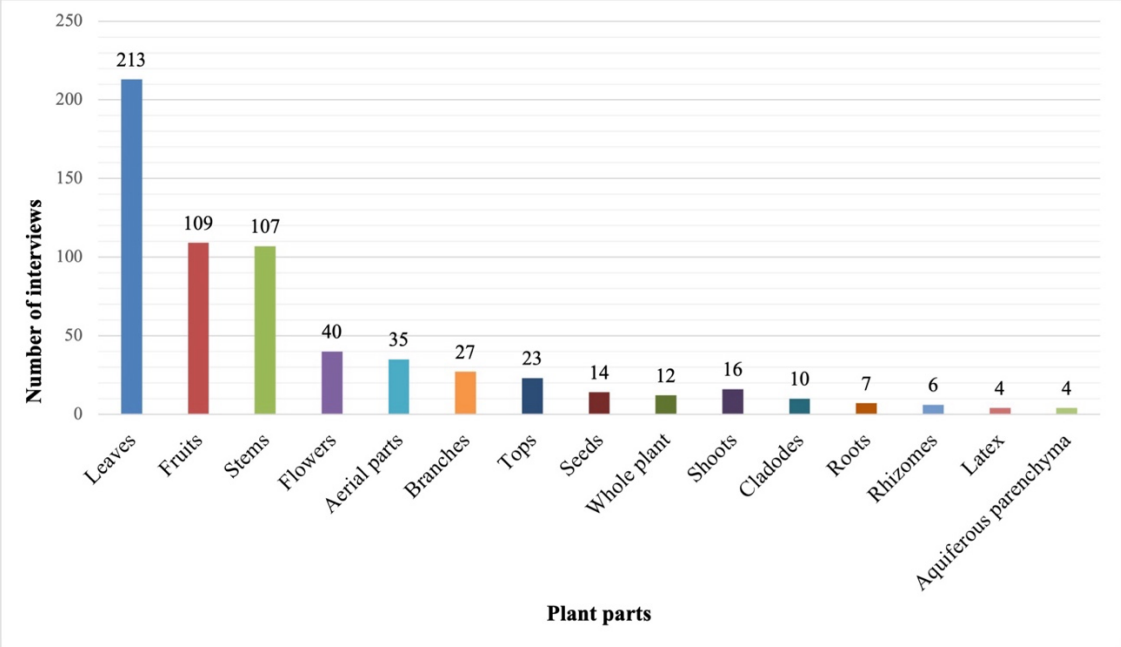

Figure 5. Plant parts most used for ethnobotanical purposes within the Graecanic Area of Reggio Calabria (Southern Italy).

The Plant Part Value (PPV) index (Tab. 3) confirmed the most used plant parts, with leaves having the highest PPV (0.34), followed by fruits (0.17) and stems (0.17). Leaves are widely recognized as the most frequently used plant part in ethnobotanical practices throughout Calabria (Patti *et al.* 2025).

Table 3. Plant parts most used for ethnobotanical purposes within the Graecanic Area of Reggio Calabria (Southern Italy) ordered by Plant Part Value (PPV) index.

Plant parts	Records	PPV
Leaves	213	34.00
Fruits	109	0.17
Stems	107	0.17
Flowers	40	0.06
Aerial parts	35	0.06
Branches	27	0.04
Tops	23	0.04
Seeds	14	0.02
Whole plant	12	0.02
Shoots	16	0.03
Cladodes	10	0.02
Roots	7	0.01
Rhizomes	6	0.01
Latex	4	0.01
Aquifer parenchyma	4	0.01

During the ethnobotanical survey, it emerged that plants are still used for various purposes today. Figure 7 summarizes all ethnobotanical uses identified in the GARC along with the number of taxa for each use. The most common use is related to food (263 interviews and 83 different taxa): as is well known, plants are a cornerstone of the Mediterranean diet, and people continue to maintain the tradition of consuming wild plants for their daily intake of nutrients and protective substances for health (Papageorgiou *et al.* 2022).

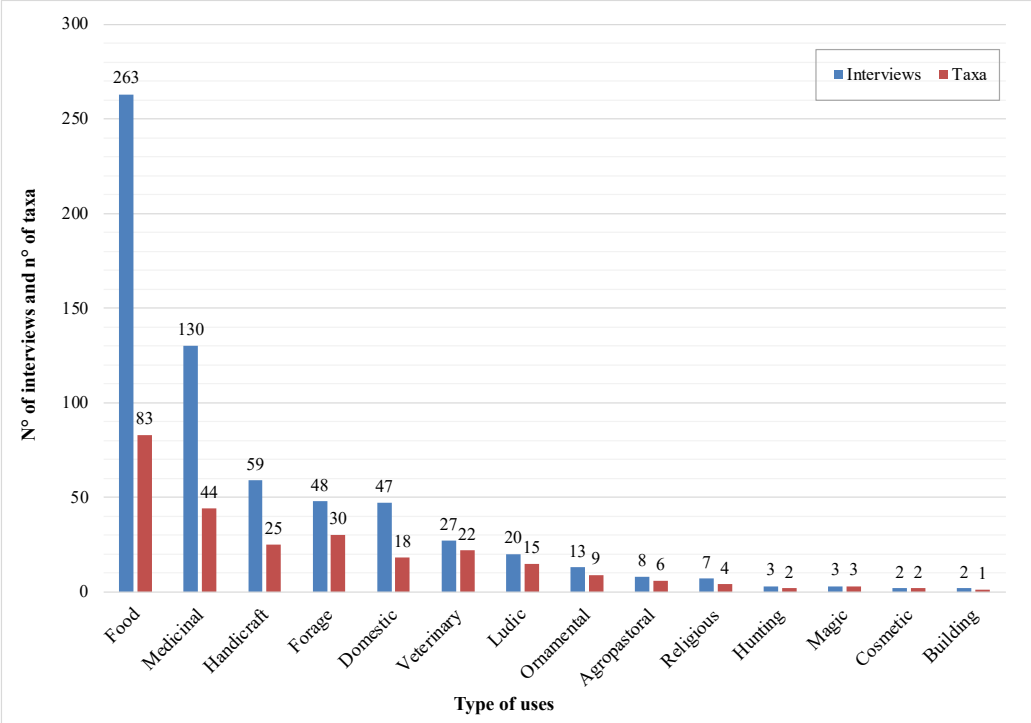

Figure 6. Types of ethnobotanical use of taxa detected within the Graecanic area of Reggio Calabria (Southern Italy), sorted by the number of records and taxa for each use.

The second most common use is medicinal (130 interviews and 44 taxa): plants, which have always been a primary source of active ingredients beneficial to human health, are still considered one of many natural options for medicinal purposes. Handicraft uses are also currently present in the GARC (59 interviews and 25 taxa): parts of plants are used to prepare various tools, which are then used at home, given as gifts or in some cases even sold.

Less common uses were also reported, such as religious (7 interviews) and magical (3), referring to traditional practices related to religion or the occult. In addition, uses related to hunting (3) and building practices (2) were also mentioned (Patti *et al.* 2022).

To highlight the most used taxa in this area, quantitative ethnobotanical indices were calculated. Table 4 presents the most used taxa in decreasing order based on the CV index, while the complete list of all taxa together with botanical information (life form, chorological type, origin) and ethnobotanical use can be found in the Supplementary material 1.

Table 4. The most relevant taxa of ethnobotanical use within the Graecanic Area of Reggio Calabria sorted according to the descending Cultural Value (CV) index.

	BASIC VALUE			INDEXES					RANKING	
Taxa	**FC**	**U_s**	**UR**	**CI**	**CV**	**RFC**	**RI**	**UV**	**CV**	**RFC**
Clinopodium nepeta (L.) Kuntze subsp. *nepeta*	14	5	34	1.42	0.72	0.58	0.81	0.31	1	1
Opuntia ficus-indica (L.) Mill.	7	6	23	0.96	0.39	0.29	0.73	0.38	2	9
Spartium junceum L.	12	8	21	0.88	0.38	0.50	0.78	0.50	3	2
Anethum piperitum Ucria	12	2	38	1.58	0.36	0.50	0.64	0.13	4	3
Pistacia lentiscus L.	8	7	19	0.79	0.27	0.33	0.68	0.44	5	5
Arundo donax L.	8	6	14	0.58	0.15	0.33	0.61	0.38	6	6
Laurus nobilis L.	11	2	23	0.96	0.13	0.46	0.45	0.13	7	4
Olea europea L.	7	6	9	0.38	0.06	0.29	0.55	0.38	8	10
Pyrus spinosa Forssk.	7	4	11	0.46	0.06	0.29	0.43	0.25	9	11
Beta vulgaris L. subsp. *vulgaris*	8	2	14	0.58	0.05	0.33	0.33	0.13	10	7
Quercus pubescens Willd. subsp. *pubescens*	6	3	11	0.46	0.05	0.25	0.36	0.19	11	14
Borago officinalis L.	7	2	12	0.50	0.04	0.29	0.30	0.13	12	12
Dittrichia viscosa (L.) Greuter	6	2	11	0.46	0.03	0.25	0.29	0.13	13	15
Ampelodesmos mauritanicus (Poir.) T.Durand & Schinz	4	4	7	0.29	0.02	0.17	0.38	0.25	14	28
Reichardia picroides (L.) Roth	8	2	9	0.38	0.02	0.33	0.26	0.13	15	8
Cynara cardunculus L. subsp. *cardunculus*	6	2	9	0.38	0.02	0.25	0.26	0.13	16	16
Matricaria chamomilla L.	6	2	9	0.38	0.02	0.25	0.26	0.13	17	17
Typha domingensis (Pers.) Steud.	3	3	7	0.29	0.02	0.13	0.31	0.19	18	39
Crepis aspromontana Brullo, Scelsi & Spamp.	6	2	8	0.33	0.02	0.25	0.25	0.13	19	18
Origanum vulgare L. subsp. *vulgare*	5	2	8	0.33	0.02	0.21	0.25	0.13	20	20
Sulla coronaria (L.) B.H.Choi & H.Ohashi	5	2	8	0.33	0.02	0.21	0.25	0.13	21	21
Morus nigra L.	4	3	6	0.25	0.01	0.17	0.29	0.19	22	29
Artemisia arborescens (Vaill.) L.	6	2	7	0.29	0.01	0.25	0.24	0.13	23	19
Cichorium intybus L.	5	2	7	0.29	0.01	0.21	0.24	0.13	24	22
Erica arborea L.	5	2	7	0.29	0.01	0.21	0.24	0.13	25	23
Ficus carica L.	5	2	7	0.29	0.01	0.21	0.24	0.13	26	24
Parietaria judaica L.	5	3	5	0.21	0.01	0.21	0.28	0.19	27	25
Urtica membranacea Poir.	5	3	5	0.21	0.01	0.21	0.28	0.19	28	26

*Basic Value: Frequency of Citation (FC), Number of types of use (U_s), Use Reports (UR); Indexes: Cultural Importance Index (CI), Cultural Value (CV), Relative Frequency of Citation (RFC), Relative Importance Index (RI), Use Value (UV).

As shown in Table 4, the most used taxon is *Clinopodium nepeta* (L.) Kuntze subsp. *nepeta*, known as **nipiteddha** in the local language. It was mentioned by 14 informants (FC) for 5 different uses (U_s), with a total of 34 interviews (UR). It has the highest CV and RFC indices (CV 0.72; RFC 0.58), and its other indices are also quite high (CI 1.42; RI 0.81; UV 0.31). The most common uses of this taxon are medicinal, culinary and domestic. Medicinally, the aerial part is used as a natural wound healer by rubbing the plant directly on the injury; this action also has disinfectant properties. It is also used as a digestive aid in infusions and decoctions, and as a relaxant. Numerous studies have demonstrated the presence of essential oils in this plant, which are useful for medicinal purposes (Beddiar *et al.* 2021, Debbabi *et al.* 2020; In the culinary world, *C. nepeta* subsp. *nepeta* is used to flavour various dishes; the use of this taxon as a food is well known (Pieroni & Giusti 2009, Sansanelli & Tassoni 2014, Vitalini *et al.* 2015). In the household, the plant is used to perfume the home and to scent home-made soap.

The second most utilised species, according to the Cultural Value index (CV), is *Opuntia ficus-indica* (L.) Mill. (0.72). This species was cited by seven informants, resulting in a total of 23 interviews. The remaining indices are similarly elevated (CI 0.96; RFC 0.29; RI 0.73; UV 0.38). This species is subject to extensive exploitation in the GARC, with six distinct types of uses: agricultural, culinary, domestic, fodder, recreational, and medicinal. The fruits are eaten as a snack, frequently in the field itself. This practice is well documented, and the edible parts of the species were the subject of extensive study (Barba *et al.* 2022, Gago *et al.* 2021, Patti *et al.* 2024a). In the field of medicine, the aquifer parenchyma located within the cladodes is used to soothe burns and frostbite of the skin. Furthermore, a more specific use involves the preparation of a decoction made from the flowers, which is drunk to eliminate kidney stones (Aragona *et al.* 2018, Kaur *et al.* 2012, Sinicropi *et al.* 2022, Tilahun & Welegerima 2018). A unique use of the cladodes of *O. ficus-indica* is the creation of the "**carrocciulu**", which is a three-piece tricycle-like toy made from the cladode. It is formed by cutting three round pieces from the cladode and joining them together with a piece of cane (Musarella *et al.* 2019, 2018).

Spartium junceum L. exhibits the greatest variability in terms of types of use (U_s), with eight different purposes for which it is utilised. A total of 12 informants (FC) and 21 interviews (UR) were included in the study. According to the RFC index, it is the second most important taxon (0.78), while it ranks third based on the CV (0.38). Other indices also highlight its significance, including the CI (0.88), RI (0.78), and UV (0.50). This species is predominantly utilised in the production of craft items, with fibres extracted from the broom employed in the manufacture of textiles, blankets, and undergarments (Brandolino & Mediati 2019). Once dried, the branches are soaked in a river or other watercourse until they soften. They are then flattened and beaten with a mallet, or "**mannatore**", until they become "**stoppa**", or threads of cloth. These are then collected and spun on a loom. This practice is widely prevalent throughout Italy, as evidenced by numerous sources (Lucchetti *et al.* 2019, Maruca *et al.* 2019, Passalacqua *et al.* 2006, Salerno *et al.* 2005). Another common utilisation of *S. junceum* is the sale of its flowers. Historically, women would rise at dawn to gather broom flowers and take them to market for sale. These flowers were known for their pleasant fragrance and were purchased for the purpose of scenting and decorating homes. Furthermore, the flowers held religious significance, as they were scattered in the streets during the procession for the *Corpus Christi* (Maruca *et al.* 2019). Furthermore, the brooms had veterinary purposes. The bark was removed and used as a plaster cast for treating animal fractures. Following a period of several weeks, the plaster would naturally detach, indicating that the fracture had healed. This particular use is unique and has not been identified in any published sources.

The taxon with the highest number of interviews (UR 38) is *Anethum piperitum* Ucria, which is one of the most utilised taxa within the GARC (CI 1.58; CV 0.36; RFC 0.50; RI 0.64; UV 0.13). The primary purposes of this species are culinary and medicinal. In the culinary arts, the fruits of *A. piperitum* are employed to impart flavour to a variety of dishes, including cured meats, legumes, soups, and broths. Additionally, the fruits are used in the production of a liqueur known as "**finocchiello**", which is typical to the region. In contrast, the aerial parts are eaten as a side dish and added to first courses and soups. In terms of medicinal purposes, the fruits are employed in the preparation of decoctions that exhibit anti-inflammatory, antitussive, digestive, and diuretic properties. The therapeutic potential of this plant was substantiated by a several scientific evidence (Ilardi & Troia 2021, Patti *et al.* 2024c).

Among the most frequently used species listed in Table 4, it is also an endemic Calabrian species, *Crepis aspromontana* Brullo, Scelsi & Spamp. (CI 0.33; CV 0.02; RFC 0.25; RI 0.25; UV 0.13), which is notably prevalent in the GARC and is frequently employed as a side dish (Patti *et al.* 2024b). The local name, "**prìcomaruddha**", translates to "very bitter" in the *Grecanico* language. Furthermore, the plant has medicinal purposes, with its leaves employed in the preparation of digestive decoctions.

Food uses

The most significant category among ethnobotanical uses is that of food plants, with 263 interviews and 83 taxa recorded (Fig. 7). The most prevalent purpose within this category is for side dishes (69 interviews and 33 taxa) (Fig. 8), which encompasses vegetable preparations that are typically eaten with a main course or as a principal dish. The taxa most used as side dishes include *Beta vulgaris* subsp. *vulgaris* (7 interviews), *Reichardia picroides* (6), and *Crepis aspromontana* (5). This category of food is of great significance in the culinary traditions of Calabria (Patti *et al.* 2024c) and in other regions of the Mediterranean basin (Pieroni & Cattero 2019, Renna *et al.* 2015).

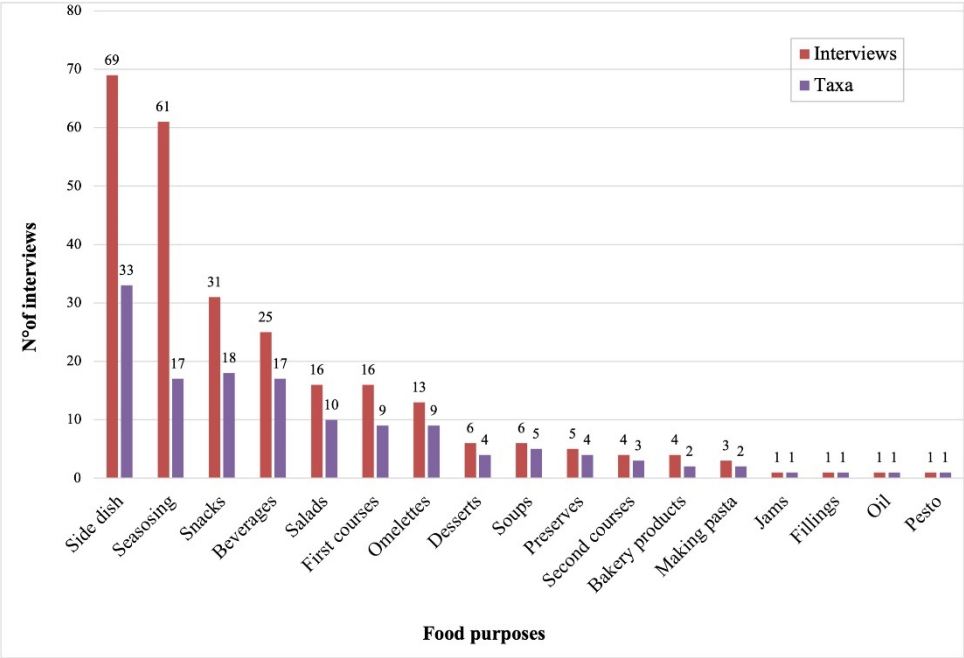

Figure 8. Food purposes detected within the Graecanic area of Reggio Calabria (Southern Italy) sorted by number of interviews.

The seasoning category encompasses all taxa employed for the purpose of enhancing and strengthening the aroma of a dish. The most frequently used taxa in this category are *Anethum piperitum* Ucria with 17 interviews, *Laurus nobilis* L. with six interviews, and *Origanum vulgare* L. subsp. *vulgare* with six interviews.

It is widely acknowledged that communities value the consumption of herbaceous plants, and the Asteraceae family is particularly rich in edible species. Figure 9 shows the four taxa eaten by the Graecanic community as food. The leaves and basal rosettes of all these taxa are employed in culinary practices. In the case of plants with spiny leaves, such as *Cynara cardunculus* L. subsp. *cardunculus* (Fig. 9a) and *Scolymus hispanicus* L. (Fig. 9b), the thorns are manually removed, and only the central vein of the leaf is eaten after boiling to soften it for easier consumption. The remaining two species, *Hypochaeris radicata* L. (Fig. 9c) and *Crepis vesicaria* L. (Fig. 9d), are eaten after being boiled or sautéed in oil and seasonings. These preparation methods enhance the flavour of the plants while rendering them more tender and preserving their nutritional properties. These culinary practices are deeply rooted in the food traditions of the Graecanic community, which has utilised the spontaneous resources of the territory for centuries to enrich its diet (Nebel *et al.* 2006, Nebel & Heinrich 2009, 2010, Pieroni & Cattero 2019).

A further common use is the consumption of plants as snacks (as evidenced in 31 interviews on 18 taxa and showed in Fig. 8). This category encompasses all plant parts that are typically eaten raw as a snack, typically in the morning or afternoon, to satiate hunger. One of the most used fruits for this purpose is that of *O. ficus-indica* (8 interviews). The fruits are peeled from their spiny exocarp with a small knife directly in the field and eaten in their unprocessed state (Fig. 10). This practice is well documented in the southern Italian regions (Biscotti *et al.* 2021, De Natale *et al.* 2021, Di Novella *et al.* 2013, Mattalia *et al.* 2020a,b, Menale *et al.* 2016, Nebel *et al.* 2006).

Figure 9. Some species belonging to the Asteraceae family eaten as food: *Cynara cardunculus* L. subsp. *cardunculus* (a), *Scolymus hyspanicus* L. (b), *Hypochaeris radicata* L. (c), and *Crepis vesicaria* L. (d) (Ph. Miriam Patti and Valentina Lucia Astrid Laface).

Figure 10. On the left, a cladode of *Opuntia ficus-indica* L. (Cactaceae) with fruits; on the right, *O. ficus-indica* fruits cleaned from the spiny epicarp with a knife and eaten during an ethnobotanical interview in the Graecanic Area (Ph: Valentina Lucia Astrid Laface).

Another species eaten directly in the field as a snack is *Sulla coronaria* (L.) B.H. Choi & H. Ohashi (3 interviews): the soft stems of the plant are stripped of their outer layer and eaten as they are, as they have a sweet flavour that is highly appreciated by the population of the GARC.

The preparation of beverages from plants is a common practice (25 interviews on 17 taxa) (Fig. 8). Beverages made with plants include liqueurs (11 interviews): the fruits of the plants used are macerated in alcohol for several days, then the mixture is filtered and combined with a solution of water and alcohol. The species used for this purpose include *A. piperitum*, *Citrus ×limon* (L.) Osbeck, *Juglans regia* L., *Morus nigra* L., *Myrtus communis* L., *O. ficus-indica*, *Pimpinella anisoides* V.Brig., *Pistacia lentiscus* L., and *Punica granatum* L.

The preparation of omelettes and fritters is also quite common (13 interviews and 9 taxa) (Fig. 8). Among the most used species are *Asparagus acutifolius* L. and *Asparagus albus* L., whose shoots are used to cook asparagus omelettes. This use is particularly widespread and has also been observed in other areas inhabited by Greek populations, such as Puglia and Macedonia (Pieroni & Cattero 2019).

Among the recipes collected, there are many related to the traditional use of plants. For example, among the baked products, two recipes stand out. The first is the preparation of bread with acorns of *Quercus pubescens* Willd. subsp. *pubescens*: the acorns are dried, ground and the flour obtained is used to make traditional bread. The use of acorns to make flour is a well-known tradition (Caneva *et al.* 1997, Guarrera 1994, Maruca *et al.* 2019, Pieroni 2000, Wang *et al.* 2022, Zocchi *et al.* 2022). The second preparation currently practised is "**scaddateddhe**", typical biscuits made from flour, yeast, vermouth and fruits of *P. anisoides*. The dough is formed into round shapes, boiled for a few minutes and then baked in the oven (Fig. 11).

Figure 11. "Scaddateddhe", typical Calabrian baked products prepared with the fruits of *Pimpinella anisoides* V.Brig. (Apiaceae) (Ph. Miriam Patti).

In addition to the more common uses, the interviews revealed the use of parts of the plant to prepare pasta dough (3 interviews) (Fig. 8). The leaves are boiled and then mixed with eggs and flour to prepare green tagliatelle. The species used are *Beta vulgaris* L. subsp. *vulgaris* and *Borago officinalis* L.

Medicinal uses

The category of medicinal use is the second most important in terms of number of interviews, with 130 interviews and 44 different taxa (Figure 7). Figure 12 shows the breakdown of diseases into subcategories. The subcategory with the highest number of interviews and taxa is 1-Digestive system diseases, which includes all diseases related to the digestive tract, mouth and teeth. The most used species for this subgroup of disorders is *Clinopodium nepeta* subsp. *nepeta*, with nine interviews. Infusions or decoctions of the aerial parts are used for digestive and anti-inflammatory purposes, and the leaves are chewed for a few seconds and spat out for the same purpose. To relieve toothache, a poultice is prepared from the decoction of the plant and applied to the affected area.

Another important species in this subcategory is *Artemisia arborescens* (Vaill.) L. (5 interviews), locally known as "**erba janca**". According to informants, in the past the plant was hung near children's beds or placed under their pillows to help them recover from stomatitis; another method was to burn the plant and allow the children to inhale the fumes. This particular use for this taxon is not documented in any bibliographical source, but numerous studies support its medicinal properties, particularly its anti-inflammatory, antimicrobial and antispasmodic activities, which may justify its use against stomatitis (Beyrouthy *et al.* 2011, Jaradat *et al.* 2022, Militello *et al.* 2011).

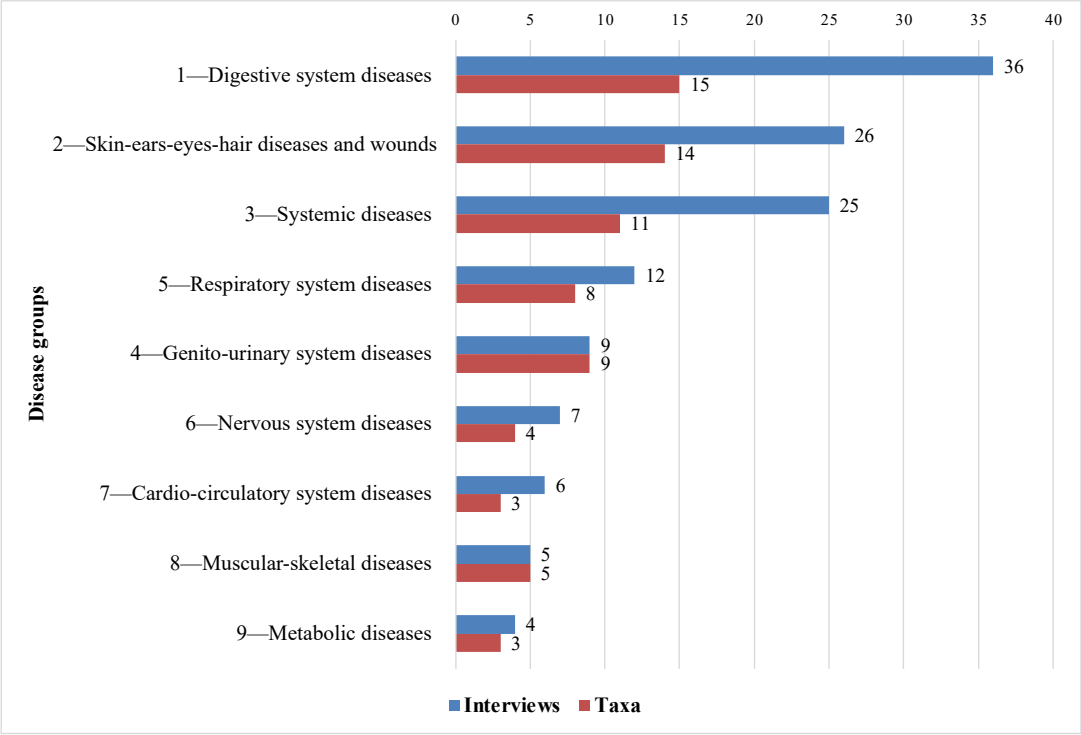

Figure 12. Medicinal purposes and taxa used detected within the Graecanic area of Reggio Calabria (Southern Italy) sorted by number of interviews. The disease groups follow the classification of Cook (1995).

Parietaria judaica L. (3 interviews) has an anthelmintic effect: a decoction was prepared from the aerial parts of the plant and drunk for two consecutive days, followed by two days of fasting and another two days of drinking the decoction. This method was said to be effective in eliminating worms in the stomach.

The second subcategory, 2-Skin-ears-eyes-hair, includes all problems related to the skin, eyes, ears and hair (26 interviews and 14 taxa) (Fig. 11). For these conditions, *C. nepeta* subsp. *nepeta* is the most used species for its healing properties (6 interviews): a paste or decoction made from the leaves was applied to wounds. *Dittichia viscosa* (L.) Greuter, locally called "**clizza**", was used for the same purpose and in a similar way (5 interviews). The use of *D. viscosa* is well documented (Hani *et al.* 2022).

One particular use is the bark of *Pyrus spinosa* Forssk: in the past, in cases of viper bites, the venom was sucked out and the inner part of the bark applied to the bite to relieve the pain.

The category of 9-metabolic diseases includes all uses related to the body's metabolism. These include plants used to treat hyperglycaemia, diabetes, hypoglycaemia and high cholesterol. For the treatment of hyperglycaemia or diabetes, the seeds of *Lupinus albus* L. subsp. *albus* were consumed for seven consecutive days, with the daily dose increasing by one lupin per day until a total of seven lupins were reached. From the eighth day, the dose was reduced by one lupin per day. The same method of use was also applied for hypoglycaemia. The medicinal properties of *L. albus* subsp. *albus* in relation to diabetes were confirmed by numerous phytochemical and medicinal studies (Bouchoucha *et al.* 2016, Helal *et al.* 2013, Kinder & Knecht 2011). In addition, *Cucurbita maxima* Duchesne sprouts were boiled and eaten without seasoning for the treatment of diabetes. The use of the seeds for other medicinal purposes is documented in various ethnobotanical publications (Aleo *et al.* 2013, Barbagallo *et al.* 2004, Idm'hand *et al.* 2020, Motti R. & Motti P. 2017, Patti *et al.* 2024c); however, the antidiabetic use wasn't found in other published sources. Finally, to treat diabetes and cholesterol, the central veins of the leaves of *Cynara cardunculus* L. subsp. *cardunculus* were boiled and the decoction was preserved and drunk daily. This medicinal use was reported in other publications (Aleo *et al*. 2013, Barbagallo *et al.* 2004, Bendif 2021, Jouad *et al.* 2001, Miara *et al.* 2019).

Figure 13 shows all the medicinal taxa associated with their respective pathology groups within a chord diagram. As highlighted earlier, a species of particular importance in the medicinal field is *Clinopodium nepeta* subsp. *nepeta*, which is

widely used especially in the first (1-Digestive) and second (2-Skin) medicinal subcategories. However, it is also used in the third (3-Syst.), fifth (5-Respir.), sixth (6-Nerv.), seventh (7-Cardio.) and eighth (9-Metab.) subcategories. It is therefore a versatile species in the medicinal field, endowed with numerous healing properties (Beddiar *et al.* 2021, Debbabi *et al.* 2020).

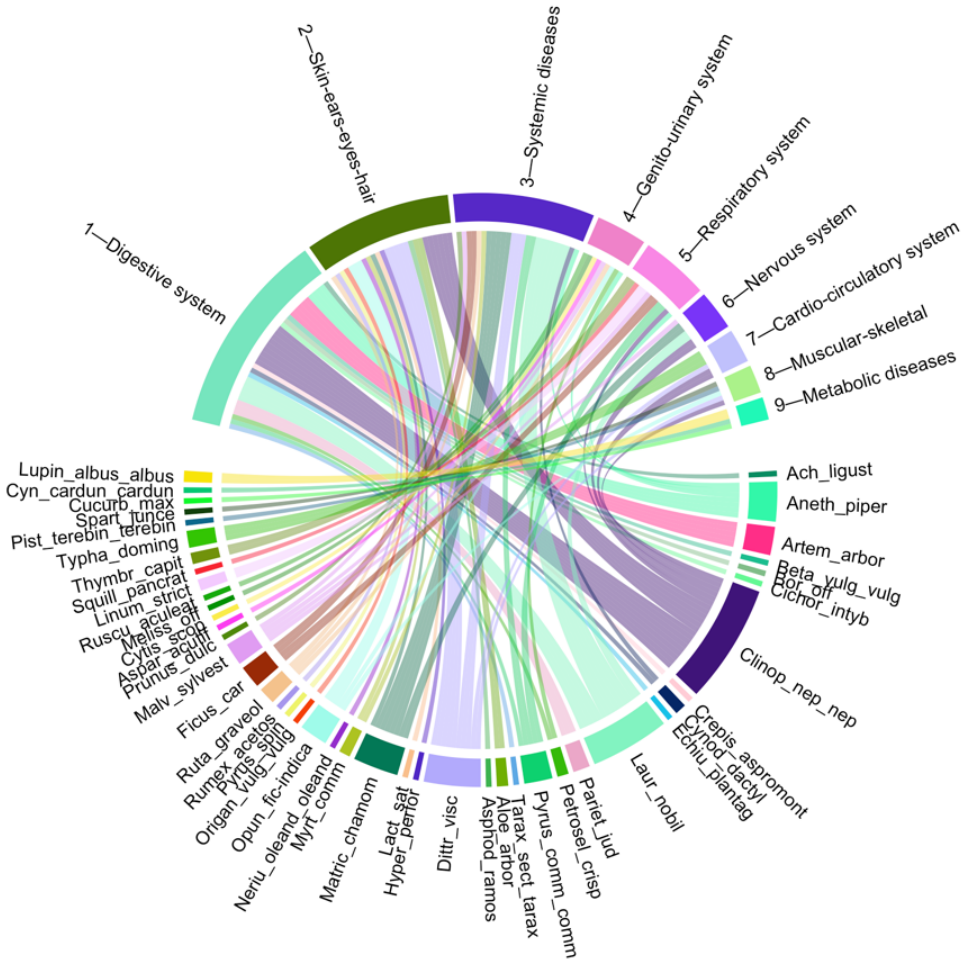

Figure 13. Chord diagram showing all medicinal taxa identified during the interviews within the Graecanic area of Reggio Calabria (Southern Italy), categorized into nine medicinal use groups. The diagram was processed using R software (version 2024.04.2+764) and the 'ethnobotany' package. The medicinal use groups follow the classification of Cook (1995).

Another species that appears more prominently in Figure 13 is *Laurus nobilis* L., whose decoctions are mainly used as a digestive (1-Digest.), as an analgesic for stomach disorders (3-Syst.) and for their relaxing and calming properties (6-Nerv.).

Dittrichia viscosa (L.) Greuter is another important species represented in the graph in Figure 13, with a wide range of medicinal uses. It is mainly used as a healing and disinfecting agent for skin wounds (2-Skin), as an analgesic for stomach pain (3-Syst.) and as a haemostatic agent (7-Cardio). It is also used as a soothing remedy for muscle pains (8-Musc.).

Matricaria chamomilla L. has many purposes in medicine. It is mainly used for its anti-inflammatory properties in skin disorders (2-Skin). It also has a significant analgesic effect for stomach pain (3-Syst.), for which it is mentioned several times. Finally, it is used for its relaxing and calming properties in nervous system disorders (6-Nerv.), making it a very versatile plant in traditional medicine.

Ficus carica L. is another important species, as showed in Figure 13, with various medicinal uses. It is known for its anti-inflammatory properties through decoctions made with the fruits (3-Syst.). It also plays an important role as a decongestant (5-Respir.) and as an anti-influenza remedy (3-Syst.). Finally, the plant is also used for its antitussive properties, helping to treat respiratory disorders (5-Respir.). Numerous studies confirm the excellent medicinal properties of this species (Badgujar *et al*. 2014, Barolo *et al*. 2014, Bouyahya *et al*. 2016, Kahramanoglu *et al*. 2020, Mawa *et al*. 2013, Salma *et al*. 2020).

Handicraft uses

Within this category of uses, all handicrafts made from plant parts are reported (59 interviews, 25 taxa) (Fig. 7). One of the most used species in this area is *Arundo donax* L. (6 interviews): the stems were dried, soaked, cut and woven into baskets and wickerwork. Other uses include making pseudo-hives for bees and making flutes by drilling holes in the reed stalk. Traditional uses include the use of reed to make the resonating body (soundbox) of the Calabrian lyra, a traditional musical instrument: a piece of the stem was inserted into the instrument to produce sound.

The wood of *Morus nigra* L. has many uses (3 interviews): it is used to make cheese moulds, traditionally called "**musulupu**" (Brandolino & Mediati 2019), walking sticks and collars for goats. A plank of wood was prepared, boiled, bent and shaped into a collar, then a bell was attached, and the wood was carved by hand (Fig. 14a) (Brandolino & Mediati 2019). The same use is found in Sicily (Tavilla *et al.* 2022).

Erica arborea L. is a common species in this category of uses (6 interviews). One of the most important uses is to make a spoon and fork for *ricotta* cheese (Fig. 14b).

Figure 14. On the left (a) goat collars made from *Morus nigra* L. (Moraceae) wood. On the right (b) spoon and fork for ricotta cheese made from *Erica arborea* L. (Ericaceae) wood (Ph. Valentina Lucia Astrid Laface).

The roots of *E. arborea* have dyeing properties. They were boiled together with the epicarp of the pomegranate; the blankets were then dipped in the water until it cooled, and the dye was obtained. *Euphorbia dendroides* L. served the same purpose: its bark was collected in August to make a yellow dye.

The stems of *Ferula communis* L. were used to make plugs and walking sticks by carving them to size (5 interviews). The wood of *Fraxinus ornus* L. subsp. *ornus* (**middhéu**) was used to make the handles of various tools, including hatchets and hoes (**marrùggi**); it was also used to build the plough and to make walking sticks.

Ludic uses

A very interesting and fun category is that of ludic uses, which is a collection of information about the use of plants for play, such as the use of *Opuntia ficus-indica* to make "**carrocciulu**". These are often childhood memories of the informants.

One of the most unique games is associated with the nursery rhyme of "**spronu**" (*Verbascum thapsus* L. subsp. *thapsus*): during the recitation of the rhyme, the plant was shaken and at the end the flowers would fall. The rhyme went: "*Spronu, spronu, spronu, mi ti pigghia un lampu n'tronu, mi ti cadi la fiurima e mi ti resta la piantina*" (trad.: "*Oh, mullein, mullein, mullein, I do hope lightning strikes you in the head, that all your flowers fall off, and that you're left with the plant*") (Fig. 15).

The fruits of *Capparis sicula* Veill. were used to make a toy: the larger fruits were chosen, and wooden sticks were inserted on four sides, creating a kind of cow that children used to play with.

The flowers of *Papaver rhoeas* L. subsp. *rhoeas* were used to make a kind of small firecracker: the petals were gathered and placed on the palm of the hand, trapping the air, and then the "balloon" formed was popped with the other hand, producing a sound like that of a small explosion.

Figure 15. *Verbascum thapsus* L. subsp. *thapsus* (Scrophulariaceae) used as a nursery rhyme by an informant within the Graecanic Area of Reggio Calabria (Ph. Valentina Lucia Astrid Laface).

The *Quercus pubescens* Willd. subsp. *pubescens* acorns were used to make toy pipes: an acorn was hollowed out to remove the inner pulp and a side hole was made into which a small twig was inserted. In this way, children pretended to have a pipe to play with (Fig. 16).

Figure 16. *Quercus pubescens* Willd. subsp. *pubescens* (Fagaceae) acorn used to make a toy pipe (Ph. Miriam Patti).

Other uses

There are also other uses, less common but no less important. One example is the production of "*Pupazze di Bova*", for which the stems of *Arundo donax* L. and the leaves of *Olea europaea* L. are still used today. During the annual religious festivals, female figures resembling dolls are made: the skeleton is built with *A. donax* stems, while the "**stiddhe**" (stars), made by intertwining pairs of olive leaves, are attached to the structure.

Domestically, the fruits of *Pistacia lentiscus* L. were used to make oil for lamps (called "**lumèra**"). The fruits were gathered, placed in a hollowed trunk and then stomped with the feet to extract the oil, which was then used to keep the lamp lit (Trabut 1935). The branches of *Pistacia lentiscus* were burned, and the ash obtained was used to scent soap and laundry.
Several taxa are used for forage purposes. The most important include *Q. pubescens* subsp. *pubescens* (acorns), *O. ficus-indica* (cladodes and fruits), *Pyrus spinosa* (fruits), and *S. coronaria* (stems).

Ruta graveolens L. was widely used in veterinary medicine for its digestive properties: a decoction was prepared and given to animals with stomach problems.

Finally, the fruits of two species of Anacardiaceae, *Pistacia lentiscus* L. and *Pistacia terebinthus* L., were given to hens to stimulate egg production.

Conclusion

The Graecanic Area of Reggio Calabria (GARC) is a treasure chest of biodiversity and cultural traditions, where wild plants have played and continue to play a fundamental role in the daily sustenance of local communities. This ethnobotanical study has allowed the collection, documentation and analysis of a large body of traditional knowledge on the use of these plants, highlighting not only the richness of the local flora, but also the deep bond that the Greek populations have developed with their environment.

The 632 interviews conducted with 24 informants identified 157 taxa belonging to 50 different families, demonstrating the extraordinary diversity of plants used for food, medicinal, handicraft, veterinary and other purposes. The study found that the most frequently mentioned botanical families were Asteraceae, Lamiaceae and Apiaceae, and that the use of plants for food remains the most widespread. In fact, wild species are not only part of an ancient tradition, but are now an important source of nutrients, vitamins and minerals, as well as having recognised therapeutic properties (Grivetti & Ogle 2000, Sánchez-Mata *et al.* 2016).

The wild plants of the GARC are not only used as food resources; many of them play an essential role in folk medicine, with numerous informants describing the use of decoctions, infusions and compresses to treat various ailments. *Clinopodium nepeta* subsp. *nepeta*, for example, was the most frequently cited taxon for its medicinal properties, confirming the importance of these species not only for physical health, but also for the cultural and social sphere of communities.

In addition to practical and everyday uses, the study also highlighted the symbolic and ritual significance of plants in the lives of Graecanic communities. Religious and magical uses, although less common, remain significant and demonstrate how plants are an integral part of intangible knowledge passed down through generations. The creation of the "*Pupazze di Bova*" or the use of species such as *Verbascum thapsus* for children's games are examples of how the local flora is a living and dynamic part of the cultural heritage.

However, despite the wealth of this knowledge, our study also highlighted the risk of losing these traditions. An ageing population, the gradual abandonment of rural areas and socio-economic changes are all contributing to the gradual disappearance of this knowledge. The new generations, increasingly distanced from traditional practices, are in danger of not inheriting this cultural heritage, which, once lost, would be extremely difficult to recover.

It is therefore essential to continue promoting ethnobotanical research in this area and in other regions with similar characteristics. The recovery, conservation and valorisation of traditional knowledge is not only a means of safeguarding cultural diversity, but also a resource for developing sustainable lifestyles and promoting new quality products, both in the gastronomic and medicinal fields.

In conclusion, this study represents another step forward in the valorisation of Calabria's ethnobotanical resources, but there is still a long way to go. Wild plants, with their multiple uses and meanings, can be a lever for local economic development through the promotion of entrepreneurship related to the use and transformation of wild plants. More importantly, they symbolise the cultural resilience of Graecanic communities, which deserves to be protected and passed on to future generations. The challenge now is to find the right balance between modernity and tradition, so that the richness of this knowledge is not lost but continues to prosper over time.

Declarations

List of abbreviations: CI - Cultural Importance Index, CV - Cultural Value, FIV - Family Importance Value, FC - Frequency of Citation, GARC - Graecanic Area of Reggio Calabria, PPV - Plant Part Value, RFC - Relative Frequency of Citation, RI - Relative Importance Index, UR - Use Reports, Us - Number of types of use, UV - Use Value.

Ethics approval and consent to participate: Before conducting interviews, prior informed consent was obtained from all.

Consent for publication: Prior and informed consent of local people's pictures had been obtained.

Availability of data and materials: All data generated or analysed during this study was included in this published article (along with the supplementary file).

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Author contributions: M.P. collected the data, performed the formal analysis, carried out the investigation, developed the methodology, and drafted the original manuscript. C.M.M. contributed to the investigation, methodology, supervision, validation, and writing - review and editing. V.L.A.L. was involved in the investigation. G.S. led the conceptualization, investigation, methodology, project administration, supervision, validation, visualization, and writing - review and editing. All authors read and approved the final version of the manuscript.

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