From the sea to the mountains - plant use in Ajara, Samegrelo and Kvemo Svaneti, Sakartvelo (Republic of Georgia), Caucasus

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Research

Abstract

Background: Ajara, Samegrelo and Kvemo Svaneti are historical provinces of Georgia located on the south-facing macro-slope of the western part of the Greater Caucasus (Samegrelo and Kvemo Svaneti) and west of the Lesser Caucasus towards the Black Sea (Ajara). In this study we documented traditional plant use in Ajara, Samegrelo and Kvemo Svaneti.

Methods: Fieldwork was conducted from July-August 2014 and June-November 2019. Interviews using semi-structured questionnaires were conducted with 84 participants (40 women and 44 men), with oral prior informed consent.

Results: We encountered 276 plant species belonging to 181 genera of 88 vascular plant families, and 3 fungal species and 8x undetermined fungi of at least 7 genera, belonging to at least 7 fungal families, and 1 lichen being used in the research region. Of these 163 species were exclusively wild collected, 114 were grown in homegardens, and 18 were both grown in gardens and collected in the wild. Plants and their uses mostly overlapped among the areas within the region, with a slightly wider divergence in uses than in plants.

Conclusions: The environmental fit analysis showed that a large degree of this variation was explained by differences among participant communities. The elevation of the participant community significantly fit...
the ordination in plant-space and explained a large degree of the variation in plant species reported but not in use-space. Gender was not significant in plant-space or use-space.

Key words: Caucasus, ethnobotany, plant use, traditional knowledge, post-soviet development

Introduction

Georgia harbors a great diversity of crops and crop wild relatives, and plant use for medicine and other purposes is very common (Akhalkatsi et al. 2018a,b), and can often be traced back millennia (McGovern et al. 2018). Plant use is indeed widely shared among different ethnic and religious communities (Söderlind 2015). Ajara, Samegrelo and Kvemo Svaneti are historical provinces of Georgia located on the south-facing macro-slope of the western part of the Greater Caucasus (Samegrelo and Kvemo Svaneti) and east of the Lesser Caucasus towards the Black Sea (Ajara), (Kordzakhia and Javakhishvili 1971) (Fig. 1). The vegetation of the region includes montane forest, subalpine, alpine, subnival and nival zones and corresponds to the West Caucasian, i.e. Colchic, type of the vegetation vertical zonation (Gagnidze and Davitadze 2000; Zazanashvili et al. 1999). Most inhabitants speak both Georgian and their own local language (Megrelian, Svan and to a small extent Laz), all belonging to the Kartvelian group of the Iberian-Caucasian family of languages (Beridze et al. 2003).

Figure 1. Study area.

Ajara (აჭარა), officially known as the Autonomous Republic of Ajara (აჭარის ავტონომიური რესპუბლიკა), is a historical, and political-administrative region of Georgia. Located in the country's southwestern corner, Ajara stretches from the coast of the Black Sea into the Lesser Caucasus, north of Turkey. Ajara has been part of Colchis and Caucasian Iberia since ancient times. Colonized by Greeks in the 5th century BC, the region fell under Roman rule in the 2nd century BC. It became part of the Lazica before being incorporated into the Kingdom of Abkhazia in the 8th century AD, and part of the kingdom of Greater Georgia in the 11th century. The Ottomans conquered the area in 1614. The people of Ajara gradually converted to Islam in this period. The Ottomans were forced to cede Ajara to the expanding Russian Empire in 1878. After a temporary occupation by Turkish and British troops in 1918–1920, Ajara became part of the Democratic Republic of Georgia in 1920. Under the Soviet Union, Ajara formed the Georgian Soviet Socialist Republic as the Adjarian ASSR. After the dissolution of the
Soviet Union in 1991, Ajara became part of a newly independent Republic of Georgia. Only in November 2007 Russia ended its two-century military occupation in Georgia by withdrawing from Batumi.

Ajara is well known for its humid climate (especially along the coastal regions) and prolonged rainy weather. The region receives the highest amounts of precipitation both in Georgia and in the Caucasus. It is also one of the wettest temperate regions in the northern hemisphere, with a minimum of 2200 mm of precipitation per year along the coast. The west-facing (windward) slopes of the Meskheti Range receive upwards of 4500 mm of precipitation per year. The interior parts of Ajara are considerably drier than the coastal mountains and lowlands. Winter usually brings significant snowfall to the higher regions of Ajara, where snowfall often reaches several meters. Average summer temperatures are between 22–24 °C in the lowland areas and 17–21 °C in the highlands. The highest areas of Ajara have lower temperatures. Average winter temperatures range between 4–6 °C along the coast while the interior areas and mountains average around -3–2 °C.

Kvemo Svaneti, on the upper Tskhenistsqali River is administratively part of Racha-Lechkhumi. The landscape of Svaneti is dominated by mountains that are separated by deep gorges. Most of the region which lies below 1800 m is covered by mixed and coniferous forests. The forest zone includes tree species like as *Picea orientalis*, *Abies nordmanniana*, *Fagus orientalis* and *Carpinus orientalis*. The zone which extends from 1800 m to about 3000 m consists of alpine meadows and grasslands. The climate of Svaneti is humid and is influenced by the air masses coming in from the Black Sea throughout the year. Annual precipitation ranges between 1000 and 3200 mm. The lowest regions of Svaneti are characterized by long, warm summers and relatively cold and snowy winters. Areas above 2000 m lie within a zone that experiences short, cool summers (less than 3 months) and long and cold winters. Originally the area was a dependency of the Kingdom of Colchis, and of its successor Kingdom of Lazica, after which when the province joined the Kingdom of Abkhazia, which was incorporated into the Kingdom of Georgia in the early 11th century. The Mongols never reached Svaneti and, for a time, the region became a cultural safe house. Following the final disintegration of the Kingdom of Georgia in the 1460s, part of Zvemo (Upper) Svaneti formed an independent principality, while Kvemo Svaneti was temporarily part of Samegrelo. Difficult to access, the region retained significant autonomy until 1857, when Russia abolished its autonomy.

Samegrelo (სამეგრელო, სამარგალო) is a historic province in the western part of Georgia, formerly known as Odishi. It is primarily inhabited by the Samegrelons, with their own language which is part of the Kartvelian language family that also includes Georgian, Laz, Zan and Svan. As is the case with most Black Sea coastal areas of Georgia, Samegrelo’s climate is subtropical with frequent rains. The coastal areas have many marshlands despite the Soviet Georgian authorities’ efforts to dry them up. In ancient times Samegrelo was a major part of the kingdom of Colchis (9th-6th centuries BC) and its successor Egrisi (4th century BC-6th century AD). From the 11th-15th centuries, Samegrelo was a part of the Kingdom of Greater Georgia. From the 16th century to 1857, the independent Principality of Samegrelo was under the rule of the House of Dadiani. In December 1803, the independence was under the patronage of the Russian Empire and in 1867 was absorbed into the Tsarist Russian Empire. From 1918 to 1921, Samegrelo was part of the Democratic Republic of Georgia (DRG). After independence in 1991, Samegrelo became part of the Republic of Georgia.

Flora and vegetation
The Caucasus region contains an amazing variety of vascular plants, with about 6300 described species (Gagnidze 2002). The number of endemic taxa known for the Caucasus region is set at 2791 (Schatz et al., 2009).

The Botanical exploration of the Caucasus started in the 17th century. Jean-Baptiste Chardin (1686), described the gardens in Tiflis, Georgia, as well as the surrounding areas as result of a journey in 1672-1673. Joseph Delaporte published similar impressions in 1768 (Gogolishvili & Skhiereli, 1986). Botanist Joseph Pitton de Tournefort, published a large treatment of the Caucasus flora and vegetation in 1717. Johann Christian Buxbaum published a five-volume treatment of the region in (1728-1740). The first real flora of the Caucasus region was however prepared by Adolf Marschall von Bieberstein (1808-1819). In the 20th century most of the Caucasus region formed part of the former Soviet Union, and botanically well studied in that time (Grossheim, 1928-1934, 1939-1967; Takhtajan, 2003-2012). A large number of detailed treatments of the Caucasus flora were compiled by Alexander Grossheim, who published the most complete Flora of the Caucasus (1928-1934). Starting in the 1940s, Grossheim produced also a series of volumes on human plant use for Armenia, Azerbaijan and Georgia (Grossheim, 1942, 1943, 1946, 1949, 1952). Especially his Manual of the Caucasian Plants (Grossheim, 1949) is still a standard reference today. Nakhutsrishvili (1999)
produced the most comprehensive vegetation description for the Caucasus.

The high biodiversity in the Caucasus is found in a wide variety of vegetation types. A large portion of the region is covered by broad-leaved and coniferous forests (Galushko, 1978-1980; Doluchanov, 1989; Nakhutsrishvili, 1999; Zazanashvili et al., 1999, 2000). In the northern Caucasus, forests are mostly found in the western part (Litvinskaya and Murtazaliev, 2009). The forest cover was estimated to be 36% in Georgia (Doluchanov, 1989), and forest cover has diminished from 35% to 11% in Azerbaijan. (Schatz et al., 2009). However, usage change, especially a reduction of sheep in the Northern Caucasus, as led the timberline to extend upwards in many areas (Bussmann et al., 2014, 2016a-d, 2017a-b).

In this study we documented traditional plant use in Ajara, Samegrelo and Kvemo Svaneti and hypothesized that (1) plant use knowledge in general is lower in these regions than in the rest of Georgia, that (2) most plant use is centered on home gardens and that (3) the consumption of herbs as "Pkhali" (herb pie), very prevalent in other regions of Georgia, would be limited.

Materials and Methods

Ethnobotanical interviews
Fieldwork was conducted from July-August 2014 and June -November 2019. Interviews using semi-structured questionnaires were conducted with 84 participants (40 women and 44 men), with oral prior informed consent. The participants were selected by snowball sampling, trying to reach gender balance and represent members of different age groups (25–96 years). However, most participants were over 45 years old, because only very few younger people remain in remote Georgian villages.

All interviews were carried out in the participants’ homes and gardens by native speakers of Georgian, Laz, Megrelian and Svan, and then translated into English. Plants grown in the home gardens were used as prompts, while wild-collected species were free listed. Wild-collected and garden species were identified directly in the field, as well as using this literature (Flora of Georgia Committee 1971-2011; Makashvili 1952-1953), and voucher collections deposited in the National Herbarium of Georgia (TBI). The nomenclature of all species follows www.tropicos.org, under APGIII (Angiosperm Phylogeny Group 2009). The spelling of vernacular names was standardized using Makashvili (1991).

Statistical analysis
Distance among informants was calculated for two matrices: one in which columns represented plant species reported, and one in which columns represented uses reported. We calculated distance with the Bray-Curtis method and used the metaMDS function in the R package vegan (Oksanen et al. 2018) to implement nonmetric multidimensional scaling. The resulting ordinations plot individuals more closely together who report similar plants (in the case of the first matrix) or similar uses (in the case of the second matrix).

We then fit different continuous variables (elevation of community and age of individual) and categorical variables (gender of individual, community, and district) using to test whether each variable explains the location of informants in the ordination, also using vegan (Oksanen et al. 2018). We compared these fits to 999 randomized shuffles of the environmental variables to calculate significance.

We calculated informant consensus for a given use category as the number of use reports minus the number of taxa over the number of use reports minus one:

\[ Nur - Nt / Nur - 1 \]

We ranked species by three metrics: cultural importance value, the sum within species across all plant-uses of the number of informants reporting a plant-use over the number of informants reporting the plant; use diversity, the Shannon index of uses (calculated with vegan, Oksannen et al. 2018); and use value, the number of reports of a species over total number of informants asked in a region (Philips and Gentry 1993).

Results
We encountered 276 plant species belonging to 181 genera of 88 vascular plant families, and 3 fungal species and 5 undetermined fungi of at least 9 genera, belonging to at least 7 fungal families, and 1 lichen being used in the research region. Of these 163 species were exclusively wild collected, 114 were grown in homegardens, and 18 were both grown in gardens and collected in the wild (Table 1). The most important use categories were food, and medicinal. For the demographics of all participants see Table 2.
| Plant family | Scientific name | Georgian Name and (Transliteration) | Name other language and (Transliteration) | Use description | Part used | Location |
|--------------|----------------|-----------------------------------|------------------------------------------|----------------|----------|----------|
| Actinidiaceae | Actinidia callosa Lindl. | აქტინიდია (akt'inidia); ჭკვი (k'ivi) | Human Food | Fruit | Garden |
| Adoxaceae | Sambucus ebulus L. | ანწლი (ants'li) | Medicinal (Cough, Diarrhea, Tincture); Animal food (Fodder) | Fruit | Forest, Garden |
| Adoxaceae | Sambucus nigra L. | დიდგულა (didgula); თხიფსელა (tkhipsela) | Medicinal (Tincture); Utenils and Tools | Fruit, Stem | Forest |
| Adoxaceae | Viburnum lantana L. | თურსა (tursa - Tushetian) | Medicinal (Cold, Inflammation) | Fruit | Garden |
| Adoxaceae | Viburnum opulus L. | თქური (ts'ants'ofi - Megrelian) | Human Food | Fruit | Forest |
| Agaricaceae | Agaricus arvensis Schaeff. Pers. | ქამა (k'ama) | Human Food | Fruiting body | Forest |
| Agaricaceae | Agaricus campestris L. | მარქვალა (markvala) | Human Food | Fruiting body | Forest |
| Agaricaceae | Agaricus arvensis Schaeff. | ქარხალი (ch'arkhali); ხოხი (shavi phkhal) | Human Food | Fruiting body | Forest |
| Amanitaceae | Amanita caesarea (Scop.) | ნიყვი (niq'vi) | Human Food | Fruiting body | Forest |
| Amanitaceae | Amaranthus retroflexus L. | ჩვეულებრივი ჯიჯლაყა (cveulebrivi jijlaq'a) | Human Food | Shoots | Garden |
| Amanitaceae | Amaranthus spinosus L. | ჩვეულებრივი ჯიჯლაყა (cveulebrivi jijlaq'a) | Human Food | Shoots | Garden |
| Amanitaceae | Beta vulgaris L. | ჭარხალი (ch'arkhali); შავი ფხალი (shavi pkhali) | Human Food (Raw, Cooked, Phkhal) | Leaves, Root | Garden |
| Amanitaceae | Beta vulgaris L. ssp. cicla (L.) | ჭარხალი (ch'arkhali); ქოროფე (korofe) | Human Food (Phkhal) | Leaves | Garden |
| Amanitaceae | Chenopodium album L. | ნატსარგათხამ (natsarqathama); ჭათამანათა (katamnatsara) | Human Food (Phkhal); Animal food (Fodder) | Leaves | Forest, Garden |
| Amaryllidaceae | Allium cepa L. | ხახვი (khakhvi); ჭარხალი (ch'arkhali) | Human Food (Phkhal, Raw, Cooked, Spice) | Bulb, Leaves | Garden |
| Family          | Genus                           | Common Name (Local) | Local Name(s) | Use(s)                      | Part(s) | Habitat     |
|-----------------|---------------------------------|---------------------|---------------|-----------------------------|---------|-------------|
| Amaryllidaceae  | *Allium fistulosum* L.          | ჭლაკვი (ch’lakvibat) | ჭლაკვი, სოხი (sokhi, sorkhi - Megrelian); ჭლაკ (ch’hagv - Svan) | Human food | Bulb        | Garden      |
|                 | *Allium porrum* L.              | ჭჰარა (ch’har’ra); ჭჰარი (ch’hari) | ჭჰარა (puraskia - Megrelian) | Human Food (Pkhali, Spice) | Leaves   | Garden      |
|                 | *Allium rotundum* L.            | ჭოხო (q’hanis niori); ჭოხო (ch’kho) | ჭოხო (katapuraskia, joghorishi niori - Megrelian); ჭოხო სორხი (g’og’e sorkhi - Megrelian) | Human Food | Shoots      | Garden      |
|                 | *Allium sativum* L.             | ნიორა (niiori)      | ნიორა (nivra - Svan) | Human Food (Raw, Spice, Svan Salt) | Bulb     | Garden      |
| Amaryllidaceae  | *Allium sp.*                    | ველური პრასა (veluri p’rasa) |                | Human Food | Stem        | Forest      |
|                 | *Allium victorialis* L.         | მთის ღანძილი (mtis g’andzili); მთის ნიორა (niiora); მთის შიშღილი (shishkil); შიშკილ ნიორა (shishkil - Svan) | Human Food (Pkhali, Pickled) | Shoots, Leaves | Forest      |
|                 | *Galanthus woronowii* Losinsk.  | ვორონოვის თეთრყვავი (voronovis tetra’vavila); ყვითალი (endzela) | Human Food; Medicinal | Bulb, Shoots | Forest      |
|                 | *Narcissus sp.*                 | ნარგიზი (nargizi); მცენარე ნიორა (niiora mtsenare) | Human Food | Flowers | Forest      |
| Apiaceae        | *Aethusa cynapium* L.           | ძაღლის ქინძი (dzag’lis kindzi ) |                | Medicinal | Shoots      | Forest      |
|                 | *Agasyllis latifolia* (Bieb.)  | დუცი (dutsi)       | ღეი (g’ei - Megrelian) | Human Food | Root        | Forest      |
|                 | *Anethum graveolens* L.         | ცერეცო (tseretso)  | ცერეცო, ცეროცო, ძერო (tserotso, tsorotso, dzero - Megrelian) | Human Food (Spice) | Shoots      | Garden      |
|                 | *Apium graveolens* L.           | ნიახური (niakhuri); ნიახური (niakhuri) | ნიახური (niakhuri); ნიახური (niakhuri) | Human Food (Spice); Medicinal | Shoots with Flower and Seeds | Garden      |
|                 | *Carum carvi* L.                | კვლიავი (k’vliavi) | გიცრულ (gitsrul Svan) | Human Food (Spice, Svan Salt) | Seeds    | Forest, Garden |
|                 | *Coriandrum sativum* L.         | ქინძი (kindzi ) | Human Food (Spice, Svan Salt) | Shoots, Seeds | Garden      |
|                 | *Daucus carota* L. ssp. *sativus* | მტირი (st’apilo) |                | Human Food | Root        | Garden      |
| Family       | Species                        | Common Names                           | Type          | Part      | Habitat  |
|--------------|--------------------------------|----------------------------------------|---------------|-----------|----------|
| Apiaceae     | Falcaria vulgaris Bernh.       | კოფრჩხილა (k'oprchkhila)              | Human Food    | Leaves   | Forest   |
| Apiaceae     | Foeniculum vulgare Mill.      | დიდი კამა (didi k'ama); კამა (k'ama) | Human Food    | Shoots   | Garden   |
| Apiaceae     | Heracleum sp.                 | დიყი (diq'i)                            | Poison        | Shoots   | Forest   |
| Apiaceae     | Petroselinum crispum (Mill.)  | ხარხუში (okhrakhushi)                  | Human Food    | Shoots   | Garden   |
| Aquifoliaceae| Ilex colchica Pojark.         | ბაძგი (badzgi); ჰარქტი (bartski)     | Ornamental    | Fruit    | Forest   |
| Araceae      | Arum sp.                      | ნიუკა (niuk'a); ქალაკოდა (kalak'oda)  | Human Food    | Leaves   | Forest   |
| Araceae      | Zantedeschia aethiopica (L.)  | ჩხიკვიში (chkhikvishi dudi)           | Ornamental    | Flowers  | Garden   |
| Araliaceae   | Aralia spinosa L.             | არალია (aralia)                        | Human Food    | Leaves   | Forest   |
| Araliaceae   | Hedera colchica (K. Koch) K.  | სურო (suro)                            | Animal food   | Leaves   | Forest   |
| Aristolochiaceae| Aristolochia iberica Fisch. & | ძირმწა (dzirmts'ara)                  | Medicinal     | Tuber    | Forest   |
| Asparagaceae | Asparagus officinalis L.       |                                     | Human Food    | Leaves   | Forest   |
| Asparagaceae | Ornithogalum woronowii Kasch  | იმერული ძაღლნიორა (imeruli dzag'lniora) | Human Food    | Bulb     | Forest   |
| Asparagaceae | Polygonatum glaberrimum K.    | სკვანტი (sk'vant'ila)                  | Human Food    | Leaves   | Forest   |
| Asparagaceae | Ruscus colchicus Yeo           | ზორმეხი (zormekhi - Megrelian)        | Human Food (Phkhali); Animal food (Fodder) | Shoots | Forest   |
| Asparagaceae | Scilla sp.                    |                                     | Human Food    | Shoots   | Forest   |
| Aspleniacae  | Phyllitis scolopendrum (L.)   | ერმის ენა (irms ena); პუზენა (pudzena) | Veterinary; Animal food (Fodder) | Whole plant; Leaves | Forest   |
| Family       | Species                        | Common Names (in Georgian) | Use                  | Part Used | Additional Information         |
|-------------|--------------------------------|---------------------------|----------------------|-----------|--------------------------------|
| Asteraceae  | Artemisia dracunculus L.       | ტარხუნა (t’arkhuna)       | Human Food           | Shoots    | Garden                         |
| Asteraceae  | Bidens tripartita L.           | გორხგოლი (ork’ila)       | Medicinal            | Seeds     | Forest                         |
| Asteraceae  | Centaurea iberica Trevir ex Spreng. | ნართებათ (nartsetskhia)  | Cultural (Ritual)    | Whole plant| Forest                         |
| Asteraceae  | Cirsium vulgare L.             | ჩვეულებრივი ნარი (chveulebrivi nari) | Human Food - Honey (Bees) | Flowers | Forest                         |
| Asteraceae  | Crepis sp.                     |                           | Human Food           | Leaves    | Forest                         |
| Asteraceae  | Helianthus annuus L.           | შავი ხალი (mzesumzira)   | Human Food           | Seeds     | Garden                         |
| Asteraceae  | Helianthus tuberosus L.        | მიწავაშლა (mits’avashla); მიწის ვაშლი (mits’is vashli) | Human Food; Medicinal | Tuber     | Garden                         |
| Asteraceae  | Helichrysum graveolens (M. Bieb.) Sweet | ნეგო (nego)              | Medicinal (Heart problems) | Flowers, Leaves, Shoots | Forest                         |
| Asteraceae  | Lactuca sativa L.              | სალათა (salata); სალათის ფოთლები (salatis potlebi) | Human Food (Phkhali) | Leaves    | Garden                         |
| Asteraceae  | Lapsana communis L.            | ფუჩფუჩა (puchpucha)      | Human Food           | Leaves    | Forest                         |
| Asteraceae  | Petasites albus (L.) Gaertn.   | ჩვეულებრივი (chveulebrivi) | Human Food (Phkhali) | Leaves, Root | Forest                         |
| Asteraceae  | Pyrethrum sp.                  | გვირილა (gvirila)        | Human Food           | Flowers   | Forest                         |
| Asteraceae  | Senecio pojakovae Schischk.    | სისვლა (sisvla)          | Medicinal - Sold     | Whole plant| Forest                         |
| Asteraceae  | Siegesbeckia orientalis L.     | ბართყა (birk’alua)       | Medicinal            | Seeds     | Forest                         |
| Asteraceae  | Solidago canadensis L.         | ყვავილწვრილა (q’vavilts’vrila) | Human Food; Weed (Honey - Bees) | Flowers | Forest                         |
| Asteraceae  | Tagetes patula L.              | ჩრდილოეთი ნაღვა (imeruli zaprana); ჯოვაფოლი ნაღვა (jovafoli ghavali) | Human Food (Spice, Svan Salt) | Flowers, Seeds, Leaves | Garden                         |
| Asteraceae  | Taraxacum officinale Wigg.     | ბამბუქული (bubuats’vera) | Human Food - Medicinal | Flowers   | Forest, Garden                 |
| Asteraceae  | Tussilago farfara L.           | ჭითაპირი (ch’itap’iri - Megrelian) | Medicinal            | Leaves    | Forest                         |
| Asteraceae  | Xanthium strumarium L.         | დამბაქი (bashk’aria - Megrelian) | Medicinal            | Seeds     | Forest                         |
| Balsaminaceae | Impatiens balsamina L.      | ბაღის ინა (bag’is ina); ინა (ina) | Cultural (Dye, Cosmetic) | Fruit     | Garden                         |
| Family                | Genus                  | Scientific Name                                  | Common Names                                      | Natural Uses                                      |
|-----------------------|------------------------|--------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| Begoniaceae           | Begonia rex Putz.      | Begonia rex (begonia); Begonia sp.               | Human Food                                        | Seeds; Garden                                     |
| Berberidaceae         | Berberis vulgaris L.   | Berberis vulgaris (k'tsakhuri); Begonia sp.      | Human food, Medicinal                             | Fruit; Garden, Forest                            |
| Betulaceae            | Alnus barbata C.A. Mey.| Alnus barbata (mura'ani); Alnus sp.              | Medicinal (Diarrhea); Utensils and Tools (Tool handles) | Fruit, Leaves, Stem; Forest, Garden              |
| Betulaceae            | Alnus glutinosa subsp. | Alnus glutinosa subsp. barbata (C.A. Mey.) Yalt.| Utensils and Tools                               | Stem, Leaves; Garden                             |
| Betulaceae            | Betula lltwinowii Doluch.| Betula lltwinowii (tetri arq'i)                  | Utensils and Tools                               | Shoots; Forest                                   |
| Betulaceae            | Betula medwediewii Regel| Betula medwediewii (medvedevis arq'i)            | Utensils and Tools                               | Shoots; Forest                                   |
| Betulaceae            | Betula sp.             | Betula sp. (arq'i)                               | Human Food; Utensils and Tools                    | Sap, Stem; Forest                                |
| Betulaceae            | Carpinus betulus L.    | Carpinus betulus (tskhila); Carpinus sp.        | Utensils and Tools                               | Stem; Forest                                     |
| Betulaceae            | Corylus avellana L.    | Corylus avellana (tskhila); Corylus sp.         | Human Food, Utensils and Tools (Tool handles)     | Seeds, Flowers, Shoots, Stem; Garden, Forest     |
| Betulaceae            | Corylus pontica K. Koch.| Corylus pontica (tkhiri)                         | Human Food, Utensils and Tools (Tool handles)     | Seeds, Flowers, Shoots, Stem; Garden, Forest     |
| Betulaceae            | Ostrya carpinifolia Scop.| Ostrya carpinifolia (ukhravi)                     | Utensils and Tools                               | Stem; Forest                                     |
| Bignoniaceae          | Catalpa bignonioides Walter| Catalpa bignonioides (k'at'alp'a); Catalpa sp. | Utensils and Tools                               | Stem; Forest                                     |
| Boletaceae            | Boletus edulis Bull.   | Boletus edulis (datva sok'o)                      | Human Food; Fruiting body                         | Forest                                           |
| Boletaceae            | Leccinum scabrum (Bull.) Gray| Leccinum scabrum (dedabera)                     | Human Food; Fruiting body                         | Forest                                           |
| Boraginaceae          | Symphytum caucasicum M. Biel.| Symphytum caucasicum (lashkara)                  | Medicinal (Fractures)                             | Root; Forest                                     |
| Brassicaceae          | Armoracia rusticana (G. Gaertn.) B. Mey. & Scherb.| Armoracia rusticana (p'irshushkha); Armoracia sp. | Human Food (Phkhali)                             | Leaves; Garden                                   |
| Family              | Species                          | Scientific Name                  | Georgian Name(s)                              | English Name(s)                        | Plant Part(s) | Habitat          |
|---------------------|----------------------------------|----------------------------------|----------------------------------------------|----------------------------------------|---------------|------------------|
| Brassicaceae        | *Brassica juncea* (L.) Czern.    | *Brassica juncea* (L.) Czern.    | Šarep't'is mdogvi (sarep'tis mdogvi)         | Human Food (Pkhali)                    | Leaves        | Garden           |
| Brassicaceae        | *Brassica montana* Pourr.        | *Brassica montana* Pourr.        | სარეპტის მდოგვ (sarep't'is mdogvi)         | Human Food (Pkhali)                    | Leaves        | Garden           |
| Brassicaceae        | *Brassica oleracea* L.           | *Brassica oleracea* L.           | კომბოსტო (k'ombost'o)                      | Human Food (Pkhali)                    | Leaves        | Garden           |
| Brassicaceae        | *Brassica oleracea* var. gongylodes | *Brassica oleracea* var. gongylodes | კოლრაბი (k'olrabi); ხვიტი (khvit'i) | Human Food (Pkhali, Dolma, Salad)      | Leaves        | Garden           |
| Brassicaceae        | *Brassica rapa* L. subsp. rapifera Metzger | *Brassica rapa* L. subsp. rapifera Metzger | თალგამი (thalgami); ბოლოკი (bolok'i) | Human Food (Pkhali)                    | Leaves        | Garden           |
| Brassicaceae        | *Lepidium sativum* L.            | *Lepidium sativum* L.            | წიწმატი (ts'its'mat'i)                      | Human Food (Pkhali)                    | Medicinal     | Garden           |
| Buxaceae            | *Buxus colchica* Pojark.         | *Buxus colchica* Pojark.         | ბზა (bza); ბზაკალი (bzak'ali)              | Human Food (Pkhali)                    | Utensils and Tools | Stem, Forest  |
| Cactaceae           | *Opuntia* sp.                    | *Opuntia* sp.                    | ბჰუნძურა (opuntsia)                        | Human Food (Oil), Utensils and Tools   | Seeds         | Garden           |
| Campanulaceae       | *Campanula alliariifolia* Wild.  | *Campanula alliariifolia* Wild.  | ბჰუნძურა (bus'k'ant'ura)                    | Human Food (Pkhali)                    | Leaves        | Forest           |
| Campanulaceae       | *Campanula glomerata* L.         | *Campanula glomerata* L.         | წარხმული (dilkhami)                        | Human Food (Pkhali)                    | Leaves        | Forest           |
| Campanulaceae       | *Campanula lactiflora* M. Bieb.  | *Campanula lactiflora* M. Bieb.  | ჭყიპანტა (ch'q'ip'ant'a)                    | Human Food (Pkhali)                    | Leaves, Shoots | Forest           |
| Cannabaceae         | *Cannabis sativa* L.             | *Cannabis sativa* L.             | კანაფი (k'anapi); ჭარბადელო (ch'arbadeli - Laz) | Human Food (Oil), Utensils and Tools   | Seeds         | Garden           |
| Caryophyllaceae     | *Silene wallachiana* Klotzsch    | *Silene wallachiana* Klotzsch    | ჭყიპანტა (ch'q'ip'ant'a)                    | Human Food (Pkhali)                    | Shoots        | Garden           |
| Celastraceae        | *Euonymus europaeus* L.          | *Euonymus europaeus* L.          | ჭანჭყატი (evrop'uli ch'anch'q'ati)           | Human Food (Pkhali)                    | Shoots        | Forest           |
| Commelinaceae       | *Commelina communis* L.          | *Commelina communis* L.          | ჭორტანა (t'q'is ch'ort'ana)                 | Human Food (Pkhali)                    | Flowers       | Garden, Forest   |
| Commelinaceae       |                                   |                                  |                                               |                                        |               |                  |
| Family              | Genus                        | Common Name (Georgian) | Common Name (Other) | Use                  | Part Used | Habitat     |
|---------------------|------------------------------|------------------------|---------------------|----------------------|-----------|-------------|
| Convolvulaceae      | *Calystegia sepium* (L.) R. Br. | დიდი ხვართქლა (didi khvartkla) | ფუტია (put'ia) | Medicinal            | Whole plant | Garden      |
| Convolvulaceae      | *Convolvulus arvensis* L.    | ხვართქლა (khvartkla) | წახერწელ (nakhertsel - Svan) | Human Food (Pkhali) | Leaves    | Garden      |
| Cornaceae           | *Cornus mas* L.              | შინდი (shindi) | ბძგირი (bdzgiri - Megrelian) | Human Food           | Fruit     | Forest      |
| Crassulaceae        | *Sedum acre* L.              | მწვავე ფუნთუშა (mts'vave futusha) | საყმაწვილოს წამალი (saq'mats'vilos ts'amali - Megrelian) | Medicinal            | Whole plant | Forest      |
| Cucurbitaceae       | *Citrullus lanatus* (Thunb.) Matsum. & Nakai | ჩვეულებრი საზამთრო (chveulebrvi sazamtro) | Human Food           | Fruit     | Garden      |
| Cucurbitaceae       | *Cucumis melo* L.            | ნესვი (nesvi) | (shinka - Megrelian, Svan) | Human Food           | Fruit     | Garden      |
| Cucurbitaceae       | *Cucumis sativus* L.         | კიტრი; კინტი (kitri); | (k'int'iri - Megrelian) | Human Food (Pickled, Raw, Salad) | Fruit | Garden      |
| Cucurbitaceae       | *Cucurbita maxima* L.        | მსხვილი გოგრა (mskhvili gogra) | Human food           | Fruit     | Garden      |
| Cucurbitaceae       | *Cucurbita pepo* L.          | გოგრა (gogra); ხოკერია გოგრა (khokeria-kopeshia, khoko - Megrelian) | Human Food, Seeds    | Fruit, Seeds | Garden      |
| Cucurbitaceae       | *Cucurbita pepo* L. var. giromontia | ყაბაყი (q'abaq'i) | Human Food           | Fruit     | Garden      |
| Cucurbitaceae       | *Lagenaria vulgaris* Ser.    | აყირო, ყელიანი გოგრა (aq'iro, q'eliani gogra) | Human Food: In Samegrelo Animal Food, used as food for pigs | Fruit | Garden      |
| Cupressaceae        | *Juniperus* sp.              | ღვია (g'via) | ღურაჯი (odag'aji - Laz) | Medicinal (Tincture); Cultural (Incense) | Bark, Shoots | Forest      |
| Cyperaceae          | *Cyperus badius* Poir.       | წამალწვრილი (ts'amalts'vrili) | ღურაჯი (odag'aji - Laz) | Medicinal            | Shoots    | Forest      |
| Dennstaedtiaceae    | *Pteridium tauricum* V.I. Krecz. | ეწრის გვიმრა (ets'ris gvimra); ეწერი (ets'eri) | ღურაჯი (odag'aji - Laz) | Medicinal            | Leaves    | Forest      |
| Dioscoreaceae       | *Tamus communis* L.          | ძაღლის სატაცური (dzag'lis sat'atsuri) | ძაღლის სატაცური (dzag'lis sat'atsuri); ძარხუხუ (mortha, untho, unthosh jinji, dzarkhukhu -) | Medicinal            | Shoots    | Forest      |
| Family          | Genus                        | Species Name | Name (Georgian) | Name (Laz) | Use         | Parts Used | Place of Use |
|-----------------|------------------------------|--------------|----------------|------------|-------------|------------|--------------|
| Dryopteridaceae | Dryopteris filix-mas (L.)   | Schott.      | ჩადუნა (chaduna) | გვრიმ (gvrima - Megrelian) | Human Food | Leaves | Forest |
|                 |                              |              | ლემშური (lemshuri - Laz) | მეგრელი (megrelian) |            |          |          |
| Ebenaceae       | Diospyros lotus L.           |              | ჯაპონურიხურმა (iap'onuri khurma) | ჩვეულებრივი ხურმა (chveulebrivi khurma) | Human Food | Fruit | Garden, Forest |
| Ebenaceae       | Diospyros sp.                |              | ხურმა (khurma) | მარსინა (marsina - Megrelian) | Human Food | Fruit | Garden |
| Ebenaceae       | Diospyros virginiana L.      |              | ვირგინიული ხურმა (virginiuli khurma) | ხურმა (khurma) | Human Food | Fruit | Garden |
| Equisetaceae    | Equisetum arvense L.         |              | შვიტა (shvit'a) | თუნთიშ ჭემი (tuntish ch'emi - Megrelian) | Medicinal | Shoots | Forest |
| Equisetaceae    | Equisetum telmateia L.       |              | შვიტა (shvit'a) | ჩადუნა (chaduna) | Medicinal | Shoots | Forest |
| Ericaceae       | Vaccinium arctostaphylos L.  |              | მაღალი მოცვი (mag'ali motsvi) | შუბი (shubi - Megrelian) | Human Food | Fruit, Leaves | Forest |
|                 |                              |              | მარწყვი (marts'q'vi) | რბული მელიშია (rbluli melishia) |            |          |          |
| Ericaceae       | Vaccinium myrtillus L.       |              | ბაღის მარწყვი (bag'is marts'q'vi) | მინდორიშ მელიშია (mindorishi melishia - Megrelian) | Human Food | Fruit, Leaves | Forest |
| Ericaceae       | Vaccinium sp.                |              | მოცვი (motsvi) | შუბი (shubi - Megrelian) | Human Food | Fruit | Forest |
| Ericaceae       | Vaccinium uliginosum L.      |              | ლურჯი მოცვი (lurji motsvi) | შუბი (shubi) | Human Food | Fruit | Garden |
| Euphorbiaceae   | Euphorbia sp.                |              | როდზია (rdziana) | მაბჟალი (mabzhalia) | Animal food (Fodder), Medicinal | Shoots, Leaves | Forest |
| Fabaceae        | Albizia julibrissin Durazz.  |              | ლენკორიალი ალბიცია (lenkoraniul albitsia) | მინდორიშ მელიშია (mindorishi melishia - Megrelian) | Utensils and Tools | Stem | Garden |
| Fabaceae        | Galega orientalis Lam.       |              | ხბოშუბლა (khboshubla) | ნინჯორი მელიშია (njorjira melishia, marulia - Megrelian) | Human Food (Phkhalii), medicinal | Leaves | Forest |
| Fabaceae        | Glycine max (L.) Merr.       |              | სოია (soia); მუხუდო (mukhudo) | ჩადუნა (chaduna) | Human Food | Seeds | Garden |
| Family   | Species                                      | Common Names                      | Uses                              | Parts Used            | Habitat          |
|----------|----------------------------------------------|-----------------------------------|-----------------------------------|-----------------------|------------------|
| Fabaceae | *Lathyrus roseus* Steven                     | არჯაკელი (arjak'eli)             | Human Food                       | Leaves                | Forest           |
| Fabaceae | *Onobrychis* sp.                            | მებარებულები (esp'artset'i)     | Animal food                      | Young shoots, Whole plant | Garden           |
| Fabaceae | *Phaseolus sativus* L.                       | ღიახი (lobio); ღიახი ღუჯი (dziris lobio); ღუჯი (lbs) (cheulebrivi lobio) | Human food                       | Seeds, Fruit         | Garden           |
| Fabaceae | *Pisum sativum* L.                           | მინდვრის ღუჯა (mindvris barda)   | Construction; Utensils and Tools (Tool handles); Human Food | Stem, Flowers, Shoots young | Garden, Forest   |
| Fabaceae | *Robinia pseudoacacia* L.                    | ასპარეცეტი (esp'artset'i)       | Animal food                      | Whole plant           | Garden           |
| Fabaceae | *Trifolium* sp.                              | სამყურა (samq'ura)               | Animal food                      |                      |                  |
| Fabaceae | *Vicia faba* L.                              | ჭუბური (ch'uburi - Megrelian)    | Human Food, Utensils and Tools (Tool handles) | Stem, Seeds | Forest           |
| Fagaceae | *Carpinus caucasica* Grossh.                 | ჭყონი (ch'q'oni - Megrelian)     | Human Food, Utensils and Tools, Construction (Doors, Windows) | Fruit, Stem | Forest           |
| Fagaceae | *Castanea sativa* Mill.                      | ჭშტიიფური (ts'ipuri - Megrelian) | Utensils and Tools (Tool handles), Construction, Human Food | Stem, Seeds | Forest           |
| Fagaceae | *Fagus orientalis* Lipsky                    | ჭყონი ჭოხოხი (ch'q'oni - Megrelian) | Medicinal, Utensils and Tools | Bark, Stem | Forest           |
| Fagaceae | *Quercus dschorochensis C. Koch*             | ჭოხოხი ჭოქი (ch'oro'his mukha)  | Construction, Utensils and Tools | Stem | Forest           |
| Fungi    | გუნი ოჩვ (g'uni nichv)                      | Human Food                        | Fruiting body                     |                      |                  |
| Fungi    | თიკშინელი (tik'nh'ura)                      | Human Food                        | Fruiting body                     |                      |                  |
| Fungi    | პილპილა (p'ilp'ila)                         | Human Food                        | Fruiting body                     |                      |                  |
| Taxonomy       | Latin Name                          | Georgian Name | Category | Subcategory | Habitat                |
|----------------|-------------------------------------|---------------|----------|-------------|------------------------|
| **Fungi**      |                                    |               |          |             |                        |
|                | Статосоко (tetrisokho)              | Human Food    | Fruiting body | Forest      |                        |
|                | Гвасокан (tvana sokho)              | Human Food    | Fruiting body | Forest      |                        |
|                | Твашокан (pich'vasok'o)             | Human Food    | Fruiting body | Forest      |                        |
|                | Тетрисокан (tetrisokho)            | Human Food    | Fruiting body | Forest      |                        |
|                | Твашосокан (tvana sokho)           | Human Food    | Fruiting body | Forest      |                        |
|                | Твашосокан (tvana sokho)           | Human Food    | Fruiting body | Forest      |                        |
|                | Фиквакан (pich'vasok'o)            | Human Food    | Fruiting body | Forest      |                        |
|                | Хетамхали (khetamkhali)             | Human Food    | Fruiting body | Forest      |                        |
| **Gentianaceae** | Centaurium erythraea Rafn.        | Панибада (asistava) | Medicinal | Leaves, Flowers | Forest                |
|                | Gentiana cruciata L.               | Нагхвела (naghvela) | Medicinal | Shoots      | Forest                |
|                | Gentiana setemfida Pall.           | Нагхвела (naghvela) | Medicinal | Leaves      | Forest                |
| **Geraniaceae** | Geranium robertianum L.           | Немсит'вера (nemsits'vera) | Human Food | (Phkhali) | Leaves | Forest |
| **Grossulariaceae** | Ribes grossularia L.              | Оплиёнд (ophleend - Svan) | Human Food | Fruit | Garden |
|                | Ribes nigrum L.                    | Мотскхари (motskhari) | Human Food | Fruit | Garden |
|                | Ribes rubrum L.                    | Чвле биври мотскхари (cheulebrivi motskhari); Чвле биври мотскхари (mtis q'urdzeni) | Human Food | Fruit | Garden |
| **Guttiferae**  | Hypericum sp.                      | К'разана (k'razana) | Medicinal | Shoots      | Garden                |
| **Helleboraceous** | Helleborus caucasicus R. Br.     | Харисдзера (kharisdzira); Харисдзера (khardzeni) | Veterinary (Cleans blood of a cattle) | Stem, Whole plant | Forest |
| **Iridaceae**  | Crocus sativus L.                  | Запрана (zarpana) | Human Food | Flowers     | Garden                |
| **Juglandaceae** | Juglans regia L.                   | Лапани (lapani) | Human food | Fruit, Stem | Garden                |
| **Lamiaceae**  | Glechoma hederacea L.              | Ошоша (oshosha), Ошоша (oshoshia) | Medicinal | Leaves      | Forest                |
|                | Lamium album L.                    | Чинчрис-реда (ch'inchris-deda) | Human Food | (Phkhali) | Leaves | Forest |
|                | Mentha aquatica L.                 | Т'ентсо (t'entso) | Human Food | (Phkhali) | Shoots | Garden |
|                | Mentha longifolia (L.) L.          | Фяш вялмнта (fyash yvalminta - Megrelian) | Human Food | (Tea) | Shoots | Garden |
|                | Mentha pulegium L.                 | Омбало (ombalo) | Human Food | Shoots      | Garden                |
| Family         | Species                                                                 | Common Names (Georgian)                                                                 | Uses                                                                 | Parts Used | Location       |
|---------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------|----------------|
| Lamiaceae     | Mentha x piperita L.                                                    | ბაღის პიტნა (bag'is p'it'na); პიტნა (p'it'na)                                        | Human Food (Phkhali, Tea, Pickled)                                   | Shoots, Leaves | Garden         |
| Lamiaceae     | Ocimum basilicum L.                                                     | რეჰანი (rehani)                                                                       | Human Food (Spice)                                                   | Shoots      | Garden         |
| Lamiaceae     | Ocimum basilicum var. purpurascens Benth.                               | რეჰანი (rehani)                                                                       | Human Food (Spice)                                                   | Shoots      | Garden         |
| Lamiaceae     | Satureja hortensis L.                                                   | ჭვინ ტყის ქონძა (ts'iteli rehani)                                                     | Human Food                                                           | Shoots      | Forest         |
| Lamiaceae     | Satureja laxiflora K. Koch Boiss.                                       | ჭვინი (tchvin - Megrelian); ჭვინ (tchvin - Svan)                                      | Human Food (Spice, Svan Salt); Medicinal (Diabetes)                  | Shoots, Leaves | Forest         |
| Lauraceae     | Laurus nobilis L.                                                       | დაფნა (dapna)                                                                          | Human Food (Phkhali, Spice) Widely planted for sale.                 | Leaves      | Garden         |
| Liliaceae     | Lilium sp.                                                              | დათვისკიტრა (datvisk'it'ra)                                                          | Human Food (Phkhali)                                                 | Leaves      | Forest         |
| Lythraceae    | Punica granatum L.                                                      | ბერწული (bertsuli)                                                                    | Human Food, Medicinal                                                | Fruit       | Forest         |
| Malvaceae     | Malva sp.                                                               | ბალბა (balba); მოლოქა (moloka)                                                     | Human Food (Phkhali)                                                 | Shoots      | Garden         |
| Malvaceae     | Malva sylvestris L.                                                     | ბალბა (balba); მოლოქა (moloka)                                                     | Human Food (Phkhali)                                                 | Leaves      | Forest         |
| Malvaceae     | Malva neglecta L.                                                      | ბალბა (balba); მოლოქა (moloka)                                                     | Human Food (Phkhali)                                                 | Leaves      | Forest         |
| Malvaceae     | Tilia caucasica Rupr.                                                   | ცხაცხუ (tskhatskhu)                                                                   | Utensils and Tools, Human Food (Tea, Phkhali)                       | Stem, Bark, Flowers, Leaves | Forest         |
| Melanthiaceae | Veratrum lobelianum Bernh.                                              | შხამა (shkhama)                                                                        | Veterinary                                                           | Leaves      | Forest         |
| Moraceae      | Ficus carica L.                                                         | ლუღი (lug'i - Megrelian)                                                              | Human Food, Medicinal                                                | Fruit, Leaves | Garden         |
| Moraceae      | Morus alba L.                                                           | ზოლი (zholi)                                                                          | Human Food (Raw, Alcohol);                                          | Fruit, Stem  | Garden, Forest |
| Family            | Species                        | Common Name                  | Type                          | Use                                         |
|-------------------|--------------------------------|------------------------------|-------------------------------|---------------------------------------------|
| Moraceae          | Morus nigra L.                 | ხართუთა (khartuta)           | Human Food                    | Fruit                                       |
| Myrtaceae         | Acca sellowiana (O. Berg.) Burret | ფეიხოა (peikhoa)            | Human Food                    | Fruit                                       |
| Myrtaceae         | Eucalyptus saligna Sm.         | ევკალიპტი (evk'alip't'i)     | Construction, Medicinal       | Stem, Leaves                                |
| Oleaceae          | Fraxinus oxycarpa M. Bieb. ex Willd. | იფანი (ipani); კოპიტი (k'op'it'i) | Utensils and Tools            | Stem, Leaves                                |
| Onocleaceae       | Mattheuccia struthiopteris (L.) Todd. | ჩადუნა (Chaduna)             | Human Food                    | Fruit                                       |
| Myrtaceae         | Pedicularis sp.                | სატილია (sat'ilia)           | Veterinary, medicinal (Warts)  | Latex                                       |
| Parmeliaceae      | Usnea barbata (L.) F.H. Wigg.  | უსნეა (usnea)                | Animal food                   | Whole plant                                 |
| Paulowniaceae     | Paulownia tormentosa (Thunb.) Steud. | ჭიაფერა (ch'iapera)          | Utensils and Tools            | Stem                                        |
| Physalacrceae     | Armiliaria meliae (Vahl) P. Kumm | მანჭკვალა (manch'k'vala)     | Human Food                    | Fruiting body                               |
| Physolaccaceae    | Phylolacca americana L.        | ქრისტესიხლა (krist'esiskhla) | Utensils and Tools            | Bark (inner); Root                          |
| Pinaceae          | Abies nordmanniana (Steven) Spach | სოჭი (soch'i); ნეზუ (nuzu)    | Utensils and Tools, Medicinal, Construction | Stem                                        |
| Pinaceae          | Picea orientalis (L.) Peterm.  | ნაძვი (nadzvi)               | Utensils and Tools, Medicinal  | Stem                                        |
| Pinaceae          | Pinus kochiana Klotzsch ex K. Koch | ფიჭვი (phich'vi)            | Construction (Stem)           | Stem                                        |
| Pinaceae          | Pinus sosnowskyi Nakai         | კავკასიური ფიჭვი (k'avk'asiuri pich'vi) | Utensils and Tools, Medicinal, Construction | Stem                                        |
| Plantaginaceae    | Plantago major L.              | მრავალძარღვა (mravaldzarg'va); მაჯარღვია (majarg'via - Megrelian) | Medicinal (Wounds, Gastro Intestinal System) | Leaves, Root                                |
| Plantaginaceae    | Valeriana officinalis L.       | ჭიაბეჭანი (k'at'abalakha)     | Medicinal                     | Root                                        |
| Plantaginaceae | Veronica anagallis L. | ჩაღანდარი (chag'andari) | ჯიხანდარი (jikhandari - Laz) | Medicinal | Leaves | Forest |
|---------------|-----------------------|--------------------------|-----------------------------|-----------|--------|--------|
| Pleurotaceae   | Pleurotus ostreatus (Jacq. ex Fr.) P. Kumm | კალმახა (k'almakha); ხის სოკო (khis soko) | ჩაღანდარი (chag'andari) | Human Food; Fruiting body | Whole plant | Forest |
| Poaceae       | Agropyron repens (L.) P. Beauv. | ხის სოკო (khis soko) | წიფრაშ ტყუბულ (tsifrash t'q'ubul - Svan) | Animal Food (Fodder) | Whole plant | Forest |
| Poaceae       | Digitaria sp. | წიფრაშ ტყუბულ (tsifrash t'q'ubul - Svan) | წიფრაშ ტყუბულ (tsifrash t'q'ubul - Svan) | Animal Food | Whole plant | Forest |
| Poaceae       | Festuca djimilensis Boiss. & Balansa | წიფრაშ ტყუბულ (tsifrash t'q'ubul - Svan) | წიფრაშ ტყუბულ (tsifrash t'q'ubul - Svan) | Utensils and Tools (Stuffing for shoes) | Whole plant | Forest |
| Poaceae       | Hordeum vulgare L. | ქერი (keri) | ქერი (keri) | Animal food (Cows), Human Food | Young shoots, Whole plant, Seeds | Garden |
| Poaceae       | Oplismenus undulatifolius (Ard.) P. Beauv. | სოკო (soko) | ჰუმურაჰ (hu'mara) | Ornamental | Whole plant | Forest |
| Poaceae       | Panicum milanjianum Rendle | ფეტვი (phetvi) | ფეტვი (phetvi) | Human food | Seeds | Garden |
| Poaceae       | Setaria italica (L.) P. Beauv. | ღუმ (g'umi) | ღუმ (g'umi) | Animal food | Seeds | Garden |
| Poaceae       | Setaria viridis (L.) P. Beauv. | ღუმ (g'umi) | ღუმ (g'umi) | Animal Food (Fodder) | Seeds, Whole plant | Forest |
| Poaceae       | Triticum sp. | ხორბალი (khorbali) | ხორბალი (khorbali) | Human Food | Seeds | Garden |
| Poaceae       | Zea mays L. | სიმინდი (simindi) | სიმინდი (simindi) | Animal Food; Animal food (Fodder); Medicinal (Urinary - Prostate) | Seeds; Leaves young; Stigmata | Garden |
| Polygonaceae  | Persicaria maculosa Gray | ღუმურაჰ (hu'mara) | ღუმურაჰ (hu'mara) | Medicinal (Hemorrhoids) | Leaves | Forest |
| Polygonaceae  | Polygonum aviculare L. | გველიში ლაკარტი (gvelishi lak'art'i - Megrelian) | გველიში ლაკარტი (gvelishi lak'art'i - Megrelian) | Medicinal | Leaves | Forest |
| Polygonaceae  | Polygonum carneum C. Koch | ფიჯონი (fj'on'i) | ფიჯონი (fj'on'i) | Human Food (Phkhali), (Medicinal - Tincture, Urinary - Diuretic) | Leaves, Root | Forest |
| Polygonaceae  | Polygonum hydropiper L. | სარდაკია (sardak'ia) | სარდაკია (sardak'ia) | Medicinal (Hemorrhoids) | Leaves | Forest |
| Family                | Species                          | Common Names (in Georgian)                                           | Uses                                | Parts Used       | Habitat       |
|-----------------------|----------------------------------|---------------------------------------------------------------------|-------------------------------------|------------------|---------------|
| Polygonaceae          | Polygonum panjutini Kharkev.     | პანიუტინის მატიტელა (chveulebrivi mat’t’ela)                      | Human Food                          | Shoots           | Forest        |
| Polygonaceae          | Rumex acetasella L.              | კოკომჟავა (k’ok’omzhava)                                            | Human Food                          | Shoots           | Garden        |
| Polygonaceae          | Rumex alpinus L.                 | მთის ღოლო (mts’g’olo)                                             | Human Food                          | Shoots           | Forest        |
| Polyporaceae          | Fomes fomentarius (L.) Fr.       | აბედი (abedi)                                                      | Utensils and Tools                  |                  | Forest        |
| Portulacaceae         | Portulaca oleracea L.            | დანდური (danduri)                                                 | Human Food                          | Shoots, Leaves  | Forest, Garden|
| Primulaceae           | Cyclamen coum subsp. caucasicum K. Koch O. Schwarz | ყოჩივარდა (q’ochivarda)                                         | Veterinary                           | Tuber            | Forest        |
| Primulaceae           | Cyclamen vernum Sweet            | ყოჩივარდა (q’ochivarda)                                         | Veterinary                           | Tuber            | Forest        |
| Primulaceae           | Primula vulgaris subsp. rubra (Sm.) Arcang. | ფურისულა (purisula)                                           | Human Food                          | Leaves, Flowers  | Forest        |
| Primulaceae           | Primula woronowii Losinsk.       | ბაბილო (babilo - Mtiuluri, Kartluri)                              | Human Food                          | Leaves           | Forest        |
| Pteridaceae           | Pteris cretica L.                | ტაბელა (t’abela)                                                 | Medicinal                           | leaves           | Forest        |
| Ranunculaceae         | Ranunculus sp.                   | ბაია (baia)                                                       | Medicinal                           | Leaves           | Forest        |
| Rhamnaceae            | Frangula alnus Mill.             | ხეჭრელი (khech’reli)                                             | Cultural (Evil eye)                 | Stem             | Forest        |
| Rhododendraceae       | Rhododendron caucasicum Pall.    | შკერი (shkeri)                                                    | Medicinal                           | Leaves, Branches dry | Forest       |
| Rhododendraceae       | Rhododendron luteum Sweet        | იელი (ieli)                                                       | Human Food                          | Leaves, Flowers, Whole plant | Forest       |
| Rhododendraceae       | Rhododendron ponticum L.         | შიკერი (shikeri)                                                 | Animal food (Fodder), Human Food (Tea), Poisonous | Leaves | Forest       |
| Rosaceae          | Agrimonia eupatoria L. | ბირკავა (birk’ava) | ბნელგრძი (bishk’aria - Megrelian) | Medicinal | Seeds | Forest |
|-------------------|------------------------|--------------------|-----------------------------------|-----------|-------|--------|
| Rosaceae          | Aruncus vulgaris Raf.  | მეკენძალა (mek’endzala) | აჯორიკა, აჯორიკელა (ajorik’a, ajobrik’ela - Laz) | Human Food | Flowers, Leaves | Forest |
| Rosaceae          | Cerasus sp.            | ბალი (bali)       | ბული (buli - Megrelian)           | Human Food | Fruit | Garden |
| Rosaceae          | Crataegus curvisepala Lindm. | თს’ითელი (ts’iteli k’uneli) | ჯოლიორიშ კურკანტელა (joliorish k’urk’ant’ela) | Human Food, Medicinal | Fruit | Forest |
| Rosaceae          | Fragaria vesca L.      | მარწყვი (marts’q’vi) | ტყაშ ცგმუა (t’q’ash tsgmua - Megrelian); ციმუა (tsimua - Svan) | Medicinal (Gastro intestinal system, Tincture); Human Food | Whole plant, Fruit | Forest |
| Rosaceae          | Fragaria virginiana Mill | მარწყვი (marts’q’vi) | კუნელი (k’uneli) | Human Food | Fruit | Garden |
| Rosaceae          | Fragaria x ananassana Duchesne ex Rozier | მარწყვი (marts’q’vi); მარიამხელა (mariamkhela) | ჯოლიორიშ ვაშლი (joliorish vashli); კეხურა (k’ekhura); კიტრა (k’it’ra); კიტრავაშლა (k’it’ravashla); ლიტრივკა (lit’rivk’a); პანტე უშქური (p’ant’e ushkuri); ჩოლუხე ვაშლი (chosului vashli); ჭალია (ch’alia) | Human Food | Fruit | Garden |
| Rosaceae          | Geum urbanum L.        | ნიგვზისძირა (nigvzisdzira) | მარიამხელა (mariamkhela) | Medicinal (Children) | Root, Leaves | Forest |
| Rosaceae          | Malus orientalis Uglizk. | ვაშლი (vashli); მაჟალო (mazhalo) | ბანანი (banana); ბერა (bera); გორი (gori); გორივრა (gorivra); დემირშალა (demirsha); დემირმა (demirma); ივერია (iveria); კეხურა (k’ekhura); ლიტრივკა (lit’rivk’a); პანტე უშქური (p’ant’e ushkuri); ჩოლუხე ვაშლი (chosului vashli) | Human Food (Raw, Thlapi, Vinegar) | Fruit | Garden |
| Family       | Genus and Species | Common Names (Georgian) | Common Names (Svan) | Common Names (Megrelian) | Category       | Fruit          | Additional Uses                          |
|--------------|-------------------|-------------------------|---------------------|--------------------------|----------------|----------------|-----------------------------------------|
| Rosaceae     | Mespilus germanica L. | ზღმარტლი (zg'mart'li) | ქუშუტუ (zhunt'u - Svan); დურატეჯან  (tskumunt'uri - Megrelian) | Human Food | Fruit | Forest |
| Rosaceae     | Prunus avium (L.) L. | ბალი (bali) | VERIETIES: ჯინდიუთ (vinbali); თეთრი ბალი (tetri bali); კახამბალი (k'akhambala); ხარითვალ (maisis bali); ჟუნტუ (kharitvala) | Human Food | Fruit | Garden |
| Rosaceae     | Prunus cerasus L. | ალუბალი (alubali) | VARIETIES: თეთრი ბალი (tetri bali); კახამბალი (k'akhambali); შავი ბალი (shavi bali) | Human Food | Raw, Compote | Fruit | Garden |
| Rosaceae     | Prunus divaricata Ledeb. | ლუშებეთი (t'semali); წითელი ტყემალი (ts'iteli t'q'emali) | ჩვრუბლე (q'umuri - Megrelian) | Human Food | Fruit | Garden, Forest |
| Rosaceae     | Prunus insititia L. | ღოღნოშო (g'og'nosho) | თეთრი ბალი (tetri bali); კახამბალი (k'akhambali); შავი ბალი (shavi bali) | Human Food | Fruit | Garden |
| Rosaceae     | Prunus laurocerasus L. | წყავი (ts'q'avi); წყი (ts'qi) | წყავი, წყი (tsq'ili, tsq'I - Megrelian) | Human Food | Fruit | Forest |
| Rosaceae     | Prunus persica (L.) Batsch | ატამი (at'ami) | წყავი, წყი (tsq'avi, tsq'i) | Human Food | Fruit | Garden, Medicinal |
| Rosaceae     | Prunus spinosa L. | კვინჩხაი (kvinchkhai) | კვინჩხაი (kvinchkhai) | Human Food | Fruit | Garden, Medicinal |
| Rosaceae     | Prunus vachuschtii Bregaze | ალუჩა (alucha) | თეთრი ბალი (tetri bali); კახამბალი (k'akhambali) | Human Food | Fruit | GArden |
| Rosaceae     | Prunus vulgaris Mill. | ალუბალი (alubali) | ჭანჭური (ch'anchuri) | Human Food | Fruit | Garden |
| Rosaceae     | Prunus x domestica L. | კილავი (kliavi) | კორკიმელი (k'ork'imeli); კურენაცა (k'urenaq'az); ჭანჭური (ch'anchuri) | Human Food | Fruit | Garden |
| Rosaceae     | Pyrus caucasica Fed. | პანტა (p'ant'a) | პანტე სხული (p'ant'e skhuli - Megrelian) | Human Food | Fruit | Garden |
| Rosaceae     | Prunus spinosa L. | ჭანჭური (ch'anchuri) | ჭანჭური (ch'anchuri) | Human Food | Fruit | Garden |
| Rosaceae     | Prunus vachuschtii Bregaze | ალუჩა (alucha) | თეთრი ბალი (tetri bali); კახამბალი (k'akhambali) | Human Food | Fruit | GArden |
| Rosaceae     | Prunus vulgaris Mill. | ალუბალი (alubali) | ჭანჭური (ch'anchuri) | Human Food | Fruit | Garden |
| Rosaceae     | Prunus x domestica L. | კილავი (kliavi) | კორკიმელი (k'ork'imeli); კურენაცა (k'urenaq'az); ჭანჭური (ch'anchuri) | Human Food | Fruit | Garden |
| Rosaceae     | Pyrus caucasica Fed. | პანტა (p'ant'a) | პანტე სხული (p'ant'e skhuli - Megrelian) | Human Food | Fruit | Garden |
| Rosaceae | Pyrus communis L. | მსხალი (mskhali) | Varieties: აზარაქი (azarnaki); ბარაკა (baraka); ბილა (bila); ბოქშვა (bokshva); გულაბი (gulabi); ტავრაჯული (tavrajuli); თაფლამსხა (taplamskhala); მენსხარმუთი (mesara); მშალთეთრა (mskhaltetra); მახრჩობელა (makhrchobela); მართახი (mesara); მარკოვი (mark'ovi); მარჯვენა (mark'ovi); მესარა (mesara); მახარა (makhar'a); მახარე (makher); მიჯარე (mij'are); მუქარა (muk'ara); მურუა (murua); ნიკ'ანდრა (nik'andra); ჭილებურა (ch'ilebura); ჭილოფი (ch'ilopi); ჭილი (ch'ili); ჭილო (ch'ilo); ჭილოფი (ch'ilopi); ჭილოფო (ch'ilopo); ჭილი (ch'ili); ჭილო (ch'ilo); ჭილოფო (ch'ilopi); ჭილი (ch'ili); ჭილო (ch'ilo); ჭილოფი (ch'ilopi); ჭილი (ch'ili); ჭილო (ch'ilo); ჭილოფო (ch'ilopi); ჭილი (ch'ili); ჭილო (ch'ilo); ჭილოफო (ch'ilofi); ჭმარო (ch'maro); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura); ჭურა (ch'ura) | Human Food | Fruit | Garden |
| Rosaceae | Rosa canina L. | ასკილი (ask'ili) | ეშმაკიში (eshmak'ishi martakhi - Megrelian) | Medicinal (Flu, Infusion, Tincture, Urinary - Kidney); Animal food (Fodder); Cultural (Evil eye) | Fruit, Shoots | Forest |
| Family       | Genus               | Common Name A-Z | Local Name (In Svan, Megrelian) | Human Use                          | Parts Used | Habitat       |
|--------------|---------------------|-----------------|---------------------------------|-----------------------------------|------------|---------------|
| Rosaceae     | Rosa sp.            | Wild Rose       | ასკილი (ask’ili)               | Human Food (Tea), Medicinal       | Fruit, Flowers | Forest        |
| Rosaceae     | Rubus caesius L.    | Blackberry      | ვარდი (vardi - Svan)            | Human Food                        | Fruit      | Forest        |
| Rosaceae     | Rubus idaeus L.     | Red Raspberry   | ჯოღორიში მუყია (joghorisi muq’ia - Megrelian) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Rosaceae     | Rubus sp.           | Rubus Species   | მაყვალი მუია (maq’vali Muia - Megrelian); მუყი (muq’i - Megrelian) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Rosaceae     | Sorbus aucuparia K. Koch | Rowan | ჩვაჰა იმღვა (ing’a, bag’ish muq’i - Megrelian) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Rosaceae     | Sorbus terminalis C.Crantz. | Red raspberry | ჟოლო ინგ’ა (zholo; ing’a - Svan); ბაღიშ მუყი (img’va, bag’ish muq’i - Megrelian) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Rosaceae     | Sorbus sp.          | Mountain Ash    | მაყვალი მუია (maq’vali Muia - Megrelian); მუყი (muq’i - Megrelian) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Russulaceae  | Lactarius deliciosus (L. ex Fr.) | Honey mushroom | ჭვაჰა სფაროშით (chvaha Svan); იმღვა, ბაღიშ მოყალი (img’va, bag’ish muq’i - Megrelian) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Russulaceae  | Lactarius piperatus L. Pers. | Bitter mushroom | არყ’ისოხო ბერუთავი (arq’isokho beruithavi - Svan) | Human Food (Raw, Wine), Medicinal (Anemia, Cold, Inflammation) | Fruit, Leaves | Forest        |
| Rutaceae     | Citrus limon (L.) Burm. f. | Lemon           | ლიმონი (limoni)               | Human Food                        | Fruit      | Garden        |
| Rutaceae     | Citrus sinensis Osbeck | Mandarin orange | ფორთოხალი (portokhali)        | Human Food                        | Fruit      | Garden        |
| Salicaceae   | Populus tremula L.  | Alder            | ლეკი (lek’a); ლეკის ხე (lek’is khe) | Human Food                        | Utensils and Tools | Stem, Bark        |
| Salicaceae   | Salix caprea L.     | Willow           | ეკალა (ek’ala)                  | Human Food                        | Utensils and Tools | Stem, Bark        |
| Santalaceae  | Viscum album L.     | Viscum          | ფითრი (pitri)                  | Medicinal                         | Leaves     | Garden        |
| Sapindaceae  | Acer platanoides L. | Maple            | ლეკი (lek’a); ლეკის ხე (lek’is khe) | Human Food                        | Utensils and Tools | Stem, Bark        |
| Sapindaceae  | Acer trautvetteri Medw. | Maple | თეკრი ჩამფა (thekri champa - Megrelian); ჩამხვა (champa - Svan) | Human Food                        | Utensils and Tools | Stem, Bark        |
| Smilacaceae  | Smilax excelsa L.   | Smilax          | შმაგა (shmaga)                  | Human Food (Phkhali)              | Leaves     | Forest        |
| Solanaceae   | Atropa caucasica Kreyer | Deadly nightshade | ქარწამალა (karts’amala - Megrelian) | Human Food                        | Fruit      | Forest        |
| Family       | Species                        | Scientific Name                                   | Examples                                                                 | Use                          | Plant Part | Habitat |
|-------------|--------------------------------|--------------------------------------------------|--------------------------------------------------------------------------|-----------------------------|------------|---------|
| Solanaceae  | Capsicum annuum ssp. bulgari   | Solanaceae Capsicum annuum (bulgaruli tsits'ak'a); Solanaceae (bulgarul); Solanaceae (tzitzak tiziheli) | Human Food (Raw, Spice, Ajika, Svan Salt, Dolma, Pickled)                | Fruit                        | Fruit      | Garden  |
| Solanaceae  | Datura stramonium L.           | Datura stramonium (lema)                         | Veterinary (Pigs)                                                       | Seeds                        | Seeds      | Forest  |
| Solanaceae  | Lycopersicum esculentum L.     | Solanaceae Lycopersicum (p'omidori); Solanaceae (p'omidori)              | Human Food                                                               | Fruit                        | Fruit      | Garden  |
| Solanaceae  | Nicotiana tabacum L.           | Solanaceae Nicotiana (tambako)                   | Cultural - Smoking tobacco                                              | Leaves                       | Leaves     | Garden  |
| Solanaceae  | Solanum melogena L.            | Solanaceae Solanum melogena (badrijani)          | Human Food                                                               | Fruit                        | Fruit      | Garden  |
| Solanaceae  | Solanum tuberosum L.           | Solanaceae Solanum tuberosum (k'artopili)        | Human Food (Cooked; Phkhali)                                            | Tuber, leaves                | Tuber, leaves | Garden  |
| Staphyleaceae | Staphylea colchica Steven     | Staphylea colchica Steven (chveulebrivi jonjoli) | Human Food                                                               | Flowers                      | Flowers    | Forest  |
| Taxaceae    | Taxus baccata L.               | Taxaceae Taxus baccata (urtkhei)                 | Utensils and Tools                                                       | Stem                         | Stem       | Forest  |
| Taxodiaceae | Cryptomeria japonica (Thunb. ex L. f.) D. Don | Taxodiaceae Cryptomeria japonica (k'r'ip'tomeria) | Ornamental; Utensils and Tools                                          | Stem                         | Stem       | Garden  |
| Thymeleaceae | Daphne mezereum L.            | Daphne mezereum (majag'veri)                     | Medicinal                                                                | leaves                       | leaves     | Forest  |
| Ulmaceae    | Ulmus elliptica C. Koch        | Ulmus elliptica (tsaira - Laz); Ulmus elliptica (teladuma)                | Construction (Stem), Utensils and Tools; Huma Food                      | Stem, Bark, Flowers, Leaves  | Stem, Bark | Forest  |
| Ulmaceae    | Ulmus sp.                      | Ulmus sp. (teladuma)                              | Human Food                                                               | Stem                         | Stem       | Forest  |
| Urticaceae  | Urtica dioica L.              | Urtica dioica (ch'inch'ari); Urtica dioica (ch'uch'elia-Megrelian)         | Medicinal                                                                | Leaves                       | Leaves     | Forest, Garden |
| Verbenaceae | Verbena officinalis L.         | Verbena officinalis (tsotskhana); Verbena officinalis (makosalia)           | Medicinal                                                                | Whole plant                  | Whole plant | Forest  |
| Family       | Genus                  | Scientific Name | Local Name (Q’urdzeni) | Varieties | Food Use          | Fruit Use | Cultivation Area |
|--------------|------------------------|-----------------|------------------------|-----------|-------------------|-----------|------------------|
| Vitaceae     | Vitis laubusca L.      |                 | იზაბელა (q’urdzeni)  | იზაბელა (izabela) | Human Food | Fruit          | Garden          |
| Vitaceae     | Vitis vinifera L.      |                 | იზაბელა (q’urdzeni)  | ჭეიშვილი (ch’eishvili); ადესა (adesa); ალადასტური (alaghasturi); დამსკიპალეცი (damsk’ip’aletsi); ფიძული (adesa); თეთრი ადესა (tetri adesa); თითა (tita); კაჭიჭა (k’ach’ich’a); ნოე (noe); აბაშამაცი (abashamtsi); ნენყურცი (nenq’urtsi); დორბულა (dirbula); მოლდავური (moldavuri); ალადასტური (aladast’uri); ჭოლიკაური (tsolik’auri) | Human Food (Khardali, Wine) | Fruit | Garden          |
Participants were little differentiated by plant species reported. The main factor for species knowledge differences was elevation, but to a limited extent (Fig. 2 A,B; $r^2 = 0.116$), and the location of the study community (Fig. 2 c; $r^2 = 0.325$). In case of different plant uses, differences were also small, and elevation had no significant impact (Fig. 2 D,E).

The location of the participant community did however significantly fit the ordination in use-space ($F$, $r^2 = 0.215$). Overall, the elevation of the study community was much less important as distinctive variable in this region, but the community location was the main separating variable for differences in both plant-space ($r^2 = 0.7433$, $P=0.001$) (Table 3), and use-space ($r^2 = 0.8244$, $P=0.001$) (Table 4).

The number of plant species used in the research area, as well as their uses were much lower than reported from other areas of Georgia, with a mean of 44 plants known by participant (versus 58.1 in other areas), and a mean of 45.8 uses (versus 62.7 in other areas) (Figs. 3 and 4). The trend to know fewer species was less evident for cultivated species than for forest plants (Fig. 5). When observing plant uses, the lack of knowledge, as compared to other regions, was significant for forest species, but not for garden species (Fig. 6).

Most species and uses were widely spread across the region. Overall participants showed a high informant consensus in all use-categories (Table 5). The use of plants for herb pies (Phkhali) was rather uncommon in the region.

Table 2. Participants

| informant code | gender | age | community  | elevation m | district |
|----------------|--------|-----|------------|-------------|----------|
| 301            | M      | 70  | Merisi     | 736         | Keda     |
| 302            | M      | 50  | Merisi     | 736         | Keda     |
| 303            | F      | 50  | Merisi     | 736         | Keda     |
| 304            | M      | 36  | Uchkhiti   | 400         | Keda     |
| 305            | F      | 40  | Uchkhiti   | 400         | Keda     |
| 306            | F      | 50  | Uchkhiti   | 400         | Keda     |
| 307            | F      | 40  | Uchkhiti   | 400         | Keda     |
| 308            | M      | 55  | Dologani   | 160         | Keda     |
| 309            | F      | 50  | Dologani   | 160         | Keda     |
| 310            | F      | 53  | Dologani   | 160         | Keda     |
| 311            | M      | 57  | Chvana     | 549         | Shuakhevi|
| 312            | M      | 70  | Gogadzebi  | 1335        | Shuakhevi|
| 313            | M      | 46  | Gogadzebi  | 1335        | Shuakhevi|
| 314            | F      | 63  | Gogadzebi  | 1335        | Shuakhevi|
| 315            | F      | 60  | Gogadzebi  | 1335        | Shuakhevi|
| 316            | F      | 35  | Gogadzebi  | 1335        | Shuakhevi|
| 317            | F      | 76  | Center     | 420         | Shuakhevi|
| 318            | F      | 52  | Chvana     | 549         | Shuakhevi|
| 319            | M      | 55  | Chvana     | 549         | Shuakhevi|
| 320            | F      | 45  | Chvana     | 549         | Shuakhevi|
| 321            | M      | 35  | Chvana     | 549         | Shuakhevi|
| 322            | M      | 42  | Tsivadzebi | 475         | Shuakhevi|
| 323            | F      | 95  | Tsivadzebi | 475         | Shuakhevi|
| 324            | M      | 64  | Tsivadzebi | 475         | Shuakhevi|
| 325            | F      | 59  | Tsivadzebi | 475         | Shuakhevi|
| 326            | F      | 49  | Gomarduli  | 11230       | Shuakhevi|
| 327            | F      | 78  | Gomarduli  | 11230       | Shuakhevi|
| 328            | M      | 72  | Gomarduli  | 11230       | Shuakhevi|
| 329            | M      | 82  | Gomarduli  | 11230       | Shuakhevi|
| 330            | F      | 69  | Fushrukauli| 11230       | Khulo    |
| 331            | M      | 76  | Fushrukauli| 11230       | Khulo    |
|   |   |   |   |   |
|---|---|---|---|---|
| 332 | F | 44 | Skhalta | 800 | Khulo |
| 333 | M | 83 | Fachkha | 1172 | Khulo |
| 334 | M | 48 | Fachkha | 1172 | Khulo |
| 335 | M | 40 | Fachkha | 1172 | Khulo |
| 336 | F | 59 | Samikao | 320 | Tsalenjikha |
| 337 | F | 73 | Samikao | 320 | Tsalenjikha |
| 338 | M | 63 | Samikao | 320 | Tsalenjikha |
| 339 | F | 53 | Napichkhovo | 244 | Chkhorots’q’u |
| 340 | F | 50 | Napichkhovo | 244 | Chkhorots’q’u |
| 341 | M | 72 | Napichkhovo | 244 | Chkhorots’q’u |
| 342 | F | 66 | Napichkhovo | 244 | Chkhorots’q’u |
| 343 | M | 80 | Napichkhovo | 244 | Chkhorots’q’u |
| 344 | M | 55 | Napichkhovo | 244 | Chkhorots’q’u |
| 345 | M | 91 | Mukhuri | 260 | Chkhorots’q’u |
| 346 | M | 55 | Mukhuri | 260 | Chkhorots’q’u |
| 347 | F | 65 | Etseri | 320 | Tsalenjikha |
| 348 | M | 35 | Etseri | 320 | Tsalenjikha |
| 349 | M | 42 | Muzhava, Sashonio | 320 | Chkhorots’q’u |
| 350 | F | 40 | Muzhava, Sashonio | 320 | Chkhorots’q’u |
| 351 | F | 40 | Muzhava, Sashonio | 320 | Chkhorots’q’u |
| 352 | M | 67 | Samikao | 300 | Tsalenjikha |
| 353 | M | 84 | Skuri | 375 | Tsalenjikha |
| 354 | M | 57 | Skuri | 375 | Tsalenjikha |
| 355 | M | 55 | Skuri | 375 | Tsalenjikha |
| 356 | M | 65 | Mukhuri | 375 | Tsalenjikha |
| 357 | M | 55 | Mukhuri | 375 | Tsalenjikha |
| 358 | F | 70 | Gakhara | 400 | Tsalenjikha |
| 359 | M | 80 | Salkhino | 400 | Martvili |
| 360 | M | 75 | Salkhino | 400 | Martvili |
| 361 | F | 75 | Salkhino | 400 | Martvili |
| 362 | F | 45 | Jikhashkari | 300 | Chkhorots’q’u |
| 363 | F | 70 | Jikhashkari | 300 | Chkhorots’q’u |
| 364 | M | 70 | Jikhashkari | 300 | Chkhorots’q’u |
| 365 | M | 45 | Jikhashkari | 300 | Chkhorots’q’u |
| 366 | F | 66 | Lentekhi | 755 | Lentekhi |
| 367 | M | 83 | Shkedisi | 1300 | Lentekhi |
| 368 | F | 40 | Shkedisi | 1300 | Lentekhi |
| 369 | F | 70 | Shkedisi | 1300 | Lentekhi |
| 370 | M | 53 | Shkedisi | 1300 | Lentekhi |
| 371 | F | 77 | Shkedisi | 1300 | Lentekhi |
| 372 | M | 53 | Tsana | 1800 | Lentekhi |
| 373 | M | 55 | Tsana | 1800 | Lentekhi |
| 374 | F | 80 | Leusheri | 1300 | Lentekhi |
| 375 | F | 77 | Leusheri | 1300 | Lentekhi |
| 376 | M | 25 | Leusheri | 1300 | Lentekhi |
Figure 2. Participants ordered by their distance in plants reported (A,B,C) and in uses reported (D,E,F). Participants are more differentiated by plant species reported (A, participants shown but plant species hidden for visual clarity) than by use reported (D, participants and uses shown).
Table 3. Environmental fit on ordination of individuals in plant-space

|           | $r^2$ | p-value |
|-----------|-------|---------|
| Age       | 0.0160| 0.561   |
| Elevation | 0.1539| 0.003 **|
| Gender    | 0.0158| 0.306   |
| Community | 0.7433| 0.001 ***|
| District  | 0.2781| 0.001 ***|

Table 4. Environmental fit on ordination of individuals in use-space

|           | $r^2$ | p-value |
|-----------|-------|---------|
| Age       | 0.0562| 0.113   |
| Elevation | 0.0071| 0.748   |
| Gender    | 0.0148| 0.348   |
| Community | 0.8244| 0.001 ***|
| District  | 0.2148| 0.001 ***|

Figure 3. Number of plant uses reported by each participant in this study (2019) in comparison to previous studies in Georgia (2013-2017).

Figure 4 Number of plant uses reported by each participant in this study (2019) in comparison to previous studies in Georgia (2013-2017).
Figure 5. Number of plant species known by each participant for forest and garden species.

Figure 6. Number of use reports by each participants for forest and garden species.
Table 5 Mean informant consensus across use categories among informant districts, with total number of use reports and taxa.

| District     | N Use Categories | Total Use Reports | Total Taxa | ICF mean | ICF sd |
|--------------|------------------|-------------------|------------|----------|--------|
| Chkhorots’q'u | 11               | 683               | 145        | 0.82     | 0.11   |
| Keda         | 8                | 538               | 94         | 0.89     | 0.10   |
| Khulo        | 6                | 413               | 96         | 0.83     | 0.17   |
| Lentekhi     | 8                | 584               | 126        | 0.78     | 0.16   |
| Martvili     | 5                | 158               | 54         | 0.72     | 0.06   |
| Shuakhevi    | 7                | 1375              | 167        | 0.77     | 0.16   |
| Tsalenjikha  | 9                | 420               | 135        | 0.71     | 0.21   |

Discussion

As we hypothesized, the number of plant species used in the research area, as well as their uses were much lower than reported from other areas of Georgia, with a mean of 41.1 plants known by participant (versus 58.1 in other areas), and a mean of 42.4 uses (versus 62.7 in other areas), equally for Svaneti-Lechkhumi-Khevsureti (Bussmann et al. 2014, 2016a), Samtshe-Javakheti (Bussmann et al. 2017a,b), and high altitude Tusheti-Khevsureti (Bussmann et al. 2016b, 2017c), and thus lower than species numbers and use reports than other areas in the wider Georgia (Bussmann et al. 2016c, Bussmann 2017; Zenderland et al. 2019). The prevalence of wild collected species for medicinal applications versus garden species for food, was however very similar in other regions (Bussmann et al. 2017a; Pieroni and Sõukand 2017).

Overall the research region showed a lower species number in comparison to a wide variety of studies published from other parts of Europe. The number of food species was low in comparison to other areas in the wider Mediterranean and Caucasus (Carvalho 2016; Dolina et al. 2017; Hajdari et al. 2018; Kasper-Pakosz et al. 2016; Korkmaz et al. 2016; Łuczaj et al. 2017, 2019; Mattalia et al. 2020; Melián et al. 2017; Mustafa et al. 2020; Nedelcheva et al. 2017; Oztürk et al. 2018; Polat et al. 2017; Pawera et al. 2017; Pieroni and Cattero 2018; Pieroni and Sõukand 2017, 2019; Pieroni et al. 2018, 2019, 2020; Savo et al. 2019; Sõukand et al. 2017, 2019, 2020; Yeşil et al. 2019), and the number of medicinal species also was lower than in comparative studies (Pieroni and Sõukand 2017; Nedelcheva et al. 2017; Melián et al. 2017; Sõukand et al.- 2017; Carvalho 2016; Polat et al. 2017; Kasper-Pakosz et al. 2016; Korkmaz et al. 2016a; Dolina et al. 2017, Korkmaz et al. 2016b; Hajdari et al. 2018; Oztürk et al. 2018; Pawera et al. 2017; Pieroni 2017; Pieroni et al. 2018). The low variety of fungal species used as food was astonishing, especially when compared to other adjacent areas in Georgia, e.g. Racha, where fungal use was found to be very common. (Kupradze et al. 2015; Bussmann et al. 2018).

Our results confirmed our hypothesis that (1) plant use knowledge in general would lower in these regions than in the rest of Georgia, that (2) most plant use would center on home gardens (3) that the consumption of herbs as “Pkhali” (herb pie), very prevalent in other regions of Georgia, would be limited.

Conclusions

The lack of forest plant use, and both forest and garden plant-use knowledge in Ajara and Samegrelo might be related to the fact that those regions, with Batumi and Zugdidi, have very large markets, and a large flow of products along the Black Sea. In Ajara, most of the population spends large parts of its time close to the capital, and higher altitude villages are only occupied in summer. In case of Samegrelo, the whole region represents a low altitude area, with easy market access. As such, in none of the two regions foraging is much needed. Although agriculture is made more difficult in Ajara due to steep slopes, much is produced in the lower regions. In contrast, agriculture in Samegrelo is very easy due to its low location and fertile soils. Due to location, and mild, short winters, there is essentially no need for foraging wild species e.g. for Phkhali in early spring. In contrast, the results in Kvemo-Svaneti are somewhat surprising. While the use of wild and garden species is higher than in the other two regions, it is still surprisingly low in comparison to the rest of Georgia. This might be related to its close vicinity to smaller cities with considerable markets, but overall further data are needed to explain this discrepancy.
Declarations

List of abbreviations: Not applicable.

Ethics approval and consent to participate: Oral informed consent was obtained from all participants before conducting interviews.

Consent for publication: Not applicable. No personal information is disclosed, nor personal images shown.

Conflict of interests: The authors declare that they have no conflict of interests.

Funding: This research work did not receive any specific grant from funding agencies or any other commercial source.

Competing interests: The authors declare that they have no competing financial interest.

Author contributions: RWB, NYPZ, SS, ZK, DK, DT, and KB designed the study; RWB, NYPZ, SS, ZK, DT, MD, ZM, JE, and KB conducted the fieldwork, RHE conducted the main statistical analysis; RBU, NYPZ and RHE analyzed the data and wrote the manuscript; all authors read, corrected and approved the manuscript.

Acknowledgements

Authors would like to thank all the people of Ajara, Samergrelo and Kvemo Svaneti who kindly agreed to participate in the ethnobiological interviews.

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