Allium paradoxum (M. Bieb.) G. Don
Allium ursinum L.
Allium victorialis L.
Amaryllidaceae

George Fayvush, Alla Aleksanyan, Naiba P. Mehdiyeva, Valida M. Alizade, Ketevan Batsatsashvili, Zaal Kikvidze, Manana Khutsishvili, Inesa Maisaia, Shalva Sikharulidze, David Tchelidze, Narel Y. Paniagua Zambrana, and Rainer W. Bussmann

Synonyms

***Allium paradoxum* (M. Bieb.) G. Don**: *Scilla paradoxa* M.Bieb
***Allium ursinum* L.**: *Allium latifolium* Gillb
***Allium victorialis* L.**: *Allium microdictyum* Prokh.; *Allium ochotense* Prokh.; *Allium latissimum* Prokh

G. Fayvush • A. Aleksanyan
Institute of Botany of National Academy of Sciences, Yerevan, Armenia
e-mail: gfayvush@yahoo.com; alla.alexanyan@gmail.com

N.P. Mehdiyeva • V.M. Alizade
Institute of Botany, Azerbaijan National Academy of Sciences, Baku, Azerbaijan
e-mail: naiba_m@mail.ru; vm_alizade@yahoo.com

K. Batsatsashvili • M. Khutsishvili • I. Maisaia • S. Sikharulidze • D. Tchelidze
Institute of Botany and Bakuriani Alpine Botanical Garden, Ilia State University, Tbilisi, Georgia
e-mail: ketevan_batt@yahoo.com; mananakhuts@yahoo.com; Inesa.Maisaia@gmail.com; bakurianigarden@yahoo.com; nickibakanidze@yahoo.de

Z. Kikvidze
4-D Research Institute, Ilia State University, Tbilisi, Georgia
e-mail: zaal.kikvidze@iliauni.edu.ge

N.Y. Paniagua Zambrana
Instituto de Ecología-UMSA, Herbario Nacional de Bolivia, La Paz, Bolivia
e-mail: nyaroslava@yahoo.es

R.W. Bussmann (✉)
William L. Brown Center, Missouri Botanical Garden, St. Louis, MO, USA
e-mail: rainer.bussmann@mobot.org

R.W. Bussmann (ed.), *Ethnobotany of the Caucasus*, European Ethnobotany,
DOI 10.1007/978-3-319-49412-8_135

Local Names

Armenia: *Allium paradoxum*: Սոխ տարօրինակ (Sokh tarorinak), խազեզ (Khazez); **Azerbaijan**: *Allium paradoxum*: Xəzəz soğanı; *Allium ursinum*: Ayı soğanı; *Allium victorialis*: Qalib soğanı; **Georgia**: *Allium ursinum*: ღანძილი – ghandzili, ღანზილ – ghanzil (Ingolian), ღანძელი – ghandzeli (Khevsuretian), შიშგილ – shishgil (Svanetian), ნიხანძილ – nikhandzil (Svanetian), ხანძილი – khandzili (Pshavian), ჯიშკილა – jishk'ila (Imeretian, Gurian, Megrelian). *Allium victorialis*: მთის ღანძილი – mtis ghandzili, ბაშო – basho (Mokhevian), ნიორაი – niorai (Mthiuletian), შებუ – shebu (Tushetian), შიბუ – shibu (Pshavian), მაღდენა – maghdena (Svanetian), დეშდვ ნივრა – dashden nivra (Svanetian) (Makashvili 1991); **English**: Wild onion.

Botany and Ecology

Allium paradoxum (M. Bieb.) G. Don

Perennial herb, bulb globose to 1 cm diameter; a notably odorous plant. Outer skin of bulb grey, papery. Flower stem triangular in section, 20–30 cm tall, 2/3 the length of the solitary leaf. Leaf linear. Flower umbel 2, 5, or 10 flowered, often bearing bulbets. Flowers nodding, campanulate, up to 10 mm long; stigma 3-lobed; ovules 6. Capsule 5 mm long. An invasive, non-native species in Europe. Found in shaded forests and throughout the Caucasus region. Flowers and fruits from April to May. The species grows well in deciduous woodland habitats, forming a green carpet that can smother other native species such as bluebells and snowdrops. *Allium paradoxum* is considered an invasive, non-native species in Europe. The smell of the plant is particularly noticeable to a person who is approaching an area where it is growing (Figs. 1, 2 and 3).

Armenia: In oak and beech forests, mainly on slightly humid places, near water streams, from lower to upper mountain belt, on the elevation 600–2300 m. Flowers from April to May, fruits from May to Jun. Distributed in Idjevan, Aparan (Tsahkadzor), South of Zangezur and Meghri floristic regions (Takhtadjan 1954–2009).

Azerbaijan: Distributed in the regions of Guba and Eastern Greater Caucasus, in all regions of the Lesser Caucasus and mountainous part of Lankaran. Grows from the lower to the middle mountain zone (500–1800 m above sea level) in forests, thickets and along forest edges. Flowering and fruiting in April-May (Flora of Azerbaijan 1950–1961).

Allium ursinum L.

Perennial with long, narrow bulbs. Bulbs with fibrous outer skin. Flower stem triangular in section and 15–40 cm long, the base enveloped with 2 leaves, slightly shorter. Leaf blade 3–5 mm broad and nearly as long as petiole. Inflorescence a spathe equaling the dense, many-flowered umbel. Fruit a capsule rounded to

Fig. 1 *Allium paradoxum* (Amaryllidaceae). Armenia (Photo: G. Fayvush)

Fig. 2 *Allium ursinum* (Amaryllidaceae). Azerbaijan (Photo: N. Mehdiyeva)

rigorous. Seeds nearly round. Common on shaded forests. Found in Caucasus (Ciscaucasia, Western, eastern and southern Transcaucasia), also in Scandinavia, Central and Atlantic Europe, Mediterranean, Baltic, Asia Minor. Flowers and fruits from May to June. *Allium ursinum* is widespread across most of Europe. It grows in

Fig. 3 *Allium victorialis* (Amaryllidaceae). Food. Khevsureti, Georgia (Photo: N. Paniagua-Zambrana)

deciduous woodlands with moist soils, preferring slightly acidic conditions. In the British Isles, colonies are frequently associated with bluebells (*Hyacinthoides* sp.), especially in ancient woodland.

Azerbaijan: Rare endangered species, included in the Red Book of the Republic of Azerbaijan (Redlist Committee Azerbaijan 2013). Found in the region of Guba of the Greater Caucasus Mountain massive and western Azerbaijan. Grows in shady forests and wet subalpine meadows from the lower to upper mountain belt (2000–2200 m). Flowering and fruiting in May-June (Flora of Azerbaijan 1950–1961).

Georgia: Shady forests in lower and middle mountain zones. Distributed in Apkhazeti, Samegrelo, Imereti, Adjara, Kartli, Mtiuleti, Trialeti (Ketskhoveli et al. 1971–2011).

Allium victorialis L.

Perennial herb, bulbs several, attached to a rhizome. Outer skin of bulb net-veined, grey-brown. Leaves oblong to lanceolate, usually 3–6 cm broad and 2–4 times as long as the petiole. Flower stalk 30–70 cm long, sheathed with 2–3 leaves in a usually violet-tinged leaf sheath. Inflorescence an umbel of flowers that droops before opening. Flowers white-green, 4–5 mm long; anther filaments nearly trigonal; style exerted. Capsule round with round seeds. Woods, wood margins and meadows. Distributed in Volga-Kama, Caucasus (Ciscaucasia, Dagestan, East Transcaucasia), West Siberia (Ob region, Upper Tobol, Altai), East Siberia (Yenisei, Angara

River-Sayans, Dauria), Far East (Kamchatka, Okhotsk, Zeya-Bureya, Uda River area, Ussuri, Sakhalin). General distribution in Central and Atlantic Europe, West Mediterranean, Balkan Peninsula and Asia Minor, India, Pakistan, Nepal, Mongolia, Japan, China, North America. Flowers and fruits from June to July. Occurs in damp, alpine forests, as well as in forest and subalpine meadows.

Azerbaijan: Distributed in the regions of Guba and Eastern Greater Caucasus. Grows in meadows and upper mountain and subalpine zones (1700–2600 m). Flowering and fruiting in June–July (Flora of Azerbaijan 1950–1961).

Georgia: Forests and forest edges up to alpine zone. Distributed in Apkhazeti, Svaneti, Racha-Lechkhumi, Imereti, Kartli, Mtiuleti, Tush-Pshav-Khevsureti, Trialeti, Kvemo Kartli, Javakheti (Ketskhoveli et al. 1971–2011).

Local Medicinal Uses

Armenia: All species of wild onion with garlic scent are widely used in folk medicine in Armenia (Isotova et al. 2010; Gabrielyan 2001). The tincture has antimicrobial properties and is used in atherosclerosis, colitis, and diarrhea. Fresh or cooked onions are applied topically for certain skin diseases (abrasions, sores). Fresh juice from the leaves and bulbs with sugar used for the treatment of diseases of the upper respiratory tract (Gammarman and Grom 1976; Grossheim 1952; Gubanov et al. 1976; Tsaturyan and Gevorgyan 2014; Turova and Sapojnikova 1982; Zolotnitskaya 1958–1965). According to the Armenian medieval healers (Amirdovlat 1927; Harutyunyan 1990; Mardjanyan 2008; Nosal and Nosal 1991; Vardanyan 1979) onion improves vision, onion juice prevents the development of cataracts in the early stages. Alcohol tinctures regulate blood pressure improve the elasticity of capillaries.

Azerbaijan: *Allium ursinum* is used for wound healing in the form of a decoction, gargle and applications as disinfectant and wound healing remedy in diseases of the skin, for abscess and women's diseases. The plant us used raw in scurvy (Grossheim 1942, 1943). *Allium* species are used as anthelminthic. *Allium victorialis* is used for Infectious diseases: Used in the fresh form as antimicrobial and anthelmintic remedy.

Local Food Uses

Armenia: Young leaves and stems of *Allium paradoxum* together with the bulbs in fresh or pickled form are used as seasoning for various dishes (Grossheim 1952; Gubanov et al. 1976; Tsaturyan and Gevorgyan 2007).

Azerbaijan: The leaves and stems of *Allium paradoxum* together with bulbs are used as one of the ingredients for cooking the national dishes Dovga (a soup cooked from yogurt, various greens, a small amount of rice and eggs. In some regions of the country a small amount of peas is added to it. It is considered good for digestion and for treatment of intestinal cramps and has warming and diaphoretic effects), Kutab (various edible greens baked in a thin rolled dough. In some regions of the country

white cheese, or cottage cheese. Before it is eaten the rolls are greased with butter, often mixed with yoghurt), and Kuku (an omelet with various greens, sometimes with added meat or fish, and often mixed with yoghurt. This food is believed to strengthen the organism and stimulates libido, especially if eaten with cinnamon and fried onions). *Allium victorialis* has a very strong garlic taste. It is used fresh, fermented and salted (Grossheim, 1946; Flora of Azerbaijan 1950–1961). *Allium ursinum* is used raw and in the form of a marinade with salt and vinegar (Flora of Azerbaijan 1950–1961). Hallyar (young leaves of *Allium ursinum* fried thoroughly in oil with onions, with either walnuts or eggs added in some reginos) is eaten and eat with yoghurt.

Georgia: The consumption of leaves of *Allium ursinum* and *A. victorialis* is widespread in Georgia: *A. ursinum* is consumed at lower and *A. victorialis* at higher altitudes. The use of the latter species is more frequent. It was customary to eat the leaves pickled (Bussmann et al. 2014, 2016a, b, 2017a, b, c; Javakhishvili 1986; Makalatia 1933; Oshoradze 1969; Sujashvili and Pitskheliauri 2005) or boiled and prepared in a form of "mkhali" (a meal of boiled, squashed and chopped herbs) (Bussmann et al. 2014, 2016a, b, 2017a, b, c; Javakhishvili 1986; Makalatia 1933; Makalatia 1934; Oshoradze 1969). There were also various ways of "mkhali" (a mixture of herbs prepared as spread) preparation: in alpine regions melted butter was mixed with boiled, squashed and chopped leaves (Bussmann et al. 2014, 2016a, b, 2017a, b, c; Javakhishvili 1986; Makalatia 1933), while in the lowlands oil was used instead of butter and vinegar was also added (Bussmann et al. 2014, 2016a, b, 2017a, b, c; Javakhishvili 1986). Greens as cilantro, mint, summer savory, and basil were added to "mkhali" (Javakhishvili 1986). Sometimes chopped and boiled leaves were mixed with curds, wrapped in pastry and boiled (Oshoradze 1969). Pickles were sometimes not only eaten raw, but rather used for "ketseuli" – a pie filled with herbs and sometimes mixed with cheese (Bussmann et al. 2014, 2016a, b, 2017a, b, c). Leaves were also stored for winter dried or salted in pots (Makalatia 1933; Oshoradze 1969). In Khevi leaves were eaten raw (Makalatia 1934). Bulbs were used as garlic substitute in Svan salt (Bussmann et al. 2014, 2016a, b, 2017a, b, c). In Khevi bulbs were eaten as garlic (Sujashvili and Pitskheliauri 2005). Leaves and stems are also pickled.

References

Amirdovlat A. Angitats anpet. Vienna; 1927 (in Armenian).

Bussmann RW, Paniagua-Zambrana NY, Sikharulidze S, Kikvidze Z, Kikodze D, Jinjikhadze T, Shanshiashvili T, Chelidze D, Batsatsashvili K, Bakanidze N. Wine, beer, snuff, medicine and loss of diversity – ethnobotanical travels in the Georgian Caucasus. Ethnobot Res Appl. 2014;12:237–313.

Bussmann RW, Paniagua Zambrana NY, Sikharulidze S, Kikvidze Z, Kikodze D, Tchelidze D, Khutsishvili M, Batsatsashvili K, Hart RE. A comparative ethnobotany of Khevsureti, Samtskhe-Javakheti, Tusheti, Svaneti, and Racha-Lechkhumi, Republic of Georgia (Sakartvelo), Caucasus. J Ehnobiol Ethnomed. 2016a;12:43. doi:10.1186/s13002-016-0110-2.

Bussmann RW, Paniagua Zambrana NY, Sikharulidze S, Kikvidze Z, Kikodze D, Tchelidze D, Batsatsashvili K, Hart RE. Medicinal and food plants of Svaneti and Lechkhumi, Sakartvelo

(Republic of Georgia), Caucasus. Med Aromat Plants. 2016b;5:266. doi:10.4172/2167-0412.1000266.
Bussmann RW, Paniagua Zambrana NY, Sikharulidze S, Kikvidze Z, Kikodze D, Tchelidze D, Batsatsashvili K, Hart RE. Plants in the spa – the medicinal plant market of Borjomi, Sakartvelo (Republic of Georgia), Caucasus. Indian J Tradit Knowl. 2017a;16(1):25–34.
Bussmann RW, Paniagua Zambrana NY, Sikharulidze S, Kikvidze Z, Kikodze D, Tchelidze D, Batsatsashvili K, Hart RE. Ethnobotany of Samtskhe-Javakheti, Sakartvelo (Republic of Georgia), Caucasus. Indian J Tradit Knowl. 2017b;16(1):7–24.
Bussmann RW, Paniagua Zambrana NY, Sikharulidze S, Kikvidze Z, Kikodze D, Tchelidze D, Khutsishvili M, Batsatsashvili K, Hart RE. Medicinal and food plants of Tusheti, Khevsureti and Pshavi, Sakartvelo (Republic of Georgia), Caucasus. Act Soc Bot Pol. 2017c;86(2), 3517. https://doi.org/10.5586/asbp.3517.
Flora of Azerbaijan, vols. I–VIII. Baku: AS of Azerbaijani SSR; 1950–1961 (in Russian).
Gabrielyan E. Herbal medicine national register. Yerevan; 2001 (in Armenian).
Gammarman A, Grom I. Wild medicinal plants of the USSR. Moscow; 1976 (in Russian).
Grossheim AA. Medicinal plants of Azerbaijan. Baku: Publishing House of Azerbaijani Branch of AS; 1942. (in Russian).
Grossheim AA. Herbs of the Caucasus. Baku: Azerbaijani Branch of AS of Azerbaijani SSR; 1943. (in Russian).
Grossheim AA. Plant resources of the Caucasus. Baku: Publishing house of AS of Azerbaijani SSR; 1946. (in Russian).
Grossheim AA. Plant richness of the Caucasus. Moscow; 1952 (in Russian).
Gubanov I, Krilova I, Tikhonova V. Wild useful plants of the USSR. Moscow; 1976 (in Russian).
Harutyunyan H. Medieval armenian phytotherapy herbs. Yerevan; 1990 (in Armenian).
Isotova MA, Sarafakova NA, Mkscho BI, Ionova AA. Great encyclopedia of traditional medicine. Moscow; 2010 (in Russian).
Javakhishvili I. Materials for history of household and crafts, Food and drinks, vol. 5. Tbilisi: Metsniereba; 1986. (in Georgian).
Ketskhoveli N, Kharadze A, Gagnidze R. Flora of Georgia, 16 vols. Tbilisi: "Metsniereba"; 1971–2011 (in Georgian).
Makalatia S. Khevi. Tpilisi; 1934 (in Georgian).
Makalatia S. Tusheti. Tpilisi; 1933 (in Georgian).
Makashvili A. Botanical dictionary. Tbilisi: Metsniereba; 1991 (in Georgian).
Mardjanyan KS. Stepanos Shahrimanyan's "Botany of Flora of Armenia". Yerevan; 2008 (in Russian).
Nosal M, Nosal I. Medicinal plants and methods for their use by people. Leningrad; 1991 (in Russian).
Oshoradze V. Characteristic of mkali and other wild food plants and possibility of their introduction in agriculture. Candidate of Agrarian Sciences Dissertation, Tbilisi; 1969 (in Georgian).
Redlist Committee Azerbaijan. Red book of the Republic of Azerbaijan/rare and endangered plant and mushroom species. 2nd edition. Baku, Aharg-Garb; 2013 (in Azeri).
Sujashvili N, Pitskheliauri I. Khevian dictionary. Tbilisi; 2005 (in Georgian).
Takhtadjan AL. Flora of Armenia, vol. 1–11. Yerevan; 1954–2009 (in Russian).
Tsaturyan T, Gevorgyan M. Wild edible plants of Armenia. Yerevan; 2007 (in Armenian).
Tsaturyan T, Gevorgyan M. Wild medicinal plants of Armenia. Yerevan; 2014 (in Armenian).
Turova A, Sapojnikova E. Medicinal plants of the USSR and their use. Moscow; 1982 (in Russian).
Vardanyan S. Pharmacology in ancient Armenia. Hist Philol J. 1979;2:179–94 (in Armenian).
Zolotnitskaya S. Medicinal resources of the flora of Armenia. vols. 1–2. Yerevan; 1958–1965 (in Russian).