

Medicinal and Food Plants of Svaneti and Lechkumi, Sakartvelo (Republic of Georgia), Caucasus

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Abstract

Svaneti and Racha-Lechkumi are historical provinces of Georgia, located on the south-facing macro-slope of the western part of the Greater Caucasus. Svaneti has always been one of the more accessible mountain regions of Georgia, and recently winter tourism has experienced a boom. However, surprisingly few studies on the plant use of its inhabitants exist. In this study we documented traditional plant use in Svaneti and Racha-Lechkumi, and hypothesized that (1) plant use knowledge in general would be higher in isolated high elevation communities, and that (2) use of home gardens would be much more restricted to lower elevation settings. Fieldwork was conducted in Svaneti and Racha July-August 2014 in 17 communities. Interviews using semi-structured questionnaires were conducted with 63 participants. We encountered 203 plant species belonging to 144 genera of 65 families being used in the research region. Of these, 99 species were exclusively wild-collected, 73 were grown in home-gardens, and 35 were both grown in home-gardens and collected in the wild. Plants and their uses mostly overlapped among the four areas within the region, with a slightly wider divergence in uses than in plants. The environmental fit analysis showed that a large degree of this variation was explained by differences among informant communities. The elevation of the informant 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.

Keywords: Caucasus; Ethnobotany; Plant use; Traditional knowledge; Post-soviet development

Introduction

Svaneti and Racha-Lechkumi are historical provinces of Georgia, located on the south-facing macro-slope of the western part of the Greater Caucasus. Svaneti's Kavkasioni, a part of the Main Watershed Range of the Greater Caucasus, creates the natural northern border of Svaneti between Gvandra and Mt. Pasismta. From the west the region is bordered by the Kodori and Akibo ranges, from the south-west by the rivers Bordjali and Gandishis-Ghele, both tributaries of the river Enguri, as well as by the Bokunstha range. From the east Svaneti is bordered by the northern part of Lechkumi range, and from the south by the southern part of the same Lechkumi range, and the eastern part of Egrisi range. The Svaneti range divides the region into two depressions: Zemo (Upper) Svaneti and Kvemo (Lower) Svaneti, creating a watershed between the Enguri Tskhenistskali basins. The region has an altitudinal gradient from 800-4,500 masl [1,2]. Administratively, Zemo Svaneti belongs to Mest'ia municipality (with an area of 3,045 km²), which is part of the Samegrelo-Zemo Svaneti Mkhare (region) and includes Mest'ia, as its administrative center, and 134 villages of 16 communes: Becho, Ch'uberi, Etseri, Idliani, Ipari, Kala, Khaishi, Latali, Lakhamula, Lenjeri, Mulakhi, Nakra, Pari, Tskhumari, Ts'virimi, and Ushguli. Kvemo Svaneti is part of Lentekhi municipality (with an area of 1,344 km²) and belongs to the Racha-Lechkumi-Kvemo Svaneti Mkhare. It includes the settlement Lentekhi as administrative center, and 59 villages of seven communes: Chikhareshi, Choluri, Kheledi, Khopuri, Rtskhmeluri, Tsana, and Zhakhunderi [3].

The area, as part of the western Greater Caucasus, experiences the influence of the Black Sea and moist westerly winds. The mean temperature of the warmest months (July-August) in Svaneti decreases from +22°C at relatively low altitudes to +7°C to -1°C above 3,200 masl; and the mean temperature of the coldest month (January) from +10°C

to -30°C or -35°C. The annual precipitation is 1,500-2,000 mm [4].

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 [1,5,6].

Most inhabitants speak both Georgian and Svanetian. The Svanetian language, like Georgian, belongs to the Kartvelian group of the Iberian-Caucasian family of languages. Svanetian is considered an old branch, and its archaisms considered very important in Proto-Kartvelian linguistics, but Svanetian still shares common basic vocabulary and grammar structures with Georgian. Svanetian does not have written language - historically the common colloquial language for all the Georgian tribes as well as formal language in the Georgian State(s) was Georgian - but rich Svanetian oral folklore provides a sizable corpus. The Svanetian language has four dialects: Balszemouri and Balskvemouri in Zemo Svaneti, and Lashkhuri and Lentekhuri in Kvemo Svaneti. In Kvemo Svaneti some researchers distinguish a third dialect, Choluruli, which is very close to Lashkhuri. Each of the listed dialects is only used in small groups of villages in Svaneti [7-15].

Svaneti has always been one of the more accessible mountain

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regions of Georgia, and recently winter tourism has experienced a boom. However, surprisingly few studies on the plant use of its inhabitants exist [16-18].

In this study we documented traditional plant use in Svaneti and Racha-Lechkhumi, and hypothesized that (1) plant use knowledge in general would be higher in isolated high elevation communities, and that (2) use of home gardens would be much more restricted to lower elevation settings.

Materials and Methods

Study area

Administratively, Zemo Svaneti belongs to Mest'ia municipality (with an area of 3,045 km²), which is part of the Samegrelo-Zemo Svaneti Mkhare (region) and includes Mest'ia, as its administrative center, and 134 villages of 16 communes: Becho, Ch'uberi, Etseri, Idliani, Ipari, Kala, Khaishi, Latali, Lakhamula, Lenjeri, Mulakhi, Nakra, Pari, Tskhumari, Ts'virimi, and Ushguli. Kvemo Svaneti is part of Lentekhi municipality (with an area of 1,344 km²) and belongs to the Racha-Lechkhumi-Kvemo Svaneti Mkhare. It includes the settlement Lentekhi as administrative center, and 59 villages of seven communes: Chikhareshi, Choluri, Kheledi, Khopuri, Rtskhmeluri, Tsana, and Zhakhunderi [15].

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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 [1,17,18].

Ethnobotanical interviews

Fieldwork was conducted in Svaneti and Racha July-August 2014 in 17 communities. Interviews using semi-structured questionnaires were conducted with 63 participants (29 women and 34 men) with oral prior informed consent. The participants were selected by snowball sampling, trying to reach gender balance and represent members of different age (13-91 years). However, most participants were over 50 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 and Svan dialects, and then translated into English. Plants grown in the home-gardens were used as prompts, while wild-collected species were free listed. In contrast to 5 many other countries Georgia may refer to a complete flora [19-21], as well as a broad inventory of vernacular names in all languages [22]. Wild-collected and home-garden species were identified in the field using this literature [19-21], and vouchers collected and deposited in the National Herbarium of Georgia. The nomenclature of all species follows www.tropicos.org, under APGIII [23].

Statistical analysis

In order to characterize similarities and differences between individual knowledge sets, the distance among informants was calculated using non-metric multi-dimensional scaling on two distance matrices: one in which columns represented plant species reported, and one in which columns represented uses reported. The resulting ordinations plot individuals who report similar plants or similar uses

more closely together. We then fit different environmental vectors (community elevation) and factors (gender, community) to test how whether a characteristic explains the location of informants in the ordination. We compared these fits to 999 randomized shuffles of the environmental variables to calculate significance. We calculated informant consensus (IC) for a given Use Category was calculated as the number of use reports minus the number of taxa over the number of use reports minus one. Species were ranked by three metrics: Cultural Importance Value (CIV), 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 (UD), the Shannon Index of uses (calculated with the R package *vegan* [24]; and Use Value (UV), the number of reports of a species over total number of informants asked in a region [25]. For these analyses, we considered two levels of geographic structure - the community of 6 interview, and four larger geographic areas: Racha Lechkhumi - Tsageri (16 informants in 2 communities), Svaneti-High (20 informants in 6 communities), Svaneti-Low (20 informants in 7 communities), and Svaneti-Ushguli (7 informants in 2 communities).

Results

We encountered 203 plant species belonging to 144 genera of 65 families being used in the research region (Table 1). Of these, 99 species were exclusively wild-collected, 73 were grown in home-gardens, and 35 were both grown in home-gardens and collected in the wild. Plants and their uses mostly overlapped among the four areas within the region, with a slightly wider divergence in uses than in plants (Figures 1-3). The ordination in use-space showed greater convergence on the use categories construction, utensils and tools, and food; while some clusters of informants were differentiated by reporting relatively more medicinal, veterinary, fuel or cultural uses. The environmental fit analysis showed that a large degree of this variation was explained by differences among informant communities (Figure 4, $r^2=0.84$, $p=0.001$). Community also significantly fit the ordination for both plant-space ($r^2=0.78$, $p=0.001$). The elevation of the informant community significantly fit the ordination in plant-space and explained a large degree of the variation in plant species reported (Figure 5A, $r^2=0.65$, $p=0.001$) but not in use-space (Figure 5B, $r^2=0.02$, $p=0.51$). Gender was not significant in plant-space ($p=0.81$) or use-space ($p=0.75$).

Informant consensus

Relative number of use reports and informant consensus (IC) across communities showed some similar patterns across different use categories (Figures 5 and 6; Table 2). Number of uses reports tended to be highest in the food use category, and IC increased with increasing use reports. Diverging from this pattern, Leli, with a relatively small number of use reports, showed a much higher IC, and was the only community to report cultural uses. The medicinal and utensils and tools use categories exhibited much greater IC, even at low numbers of use reports, in comparison to, e.g., the construction and food use categories.

Plant relative importance

The three different plant species importance ranking metrics produced quite different rankings of plant importance. Cultural Importance (CI, Table 3) prioritized species of diverse life-forms and use categories, but species with the very highest CI were not often those with high Use Diversity (UD) or Use Value (UV). *Corylus avellana* L./*C. pontica* K. Koch is an exception, with high importance in all three metrics, and *Sambucus ebulus* L. and *Juniperus sabina* L. ranked highly

	Collection # SVAN	Use category (Use description)	Georgian Name (Transliteration)	Name other dialect (Transliteration other dialect)	Georgian variety name (Variety transliteration)	Part used	Location
Adoxaceae							
<i>Sambucus ebulus</i> L.	172	Food (Alcohol, Human food, Phkhali); Medicinal (Cold, Cough, Diarrhea, Gastro intestinal system, Liver, Lungs)	ანწლი (Ants'li)	გენჭე (Gentchv Svan.), ღენღი (Genghi Svan.)		Flower, Fruit, Leaf	Forest
<i>Sambucus nigra</i> L.	173	Food (Human food)	დიდგულა (didgula)	თოფილაი (thophilai Svan.)		Fruit	Forest
<i>Viburnum lantana</i> L.	203	Food (Human food); Medicinal (Blood pressure, Cold, Hypertension, Inflammation)		თურსა (Tursa Tush.), წონწოგ (Tzontzoph Svan.)		Fruit	Forest, Garden
<i>Viburnum opulus</i> L.	204	Food (Human food); Medicinal (Blood pressure)	უზანი (Uzani)	სანწევი (Santzeph Svan.), წონწოგ (Tzontzoph Svan.)		Fruit	Forest
Agaricaceae							
<i>Agaricus arvensis</i> Schaeff.	5	Food (Human food)	კამა (Kama)			Fruit	Forest
<i>Agaricus campestris</i> L.	6	Food (Human food)	მინდვრის სოკო (Mindvris sok'o)			Fruit	Forest
<i>Lycoperdon perlatum</i> Pers.	109	Medicinal (Bleeding, Wounds)	მალათუ (Malathu)			Fruit	Forest
<i>Lycoperdon pyriforme</i> Schaeff.	110	Medicinal (Bleeding, Wounds)	მალათუ (Malathu)			Fruit	Forest
Amanitaceae							
<i>Amanita caesarea</i> (Scop.) Pers.	15	Food (Human food)	ნიევი (Niq'vi), წითელქუდა (Tzithelquda)			Fruit	Forest
Amaranthaceae							
<i>Amaranthus palmeri</i> S. Watson	16	Food (Human food, Phkhali)	ჯიჯილაყი (Jijilaqhi)			Leaf	Forest, Garden
<i>Beta vulgaris</i> L. ssp. <i>esculenta</i> Salisb. Gürke var. <i>altissima</i> Rössig. = <i>Beta vulgaris saccharifera</i> Alef.	30	Food (Human food)	შაკრის ჭარხალი (Shakris ch'arkhali)			Root	Garden
<i>Beta vulgaris</i> L. sugar beet	31	Food (Human food, Pickled)		ხულ (khul Svan.)		Leaf, Root	Forest, Garden
<i>Beta vulgaris</i> L.	29	Food (Human food, Phkhali, Pickled)	ჭარხალი (Ch'arkhali)			Leaf, Root	Garden
<i>Chenopodium album</i> L.	50	Food (Chachapuri, Human food, Phkhali)	ნაცარქათამა (Natsarqathama)	მესგელა (Mesgvla Svan.), მესკვა (Menshkva Svan.), ქათანაცარა (Qathanatsara Svan.)		Fruit, Leaf, Seed	Forest, Garden
Amaryllidaceae							
<i>Allium apeloprasum</i> L.	8	Food (Human food)	პრასი (Prasi)	პრასა (prasa Svan.)		Leaf	Garden
<i>Allium cepa</i> L.	9	Food (Human food)	ხახვი (Khakhvi)			Bulb, Leaf	Garden
<i>Allium fistulosum</i> L.	10	Food (Human food)	ჭლაკვი (Ch'lakvi)	ჭაგვ (Ch'hagv Svan.)		Bulb, Leaf	Garden
<i>Allium sativum</i> L.	11	Food (Human food, Svan salt); Medicinal (Cold, Flu)	ნიორი (Niori)			Bulb, Flower	Forest, Garden
<i>Allium ursinum</i> L.	12	Food (Pickled)	ღანძილი (Ghanzili)	ნხანძილ (Nikhandzil Svan.)		Leaf	Forest
<i>Allium victorialis</i> L.	13	Food (Human food, Phkhali, Pickled)	ღანძილი (Ghanzili)	დემღე ნივრა (Dashdven nivra Svan.), მაღდენა (Maghdena Svan.), შიშლილ (Shishkil Svan.), შიშლილ (Shisqil Svan.)		Leaf	Forest, Garden
Apiaceae							
<i>Agasyllis latifolia</i> (Bieb.) Boiss.	7	Food (Human food, Phkhali); Medicinal (Digestive system)	დუცი (Dutsi)	(Gheh Svan.)		Leaf, Root, Stem	Forest, Garden
<i>Anethum graveolens</i> L.	17	Food (Human food, Svan salt)	კამა (K'ama)			Fruit, Leaf, Seed	Garden
<i>Apium graveolens</i> L.	18	Food (Human food)	ნიახური (Niakhuri)			Leaf, Root	Garden

<i>Carum carvi</i> L.	45	Food (Human food, Svan salt)	ძირა (Zira)	გიცრულ (gitsrul Svan.)	Seed	Forest, Garden
<i>Chaerophyllum aureum</i> L.	48	Food (Human food); Medicinal (Nerves)		ყვასგ სვან (qhvassg Svan.)	Root	Forest
<i>Coriandrum sativum</i> L.	57	Food (Human food, Svan salt)	ქინძი (Kindzi)		Seed	Garden
<i>Daucus carota</i> L. ssp. sativus	69	Food (Human food)	სტაფილო (St'apilo)		Root	Garden
<i>Foeniculum vulgare</i> Mill.	75	Food (Human food, Svan salt)	ცერეცო (Tseretso)		Leaf, Root, Seed	Garden
<i>Heracleum mantegazzianum</i> Sommier & Levier	82	Medicinal (Cancer)	დიყი (Diq'i)	ჩიჩვა (Chichva Svan.)	Root	Forest
<i>Heracleum sosnowskyi</i> Manden	83	Medicinal (Tumors)		ჩიჩვა (Chichva Svan.)	Root	Forest
<i>Hippomarathrum microcarpum</i> Petrov.	84	Medicinal (Cold)	ქარკვეტა (Karkvet'a)		Fruit	Forest
<i>Ligusticum alatum</i> Spreng.	108	Food (Human food)	მარიამა (Mariamdzmara)		Leaf	Garden
<i>Petroselinum crispum</i> (Mill.) Fuss.	130	Food (Human food)	ოხრახუში (Okhrakhushi)		Leaf, Seed	Garden
Araceae						
<i>Arum albispatum</i> Stev. ex Ledeb.	24	Food (Human food)		ქალაკოდა (qalakoda Svan.)	Leaf	Forest
Aspleniaceae						
<i>Asplenium trichomanes</i> L.	26	Veterinary (Urine retention)	მამასწარა (Mamasts'ara)		Whole plant	Forest
Asteraceae						
<i>Achillea millefolium</i> L.	4	Food (Chachapuri)	ფარსმანდუკი (Parsmanduk'i)		Leaf	Forest
<i>Artemisia annua</i> L.	21	Medicinal (Insect repellent, Wounds); Veterinary (Wounds cattle)	უჯანგარი (Ujangari)		Leaf	Forest
<i>Artemisia dracunculus</i> L.	22	Food (Human food)	ტარხუნა (T'arkhuna)		Leaf, Root	Garden
<i>Artemisia vulgaris</i> L.	23	Medicinal (Diuretic, Gallbladder, Lice)	ჯორტუდა (Jortk'uda)	ველური ტარხუნა (Veluri T'arkhuna Svan.)	Leaf	Forest
<i>Calendula officinalis</i> L.	38	Medicinal (Wounds)	გულყვიტელა, ნარგიზელა (gulq'vitela, nargizela)		Flower	Garden
<i>Cichorium intybus</i> L.	51	Medicinal (Diabetes, Gallbladder, Gastro intestinal system, Oral inflammation)	ხაპრაი (Khap'arai)	ვარდაქაქა (Vardkach'ach'a Svan.)	Root	Forest
<i>Lactuca sativa</i> L.	103	Food (Human food)	მწვანე სალათა (Mtsvane salata), სალათა (Salata)		Bulb, Leaf	Garden
<i>Inula helenium</i> L.	96	Medicinal (Panacea)	კულმუხო (Kulmukho)		Root	Forest
<i>Matricaria chamomilla</i> L.	117	Medicinal (Cough, Diuretic, Gastro intestinal system, Wounds)	გვირილა (Gvirila)		Whole plant	Forest
<i>Petasites vulgaris</i> Desf.	129	Food (Human food, Phkhali, Pickled)		ბურღვილ (burghvil Svan.)	Leaf, Stem	Forest
<i>Tagetes patula</i> L.	189	Food (Human food, Svan salt)	ყვითელი ყვავილი - "იმერული ზაფრანა" (Qhvitheli qhvavili "imeruli zaphrana")	გულყვიტელა (gulqhvithela Svan.)	Fruit, Leaf, Root	Forest, Garden
<i>Taraxacum officinale</i> Wigg.	190	Medicinal (Diuretic, Laxative, Oral inflammation, Toothache)	საღვიძლა (Saghvidzla)	ნაგურელა (nagurela Svan.), ფანდურპაპაი (Pandurpapai Tush.)	Leaf	Forest
<i>Tussilago farfara</i> L.	195	Medicinal (Cough)	კულმუხო (Kulmukho)		Leaf, Whole plant	Forest
Berberidaceae						
<i>Berberis vulgaris</i> L.	28	Food (Human food, Tqhemali); Medicinal (Hypertension)	კოწახური (K'otsakhuri)		Fruit, Leaf	Forest, Garden
Betulaceae						
<i>Alnus barbata</i> C.A. Mey.	14	Construction (Timber); Food (Tea); Fuel (Firewood); Utensils and tools (Furniture, Sleds, Tool handles)	თხმელა (Thkhmela), მურყანი (Murq'ani)	ბელყაც (belqhats Svan.)	Leaf, Stem	Forest

<i>Betula litwinowii</i> Doluch.	32	Construction (Timber); Fuel (Firewood); Utensils and tools (Candlesticks, Carts, Furniture, Food, Sleds, Spoons, , Tool handles, Yokes)	არყი (Arq'i)	ბელყაც (belqhats Svan.), ჯახვარ (zhakhvar Svan.)		Stem	Forest
<i>Carpinus caucasica</i> Grossh.	44	Construction (Timber); Fuel (Firewood); Utensils and tools (Furniture, Sleds, Tool handles)	რცხილა (Rtskhila)	ცხვიმრა (tskhvimra Svan.)		Stem	Forest
<i>Corylus avellana</i> L.	59	Construction (Fences); Food (Human food); Utensils and tools (Baskets, Carts, Household utensils, Rope, Sleds, Tool handles)	თხილი (Tkhili)	შდობ (shdikh Svan.)	(khaka Svan.), (nems Svan.)	Branches, Fruit, Stem	Forest, Garden
<i>Corylus pontica</i> K. Koch.	60	Construction (Fences); Food (Human food); Utensils and tools (Baskets, Carts, Household utensils, Rope, Sleds, Tool handles)	თხილი (Tkhili)	შდობ (shdikh Svan.)	(khaka Svan.), (nems Svan.)	Branches, Fruit, Stem	Forest, Garden
Boraginaceae							
<i>Symphytum caucasicum</i> M. Bieb.	188	Medicinal (Fractures, Gastro intestinal system)		მელენ (melen Svan.), Brassicaceae		Root	Forest
Brassicaceae							
<i>Armoracia rusticana</i> G. Gaertn., B. Mey. & Scherb.	20	Food (Human food)	პირშუშხა (P'irshushkha)			Leaf, Root	Garden
<i>Brassica oleracea</i> L.	34	Food (Human food, Phkhali, Pickled)	კომბოსტო (K'ombost'o)	ლახანა (lachana Svan.)		Leaf	Forest, Garden
<i>Brassica oleracea</i> L. Broccoli	35	Food (Human food)	ბროკოლი (Brokoli)			Flower, Leaf	Garden
<i>Brassica oleracea</i> L. Cauliflower	36	Food (Human food)	ყვავილოვანი კომბოსტო (Q'vavilovani k'ombost'o)			Flower	Garden
<i>Brassica rapa</i> L. subsp. <i>rapifera</i> Metzger	37	Food (Human food, Pickled)	თალგამი (Thalgami)	ქართ (quarth Svan.)		Root	Garden
<i>Lepidium sativum</i> L.	107	Food (Human food)	წიწმატი (Ts'its'mat'i)			Leaf	Garden
<i>Raphanus sativus</i> L. var. <i>major</i>	156	Food (Human food)	ბოლოკი (Bolok'i), მთის ბოლოკი (Mthis boloki)			Leaf, Root	Garden
Campanulaceae							
<i>Campanula lactiflora</i> Bieb.	39	Food (Human food, Phkhali)	კიცძიშლი (Kitsdzishli)	(Kitsdzishli Svan.), კიც (kits Svan.)		Stem	Forest, Garden
Cannabaceae							
<i>Cannabis sativa</i> L.	40	Food (Chachapuri, Human food, Svan salt); Medicinal (Tumors); Utensils and tools (Rope)	ქან (Qan)			Seed, Stem	Garden
Cantharellaceae							
<i>Cantharellus cibarius</i> Fr.	41	Food (Human food)		მიქელა (miquela Svan.)		Fruit	Forest
Caryophyllaceae							
<i>Silene lacera</i> Steven	177	Food (Human food)		ქვიშახალი (KvishaPhkhali Tush.)		Seed	Garden
Cornaceae							
<i>Cornus mas</i> L.	58	Food (Human food); Utensils and tools (Tool handles)	შვინდი (Shvindi)			Fruit, Stem	Forest
<i>Swida australis</i> (C.A. Mey.) Pojark ex Grossh.	187	Utensils and tools (Sieves)	შინდანწლა (Shindants'la)			Branches	Forest
Cucurbitaceae							
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai var. <i>lanatus</i>	52	Food (Human food)	საზამთრო (Sazamthro)			Fruit	Garden
<i>Cucumis melo</i> L.	63	Food (Human food)	ნესვი (Nesvi)			Fruit	Garden
<i>Cucumis sativus</i> L.	64	Food (Human food, Pickled)	კიტრი (K'i't'ri)			Bulb, Flower, Fruit	Garden
<i>Cucurbita pepo</i> L.	65	Food (Human food); Medicinal (Digestive system)	გოგრა (Gogra)	კვახი (kvakhi Svan.), კობეშია (kobeshia Svan.), ჭუთკვახ (quthkvakh Svan.)		Flower, Fruit, Leaf	Forest, Garden

<i>Cucurbita pepo</i> L. Zucchini	66	Food (Human food)	ყაბაყი (Q'abaq'i)			Flower, Fruit	Garden
Cupressaceae							
<i>Juniperus hemisphaerica</i> C. Presl	98	Medicinal (Blood cleansing, Kidneys, Urinary system)		წყერო (tzqhero Svan.)		Branches	Forest
<i>Juniperus oblonga</i> Bieb.	99	Medicinal (Blood cleansing, Kidneys, Urinary system)		წყერო (tzqhero Svan.)		Branches	Forest
<i>Juniperus sabina</i> L.	100	Food (Human food); Medicinal (Blood cleansing, Detoxicant, Diuretic, Gallbladder, Prostate, Urinary system)	ღვია (Ghiva)	ჭყერო (Tchqhero Svan.)		Fruit, Root, Stem	Forest
Cystopteridaceae							
<i>Cystopteris fragilis</i> (L.) Bernh.	68	Medicinal (Wounds)	გვიმრა (Gvimra)			Whole plant	Forest
Dryopteridaceae							
Indet sp. 47	95	Medicinal (Burns)		დიდი იფხი (didi iphkh'i Svan.)		Root	Forest
<i>Mattheucia struthiopteris</i> (L.) Todd.	118	Food (Phkhali, Pickled)	გვიმრა (gvimra)	მუჭი (much'i Svan.)		Leaf, Stem	Forest
Ebenaceae							
<i>Diospyros lotus</i> L.	70	Food (Human food)	ჩვეულბრივი ხურმა (chveulebrivi khurma)			Fruit	Forest
Equisetaceae							
<i>Equisetum arvense</i> L.	71	Medicinal (Wounds)	შვიტა (Shvit'a)			Leaf	Forest
Ericaceae							
<i>Vaccinium arctostaphylos</i> L.	198	Food (Alcohol, Human food, Tea, Wine); Medicinal (Anemia, Cold, Diabetes, Inflammation, Stomach)	მოცი მაღალი (Motsvi maghali)	ცინყა (tsinqha Svan.)		Fruit, Leaf	Forest, Garden
<i>Vaccinium myrtillus</i> L.	199	Food (Human food, Tea)	მოცი (Motsvi), ჯოლი (Zholi)	იღვი (ighvi Svan.), მეგმულდ (megmuld Svan.)		Flower, Fruit, Leaf	Forest
<i>Vaccinium vitis-idaea</i> L.	200	Food (Human food)	წითელი მოცი (Ts'iteli motsvi)	ვიღვი (vighv Svan.), მაიოლ / მაია (maiol / maia Svan.)		Fruit	Forest
Fabaceae							
<i>Glycine max</i> (L.) Merr.	81	Food (Human food)	სოია (Soia)	სოიო (soio Svan.)		Leaf, Seed	Garden
<i>Lathyrus roseus</i> Steven	104	Food (Phkhali)		ზერჩო (zercho Svan.)		Leaf	Forest
<i>Lens cornicularis</i> L.	105	Food (Human food)	ოსპი (Ospi)	ქირს (qirs Svan.)		Seed	Garden
<i>Phaseolus sativus</i> L.	131	Food (Human food)	ლობიო (Lobio)			Fruit, Seed	Garden
<i>Pisum sativum</i> L.	135	Food (Human food)		ისაბ (isab Svan.), ღედაარ (ghedaar Svan.)		Seed	Garden
<i>Robinia pseudoacacia</i> L.	164	Construction (Fences, Timber); Utensils and tools (Rope, Tool handles, Walking sticks)	აკაცია (Akatsia)			Bark, Stem	Forest, Garden
<i>Trigonella caerulea</i> (L.) Ser.	192	Food (Human food, Svan salt)	შამბრიკა (Shambrika)	უცხო სუნელი (utshko suneli Svan.), უცხო სუნელი (utshko suneli Svan.)		Leaf, Seed	Forest, Garden
<i>Vicia faba</i> L.	205	Food (Human food); Medicinal (Heartburn)	ცერცვი (Tsertsvi)			Fruit, Seed	Garden
Fagaceae							
<i>Castanea sativa</i> Mill.	46	Construction (Fences, Timber, Windows, Doors); Food (Human food); Utensils and tools (Carts, Tool handles, Walking sticks)	წაბლი (Tzabli)	გვიჯ (gvij Svan.)		Fruit, Stem	Forest, Garden
<i>Fagus orientalis</i> Lipsky	72	Construction (Timber); Food (Human food); Fuel (Firewood); Utensils and tools (Furniture, Sleds, Tool handles)	წიფელი (Ts'ipeli)	წიფრა (tziphra Svan.)		Fruit, Stem	Forest

<i>Quercus iberica</i> Steven ex M. Bieb.	154	Construction (Fences, Timber); Food (Human food); Fuel (Firewood); Utensils and tools (Furniture, Tool handles)	მუხა (Mukha)	ჯიჰრა (jihra Svan.)		Fruit, Stem	Forest
Fungi							
Fungus sp. 20	79	Food (Human food)		Родственница (rostvennitsa Russ.)		Fruit	Forest
Gomphaceae							
<i>Ramaria flava</i> Schaeff. Quél.	155	Food (Human food)		სახიჩელა (sachichela Svan.)		Fruit	Forest
Grossulariaceae							
<i>Ribes biebersteinii</i> Berl. ex DC	159	Food (Human food)	მოცხარი (Motskhari)	მანცხალდ (mantskhald Svan.)	(red)	Fruit	Forest, Garden
<i>Ribes grossularia</i> L.	160	Food (Human food)		ოფლენდ (ophleend Svan.)		Fruit	Forest, Garden
<i>Ribes nigrum</i> L.	161	Food (Human food)	მოცხარი (Motskhari)		(black)	Fruit	Garden
<i>Ribes rubrum</i> L.	162	Food (Human food)	მოცხარი (Motskhari)		(red)	Fruit	Garden
<i>Ribes uva-crispa</i> L.	163	Food (Human food)	ხურტკმელი (Khurt'k'meli)	ოფლენდ (ophleend Svan.)		Fruit	Forest, Garden
Hypericaceae							
<i>Hypericum perforatum</i> L.	86	Medicinal ((Gallbladder, Kidneys, Liver, Nerves)	კრაზანა (K'razana)			Flower, Leaf, Whole plant	Forest
Indeterminatus							
Indet sp. 13	87	Utensils and tools (Tool handles)	მლჯარა (M'ljara)			Stem	Forest
Indet sp. 30	88	Food (Human food)		დედოფალა (Dedophala Svan.)		Fruit	Forest
Indet sp. 31	89	Food (Human food)		ჰარდილი (haardl Svan.)		Stem	Garden
Indet sp. 32	90	Food (Phkhali)		ჰინერი (hainer Svan.)		Leaf	Forest
Indet sp. 36	91	Food (Phkhali)		ნესგვლა (nesgvla Svan.)		Leaf	Forest
Indet sp. 40	92	Utensils and tools (Furniture)		ცხალი (tskhali Svan.)		Stem	Forest
Indet sp. 41	93	Food (Phkhali)		ცუჟლა (tzushla Svan.)		Leaf	Forest
Indet sp. 43	94	Food (Human food)		ვერდელი (verdel Svan.)		Stem	Garden
Juglandaceae							
<i>Juglans regia</i> L.	97	Construction (Timber); Food (Human food, Phkhali, Svan salt); Utensils and tools (Furniture)	ნიგოზი (Nigozi)	კაკალი (kakali Svan.)		Fruit, Seed, Stem	Forest, Garden
Lamiaceae							
<i>Clinopodium vulgare</i> L.	55	Medicinal (Hypertension)	მოპიტნაო (Mopit'nao)			Leaf	Forest
<i>Leonurus quinquelobatus</i> Gilib. var. <i>caucasicus</i> Krestovsk.	106	Medicinal (Epilepsy)	შავბალახა (Shavbalakha)			Leaf	Forest
<i>Mentha longifolia</i> (L.) L.	119	Food (Phkhali, Tea); Medicinal (Nerves, Tea)	ტყის პიტნა (T'q'is p'it'na)			Fruit, Leaf	Forest
<i>Mentha x piperita</i> L.	120	Food (Human food, Phkhali, Pickled, Svan salt, Tea); Medicinal (Nerves)	ბაღის პიტნა (Baghis pit'na)			Leaf	Forest, Garden
<i>Ocimum basilicum</i> L.	125	Food (Human food, Svan salt)	რეჰანი (Rehani)			Fruit, Leaf	Garden
<i>Origanum vulgare</i> L.	126	Food (Human food)	თავშავა (Tavshava)			Leaf	Garden
<i>Satureja hortensis</i> L.	174	Food (Human food, Svan salt)	ქონდარი (Kondari)			Leaf	Garden
<i>Satureja spicigera</i> Boiss.	175	Food (Svan salt, Tea); Medicinal (Diabetes)		ჭვინ (tchvin Svan.)		Leaf	Forest
Lepiotaceae							
<i>Macrolepiota procera</i> (Scop.) Springer	112	Food (Human food)	წეროსწვივა (Ts'erosts'viva)	ხარხუშა (Kharkhusha)		Fruit	Forest
Liliaceae							
<i>Galanthus</i> sp.	80	Food (Human food)	თეტრეკავილა (Tetrq'vavila)			Bulb	Forest
Lythraceae							

<i>Punica granatum</i> L.	151	Food (Human food)	ბროწეული (Brots'euli)			Fruit	Garden
<i>Malvaceae</i>							
<i>Malva neglecta</i> L.	115	Food (Phkhali)	ბალბა (Balba)			Leaf	Forest
<i>Malva sylvestris</i> L.	116	Food (Phkhali)	ბალბა (Balba)			Leaf	Forest
<i>Tilia caucasica</i> Rupr.	191	Food (Tea); Utensils and tools (Tool handles)	ცაცხვი (Phacha)	ფაცარიმა (phatsaraima Svan.)		Fruit, Leaf	Forest
<i>Moraceae</i>							
<i>Ficus carica</i> L.	74	Food (Human food)	ლეღვი (Leghvi)		(black), (white)	Fruit	Garden
<i>Morus alba</i> L.	122	Food (Human food); Utensils and tools (Tool handles)	თუთა (Tuta)		(black), (white)	Fruit, Stem	Forest, Garden
<i>Oleaceae</i>							
<i>Fraxinus excelsior</i> L.	78	Construction (Timber); Utensils and tools (Sleds, Tool handles)	იფანი (Ipani)	ლაჯრა (Iajra Svan.), წითელა (tzithela Svan.)		Stem, Papaveraceae	Forest
<i>Papaveraceae</i>							
<i>Chelidonium majus</i> L.	49	Medicinal (Warts, Wounds)	ქრისტესხლა (Krstesikhla)			Latex, Physalacriaceae	Forest
<i>Physalacriaceae</i>							
<i>Armillariella mellea</i> (Vahl) P. Kumm	19	Food (Human food)	მანჭკვალა (Mantchkvala)			Fruit, Pinaceae	Forest
<i>Pinaceae</i>							
<i>Abies nordmanniana</i> (Steven) Spach	1	Construction (Timber); Food (Human food, Phkhali); Medicinal (Tuberculosis, Ulcers); Utensils and tools (Sleds)	სოჭი (Sotchi)	ჭიშხ (tshishkh Svan.)		Branches, Leaf, Stem	Forest
<i>Cedrus</i> sp.	47	Food (Human food)	კედარი (Kedari)				Garden
<i>Picea orientalis</i> (L.) Peterm.	132	Construction (Roof shingles, Timber); Food (Human food, Masticant); Medicinal (Tuberculosis, Ulcers); Utensils and tools (Sleds, Walking sticks)	ნადვი (Nadzvi)	ხაარ (qhaar Svan.)		Leaf, Resin, Stem	Forest
<i>Pinus kochiana</i> Klotzsch ex K. Koch	133	Construction (Roof shingles, Timber); Medicinal (Tuberculosis, Ulcers); Utensils and tools (Sleds)	ფიჭვი (Phich'vi)			Leaf, Stem	Forest
<i>Piperaceae</i>							
<i>Piper nigrum</i> L.	134	Food (Svan salt)	პილპილი (Pilpili)			Seed	Bought
<i>Plantaginaceae</i>							
<i>Plantago major</i> L.	136	Medicinal (Bleeding, Cough, Digestive system, Gastritis, Gastro intestinal system, Wounds)	მრავალძარღვა (Mravaldzarghva)	კუთკვახ (kuthkvakh Svan.), ჯოდობალე (jo'odibale Svan.)		Latex, Leaf	Forest
<i>Pleurotaceae</i>							
<i>Pleurotus ostreatus</i> (Jacq. ex Fr.) P. Kumm	137	Food (Human food)	ხის სოკო (Khis soko)	ტყუბულ (tqhubul Svan.)		Fruit	Forest
<i>Pluteaceae</i>							
<i>Pluteus cervinus</i> (Schaeffer ex Fr.) P. Kumm.	138	Food (Human food)	ირმის რქა (Irmis rqa)			Fruit	Forest
<i>Poaceae</i>							
<i>Avena sativa</i> L.	27	Food (Human food)	შვრია (Shvira)	ზინთხ (zinthkh Svan.)		Seed	Garden
<i>Festuca djimilensis</i> Boiss. & Balansa	73	Utensils and tools (Stuffing for shoes)		წერეკვ (tzereqv Svan.)		Leaf	Forest
<i>Hordeum vulgare</i> L.	85	Food (Alcohol, Human food)	ორიგა (Orriga keri), კერი (Keri)	ჭმინ (tchmin Svan.)		Seed	Garden
<i>Panicum milanjanum</i> Rendle	127	Food (Human food, Phetveer)	ფეტვი (Phatvi)	წვინი (tsvini Svan.)	(black), (white), (yellow)	Seed	Garden
<i>Secale cereale</i> L.	176	Food (Alcohol, Human food); Medicinal (Cold, Flu)	ჭვავი (Ch'vavi)	მანაშ (maanash Svan.)		Seed	Garden
<i>Triticum aestivum</i> L.	193	Food (Alcohol, Human food)	ხორბალი (Khorbali)		(makha), (zanduri), კვეტერ (summer kvetser), კულ (winter kul)	Fruit, Seed	Garden

<i>Triticum carthlicum</i> Nevski	194	Food (Human food)	დიკა (Dika)			Seed	Garden
<i>Zea mays</i> L.	207	Food (Human food)	სიმინდი (Simindi)		(black), (summer), (white), (yellow)	Seed	Garden
Polygonaceae							
<i>Bistorta officinalis</i> Delarbre	33	Medicinal (Diarrhea)	მატიტელა (Matitela)	ჭიჭიშვილი (Tchitchishvili Khev.)		Root	Forest
<i>Persicaria maculosa</i> Gray	128	Medicinal ((blank))	მატიკელა (Matikela)			Leaf	Forest
<i>Polygonum alpinum</i> All.	139	Food (Human food); Medicinal (Gastro intestinal system, Joints)	ლეცირი (Letsir)	ლეცირ (letsir Svan.)		Leaf, Resin, Stem	Forest
<i>Polygonum aviculare</i> L.	140	Food (Human food); Medicinal (Bladder, Kidneys, Urinary system)	მატიტელა (Matitela)			Leaf	Forest
<i>Rumex acetosa</i> L.	168	Food (Human food, Phkhali)		ტელეფ (teleph Svan.)		Leaf	Forest, Garden
Portulacaceae							
<i>Portulaca oleracea</i> L.	142	Food (Phkhali)	დანდური (Danduri)			Leaf	Forest
Psathyrellaceae							
<i>Coprinopsis atramentaria</i> (Bull.) Redhead, Vilgalys & Moncalvo	56	Food (Human food)	მელანა, სილიო (Melana sok'o, Silio)			Fruit	Forest
Ranunculaceae							
<i>Aruncus vulgaris</i> Raf.	25	Food (Phkhali)		მეჭეხი (metchekhi Svan.)		Leaf	Forest
<i>Clematis vitalba</i> L.	54	Food (Phkhali)		ციცაბალბა (tsitsabalba Svan.)		Branches	Forest
Rhododendraceae							
<i>Rhododendron caucasicum</i> Pall.	157	Food (Phkhali, Tea); Medicinal (Tea)	დეკა (Dek'a), წითელა (Ts'itela), წითელი (Ts'iteli)	შქერი (shgver Svan.)		Fruit, Leaf	Forest
<i>Rhododendron ponticum</i> L.	158	Food (Tea)		შქერი (shgver Svan.)		Leaf	Forest
Rosaceae							
<i>Crataegus curvisepala</i> Lindm.	61	Food (Human food); Medicinal (Heart)	კუნელი (K'uneli)			Fruit	Forest
<i>Crataegus pentagyna</i> Waldst.	62	Food (Human food, Tea); Medicinal (Heart)	კუნელი (K'uneli)	კუნელი (tsentsi Svan.)		Flower, Fruit	Forest
<i>Cydonia oblonga</i> L.	67	Food (Human food); Medicinal (Bleeding)	კომში (K'omshi)			Fruit, Leaf	Garden
<i>Fragaria vesca</i> L.	76	Food (Human food, Tqhemali)	მარწყვი (Marts'q'vi)	ცხეკი ხილ (tskheki khil Svan.)		Fruit	Forest
<i>Fragaria x ananassana</i> Duchesne ex Rozier	77	Food (Human food)	მარწყვი (Marts'q'vi)	ბაყ (basq Svan.)		Fruit, Leaf	Garden
<i>Malus domestica</i> L.	113	Food (Alcohol, Human food, Svan salt, Vinegar); Medicinal (Panacea)	ვაშლი (Vashli)	ვისვ (viskv Svan.)	(chershda), (garden apples), (ice apples), (Lechkhumi sinaphi), (lushnu sanaph), (makhara), (mehald sanaphi), (phear mehald), (Qhinuli), (red), (samepho), (saneph), (selap), (Sinaphi), (tchkuta viskv), (thethne mehald), (tzm mehald), ანთრო (anthro), ანტონოვკა (antonovka), ბაბასანა (babashana), კეხურა (kexura), კიტრა (kitra), ლელმარ (lelmar), ლენგეტქ (lengetch), ლუზნუვიცხ (luznuvitskh), ნეჰალდ (nenhald), შანპანი (champagne), შაფრან (shaphran), ცერსდა (tzersda), ჯუმანდიფ (tumandiph)	Fruit	Garden

<i>Malus orientalis</i> Uglizk.	114	Food (Alcohol, Human food)	მაჟალო (Mazhalo)			Fruit	Forest
<i>Mespilus germanica</i> L.	121	Food (Human food); Utensils and tools (Furniture)	ზღმარტლი (Zghmart'li)	ზუნტი (zunti Svan.)		Fruit, Leaf	Forest
<i>Prunus avium</i> (L.) L.	143	Food (Alcohol, Human food)	ბალი (bali)	ცხეკიშ (tskhekish Svan.), ჰებრა (hebra Svan.)	(black), (gogra), (red), (white)	Fruit	Forest, Garden
<i>Prunus cerasus</i> L.	144	Food (Human food)	ალუბალი (Alubali)		(large), (small)	Fruit	Garden
<i>Prunus divaricata</i> Ledeb.	145	Food (Alcohol, Human food, Tqhemali)	ტყემალი (Tq'emali)	ბარყვენდ (barqhvend Svan.)	(red), (white), (yellow)	Fruit	Forest, Garden
<i>Prunus padus</i> L.	146	Utensils and tools (Tool handles)		მჯნელა (mjnela Svan.)		Stem	Forest
<i>Prunus persica</i> (L.) Batsch	147	Food (Human food)	ატამი (Atami)			Fruit	Garden
<i>Prunus spinosa</i> L.	148	Food (Human food)	კვინჩხაი (Kvinchkhai)			Fruit	Garden
<i>Prunus vachuschtii</i> Bregaze	149	Food (Human food)	ალუჩა (Alucha)			Fruit	Garden
<i>Prunus x domestica</i> L.	150	Food (Alcohol, Human food)	კლიავი (Kliavi)		(Alibukhari), (black), (makhara), (Tzqhalqliava), (white), ჰანჭური (ch'anch'uri)	Fruit	Forest, Garden
<i>Pyrus caucasica</i> Fed.	152	Food (Alcohol, Human food, Phkhali)	პანტა (P'ant'a), <i>Pyrus communis</i> L.			Fruit	Forest, Garden
<i>Pyrus communis</i> L.	153	Food (Alcohol, Human food)	მსხალი (Mskhali)	იტხი (itskhi Svan.)	(aqhari), (gombri), (gulabi), (guril), (gvirkesh), (Katsithava), (kefri), (khetchetchuri), (lelqhin), (luznu), (makhali), (malinthu), (phkhantchaash), (Shavmskhala), (tchkuta vitskh), (tchumend), (tsument), (winter), ბაბანი (baban), ბაბაროზან (babarozan), გობრუ (gobru), გომბრო (gombro), ვირკეშ (virkesh), თეთნო (thethno), კიფერ (kipher), ლელმარ (lelmar), ლეფხანჭ (lephkhantch), ლოვეენ (lovqhen), ლოზმ (lozm), მანიტ (manint), მამუკვანი (maskhvan), მირკეშ (mirkesh), ნენსგაშვიხ (nensgashvikh), ხანჭაშ ცალან (khantchash tsalan), ხანჭიან (khantchiash)	Fruit	Forest, Garden
<i>Rosa</i> sp.	165	Food (Human food, Tea); Medicinal (Cold, Cough, Gallbladder, Kidneys)	ასკილი (Ask'ili)	ხვარ (khvar Svan.)		Fruit, Leaf	Forest
<i>Rubus idaeus</i> L.	166	Food (Human food)	ჟოლო (Zholo)	ინღა (ingha Svan.)		Fruit, Leaf	Forest, Garden
<i>Rubus</i> sp.	167	Food (Human food, Wine); Medicinal (Anemia, Cold, Inflammation)	მაყვალი (maqhvili)	ვიღვი (vighv Svan.), უღვ (ughv Svan.)		Fruit, Leaf	Forest, Garden
<i>Sorbus caucasigena</i> Kom.	181	Food (Alcohol, Human food); Medicinal (Hypertension, Wounds); Utensils and tools (Tool handles)	ცირცელი (Tsirtseli)	გოგლანდ (gogland Svan.)		Fruit, Leaf	Forest, Garden
<i>Sorbus terminalis</i> Crantz.	182	Food (Human food); Utensils and tools (Furniture)	თამელი (Thameli)	მურგვი (murgvi Svan.)		Fruit, Leaf	Forest
<i>Sorbus torminalis</i> (L.) Crantz.	183	Food (Human food)	დათვისყურა (Dathvisqhura)			Fruit	Forest
Russulaceae							

<i>Lactarius deliciosus</i> (L. ex Fr.) S.F. Grey	101	Food (Human food)	მჭადა (Mtchada)	ჭადა (tchada Svan.)		Fruit	Forest
<i>Lactifluus piperatus</i> (L.) Roussel	102	Food (Human food, Pickled)		ბერუითავი (beruithavi Svan.)		Fruit	Forest
<i>Russula rosea</i> Pers.	169	Food (Human food)	წითლიო (Ts'itlio)			Fruit	Forest
Rutaceae							
<i>Citrus limon</i> (L.) Burm. f.	53	Food (Human food)	ლიმონი (Limoni)			Fruit	Garden
Salicaceae							
<i>Populus tremula</i> L.	141	Utensils and tools (Tool handles)	ვერხვი (Verkhvi)			Stem	Forest
<i>Salix alba</i> L.	170	Construction (Timber); Utensils and tools (Baskets, Tool handles)	ტირიფი (Tiriphi)	ვაჰლანდ (vahland Svan.)		Stem	Forest
<i>Salix caprea</i> L.	171	Construction (Fences); Utensils and tools (Tool handles)	მდგნალი (Mdgnali)	ბაგუნდი (bagund Svan.), ჭიჭუნა (Chitchuni Svan.)		Fruit, Leaf	Forest
Sapindaceae							
<i>Acer platanoides</i> L.	2	Utensils and tools (Furniture, Household utensils, Sleds, Tool handles)	ნეკერჩხალი (Nek'erchkhali)	თეკრა (thekra Svan.)		Stem	Forest
<i>Acer trautvetteri</i> Medw.	3	Construction (Timber); Utensils and tools (Tool handles)	თეკრი (Thekri)			Stem	Forest
Scrophulariaceae							
<i>Verbascum</i> sp.	202	Medicinal (Skin problems)	კერიფკლა (Keripkla)			Flower	Forest
Smilacaceae							
<i>Smilax excelsa</i> L.	178	Food (Phkhali)	ეკალდიჭი (Ek'alghich'i)	ეკალა (ekala Svan.)		Branches	Forest
Solanaceae							
<i>Capsicum annuum</i> L.	42	Food (Human food, Pickled, Svan salt); Medicinal (Cold, Flu)	წიწაკა (Ts'tsak'a)	<i>Capsicum annuum</i> L. Sweet Bulgarian	(chili), (sweet)	Fruit, Leaf	Forest, Garden
<i>Capsicum annuum</i> L. Sweet Bulgarian	43	Food (Human food, Svan salt)	წიწაკა წითელი (Tzitzaka tzitheli)	ძაფანა (dzaphana Svan.)		Fruit	Garden
<i>Lycopersicon esculentum</i> L.	111	Food (Human food)	პამიდორი (P'amidori)			Fruit	Garden
<i>Nicotiana rustica</i> L.	123	Cultural (Smoking)		თუთინ (thuthin Svan.)		Leaf	Garden
<i>Nicotiana tabacum</i> L.	124	Cultural (Smoking); Utensils and tools (Natural pesticide)		თუთინ (thuthin Svan.)		Leaf	Garden
<i>Solanum meloena</i> L.	179	Food (Human food)	ბადრიჯანი (Badrijani)			Fruit	Garden
<i>Solanum tuberosum</i> L.	180	Food (Human food)	კარტოფილი (K'art'opili)		(red), (white)	Root	Garden
Staphyleaceae							
<i>Staphylea colchica</i> Steven	184	Food (Human food, Phkhali)	ჯონჯოლი (Jonjoli)	ნიორკავა (niorkava Svan.)		Fruit, Leaf	Forest, Garden
Suillaceae							
<i>Suillus granulatus</i> (L.) Roussel	185	Food (Human food)	დუმა სოკო (Duma soko)			Fruit	Forest
<i>Suillus luteus</i> (L.) Roussel	186	Food (Human food)	ზეთიანა (Zethiana)	масляга (masliata Russ.)		Fruit	Forest
Ulmaceae							
<i>Ulmus elliptica</i> C. Koch	196	Construction (Timber); Utensils and tools (Carts, Furniture)	თელა (Tela)			Stem	Forest
Urticaceae							
<i>Urtica dioica</i> L.	197	Food (Chachapuri, Phkhali); Medicinal (Joints, Nerves, Wounds)	ჭინჭარი (Ch'inch'ari)	მერხელ (merkhel Svan.)		Leaf	Forest
Valerianaceae							
<i>Valeriana officinalis</i> L.	201	Medicinal (Nerves)		გულბანდი (Gulbandi Tush.)		Root	Forest
Vitaceae							

<i>Vitis vinifera</i> L.	206	Food (Alcohol, Human food); Medicinal (Anemia, Blood pressure increase)	ყურძენი (Qurdzeni)	(Aleqsandrouli), (Isabella red), (Isabella white), (Isabella), (jvarisa “sebel”), (Jvarisa), (kachichi), (katchitchi), (Maethiani qurdzeeni Svan.), (Ojaleshi), (pjaleshi), (saperavi), (Svanetian saperavi), (third variety), (Thitha), (ththa red), (ththa white), (Tsitsqa), (tsolikouri), (usakhelauri), (Viraqurdzeni Svan.), ადგსა (adesa), ფრანგულა (phrangula)	Fruit	Garden
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Community	# Use Categories	# Reports	#Taxa	Mean ICF	ICF sd
Babili	4	399	74	0.8	0.1
Chvabiani	3	89	38	0.65	0.07
Ebuthi	4	830	64	0.93	0.01
Gvimbrala	5	384	71	0.82	0.03
Khophuri	4	116	46	0.61	0.05
Labsqhaldi	4	94	71	0.25	0.21
Lahamula	3	280	90	0.81	0.18
Leli	5	174	56	0.84	0.17
Mananauri	5	195	50	0.84	0.11
Murqhmeli	3	34	32	0.18	0.28
Nakuraleshi	4	790	85	0.9	0.02
Oqhureshi	4	588	97	0.83	0.01
Tskhekvani	4	348	85	0.76	0.04
Tviberi	4	142	85	0.24	0.2
Tzvrimi	5	228	91	0.63	0.07
Zeskho	4	90	39	0.6	0.05
Zhibiani	6	346	68	0.82	0.03

Table 2: Mean informant consensus across use categories among informant communities, with total number of use reports and taxa.

Scientific name	Cultural Importance	Use Diversity	Use Value
<i>Artemisia vulgaris</i> L.	3	1.04	0.13
<i>Hypericum perforatum</i> L.	3	1.1	0.1
<i>Juniperus hemisphaerica</i> C. Presl	3	1.1	0.05
<i>Juniperus oblonga</i> Bieb.	3	1.1	0.05
<i>Cichorium intybus</i> L.	2.56	1.3	0.37
<i>Sambucus ebulus</i> L.	2.48	2.05	1.1
<i>Corylus avellana</i> L./ <i>C. pontica</i> K. Koch.	2.35	1.57	2.21
<i>Juniperus sabina</i> L.	2.2	1.81	0.22
<i>Cannabis sativa</i> L.	2	1.43	0.29
<i>Lycoperdon perlatum</i> Pers.	2	0.69	0.06
<i>Lycoperdon pyriforme</i> Schaeff.			
<i>Beta vulgaris</i> L. (sugar beet)	2	0.69	0.03
<i>Sorbus terminalis</i> Crantz.	2	0.69	0.03

Table 3: The 95th percentile species ranked by Cultural Importance.

in both CI and UD. These two species, and others with especially high UD (Table 4) tended to be woody species. Species with the greatest UD did tend to also have high CI or UV metrics. Species with high Use Value (UV, Table 5) tended to be common managed/domesticated species from home orchards, gardens or farms.

Discussion

For Svaneti-Racha, geographic differences were important for in which kinds of ways people used plants; and in which plants they used. Elevation also played an important role in what plants they use, but not in use categories. Medicinal and utensils and tools use categories exhibited much greater IC at low numbers of use reports Cultural Importance (CI, Table 3) prioritized species of diverse life-forms and use categories but looking at the list, is there may be a tendency for aromatic/bitter profiles? (compare with, for instance, Table 5).

We found *Corylus avellana* L./*C. pontica* K. Koch to be one of the most important useful plants in the region by any of the three metrics we use. Hazelnuts are an excellent example of Georgia's place as a hotspot of temperate plant diversity and an ancient center of plant domestication, home to a diversity of endemic crop varieties and ecotypes. Hazelnuts' earliest cultivation was in the Caucasus, and the few current studies on the topic suggest that Georgian hazelnuts have a remarkable degree of genetic diversity. This botanical richness is held in small farms like those in the study area: 80% of Georgian hazelnut producers cultivate orchards of <0.5 hectare (Lane 2013). The importance of hazelnuts in the area implies a rich and body of plant genetic resources and associated knowledge.

Plant species, and uses, found in our study, showed clear relations to the wider Eurasian cultural complex, showing broad overlap with other studies, forming part of what Biscotti and Pieroni [26] described as "hidden Mediterranean diet". The number of species used in Svaneti and Racha was however far higher than in any published study from either the region or the wider Eurasia [27-39]. The much larger incidence of plant use for food might stem from the particularly long agricultural and gardening history in the Caucasus. Interestingly, medicinal plant species tended to coincide more with other studies in the region [27,40-45].

High UV scores are found in garden rather than in wild-collected species, e.g., *Malus domestica*, *Pyrus communis*, *Coriandrum sativum*, *Corylus avellana* / *C. pontica*, *Allium victorialis*, *Vitis vinifera*; and garden species also differed much less across environmental gradients than wildcollected species. To some extent, this may reflect the wide geographic distribution of these cultivated species and their cultivated niche, in contrast to wilder areas with more niche divergence along geographical and topographical gradients. It also underlines the importance of Georgia as an ancient center of crop domestication and diversification and its role in the origin of many domesticated species that are globally spread today.

The wide use of mushrooms and lichens in Svaneti is of particular interest, and characterizes the region as *mycophilous* [46].

While the great variety of plant species used in the Georgian Caucasus might provide a reservoir for food security, similar to the Balkans [47], climate change is starting to affect both natural floristic diversity and gardens both in the Caucasus as well as continent wide [48,49].

Conclusions

For Svaneti-Racha, geographic differences were important for in

which kinds of ways people used plants, and which plants they used. Elevation also played an important role in what plants were utilized, but not in use categories. Medicinal and utensils and tools use categories exhibited much greater IC at low numbers of use reports, while Cultural Importance prioritized species of diverse life-forms and use categories.

The shift from ancient cultivars to modern high-yielding crops such as maize and potato, which took place in the lowland areas much earlier, began in mountain villages towards the end of Soviet occupation. Similar changes have been reported from other former Soviet republics [50]. In addition, the rehabilitation of high altitude villages has been only partial - while some families have returned at least for the summer, many villages remain in ruins. In occupied villages old household utensils like butter barrels are often to be found in storage, but not used anymore. Small bridges are still made from wood, but many other wooden household items like beautiful bed-headboards are simply discarded. Some implements, e.g., snowshoes or brooms are still maintained. Agricultural tools such as hay rakes are a common sight in abandoned barns, but more sought after 10 items like ox-drawn threshing sledges could only be found in museums. While sheep were produced on a large scale during Soviet times, leading to widespread overgrazing, nowadays only a few scattered herds remain, and traditional wool items are getting more difficult to find, while tourist products abound along roadsides especially in the outskirts of Tbilisi and resort areas like Borjomi and Barisako. Sadly, we could only find some cultivation of *Hordeum* in Svaneti, although many participants mentioned that old landraces of wheat and barley were formerly preferred to prepare bread and beer for religious rituals. All over Georgia abandoned terraces indicate where grain was formerly grown. Many old barns still contain clay lined grain storage baskets made from *Salix* sp., which quite often contain old grains. One old storage chest in an abandoned barn was still half full of oats, probably harvested in the 1970s, and some wheat bran was still found in an abandoned house. Now villagers buy wheat to distil alcohol or to bake bread, or buy commercial beer making mixtures to brew their own beer [17].

The maintenance of home gardens in Georgia serves as socio-ecological memory, like in other regions [51,52], and as such is an irreplaceable tool to maintain Georgian culture. In contrast to other regions, this represents not just a reflectance of growing popularity of gardening and gathering [53-60], but cultural survival.

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Declaration

Before conducting interviews, prior informed consent was obtained from all participants. No further ethics approval was required.

Consent for Publication

This manuscript does not contain any individual person's data and further consent for publication is not required.

Availability of data and materials

The raw data contain the names of all participants, and cannot be shared in this form. All other material is included in the paper.



Figure 1: Study area (based on United Nations, modified).

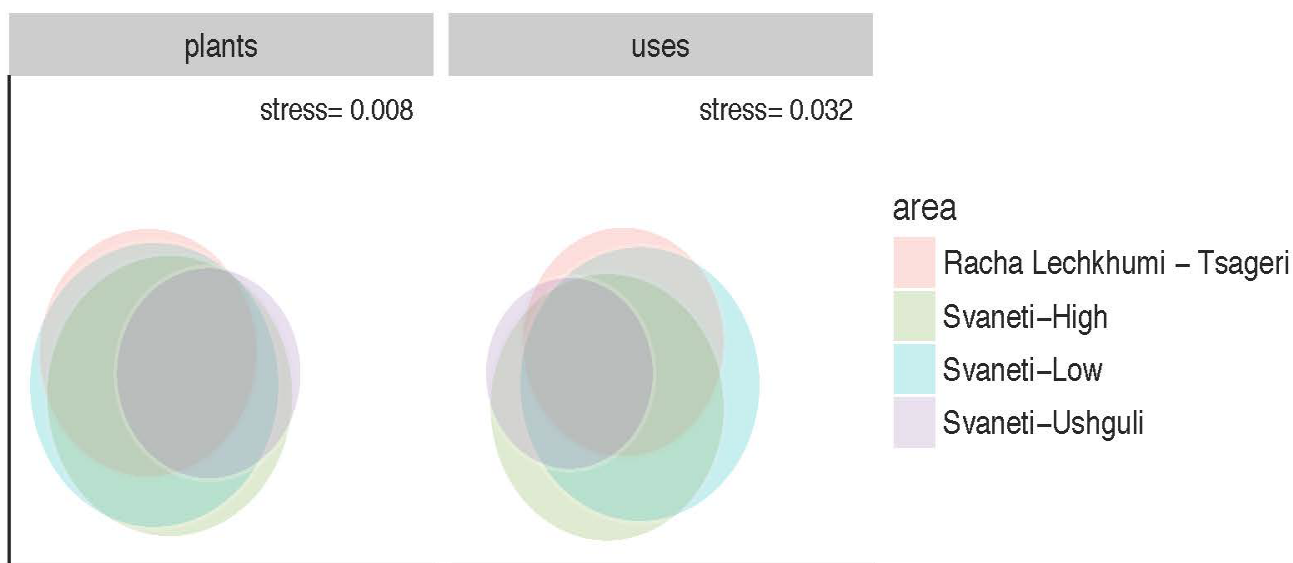


Figure 2: Proportional Euler diagrams of plants and usage shared among areas within Svaneti-Racha.

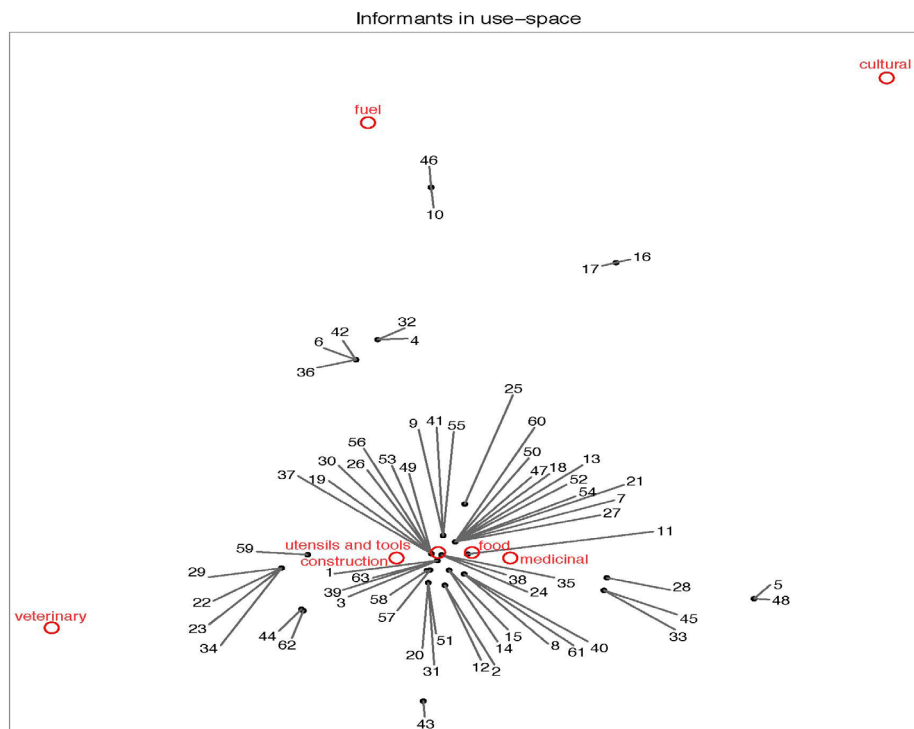


Figure 3: Informants from the Svaneti-Racha region ordered by their distance in uses reported, labelled by identification number (see Table 1).

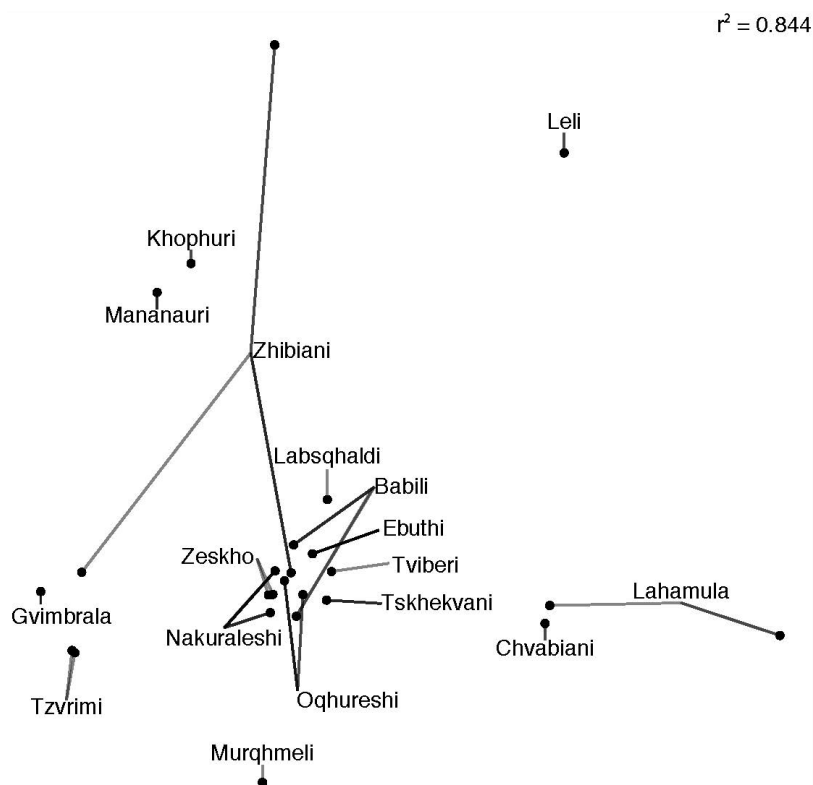


Figure 4: Community explains a large degree of the variation in uses reported ($r^2=0.84$, $p=0.001$).

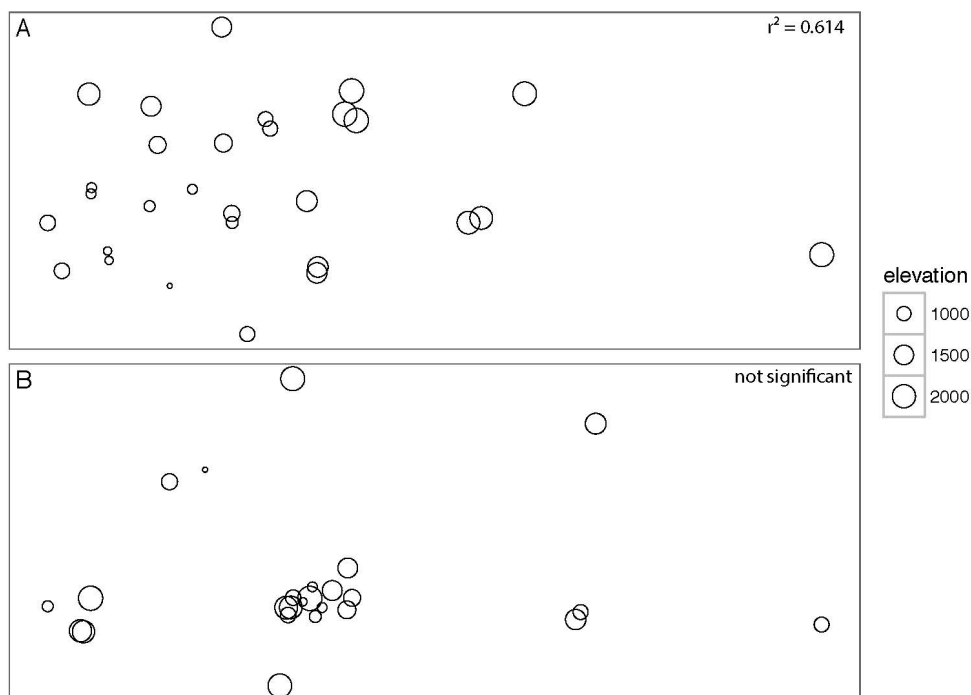


Figure 5: Elevation of community explains a large degree of the variation in plant species reported (A, $r^2=0.65$, $p=0.001$) but not in uses reported (B, $r^2=0.02$, $p=0.51$).

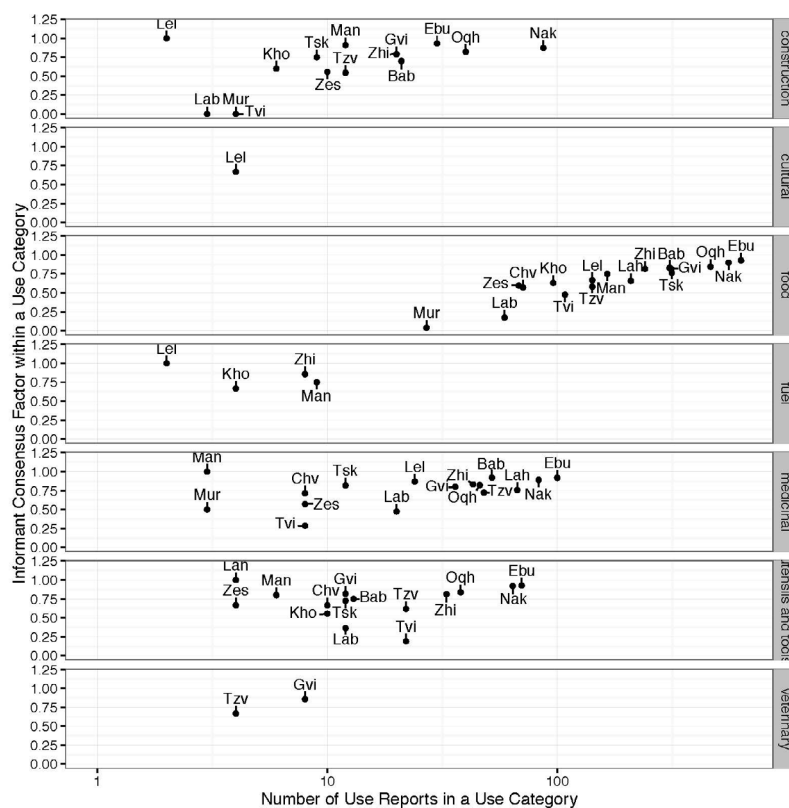


Figure 6: Informant consensus plotted over number of use reports for each Use Category among informant communities. Micronucleus induced in mice exposed to TiO_2 -NPs. (a) PCE: Polychromatic erythrocytes, NCE: Normochromatic erythrocyte (b) MNPCE: mono-micronucleated polychromatic erythrocyte. (c) Bi-MNPCE: Bi-micronucleated polychromatic erythrocyte.

Scientific name	Cultural Importance	Use Diversity	Use Value
<i>Sambucus ebulus</i> L.	2.48	2.05	1.1
<i>Juniperus sabina</i> L.	2.2	1.81	0.22
<i>Betula litwinowii</i> Doluch.	1.64	1.8	0.43
<i>Castanea sativa</i> Mill.	1.79	1.68	0.68
<i>Vaccinium arctostaphylos</i> L.	1.7	1.66	1.84
<i>Corylus avellana</i> L. / <i>C. pontica</i> K. Koch.	2.35	1.57	2.21
<i>Fagus orientalis</i> Lipsky	1.4	1.43	1.08
<i>Cannabis sativa</i> L.	2	1.43	0.29
<i>Viburnum lantana</i> L.	1.29	1.4	0.49
<i>Matricaria chamomilla</i> L.	1.33	1.39	0.13
<i>Rosa</i> sp.	1.46	1.35	1.37

Table 4: The 95th percentile species ranked by Use Diversity.

Scientific name	Cultural Importance	Use Diversity	Use Value
<i>Sambucus ebulus</i> L.	1.25	0.41	3.05
<i>Juniperus sabina</i> L.	1.05	0.16	2.95
<i>Betula litwinowii</i> Doluch.	1.47	0.48	2.41
<i>Castanea sativa</i> Mill.	2.35	1.57	2.21
<i>Vaccinium arctostaphylos</i> L.	1.7	1.66	1.84
<i>Corylus avellana</i> L./ <i>C. pontica</i> K. Koch.	1.05	0.1	1.52
<i>Fagus orientalis</i> Lipsky	1.49	0.63	1.51
<i>Cannabis sativa</i> L.	1.44	0.61	1.51
<i>Viburnum lantana</i> L.	1.26	0.4	1.48
<i>Matricaria chamomilla</i> L.	1.46	1.35	1.37
<i>Rosa</i> sp.	1.61	0.99	1.32

Table 5: The 95th percentile species ranked by Use Value.

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Competing Interests

The authors declare that they have no competing interests.

Author Contributions

RWB, NYPZ, SS, ZK, DK, DT and KB designed the study; RWB, NYPZ, SS, ZK, DT 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.

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