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СИСТЕМАТИЧЕСКИЕ ОБЗОРЫ И НОВЫЕ ТАКСОНЫ

THE GENUS *PRUNELLA* (LAMIACEAE) IN THE CAUCASUS

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The article discusses the nature of variability in the genus *Prunella*. Based on a study of rich herbarium collections of the LE Herbarium, 3 species of the genus are found in the Caucasus, among them *P. vulgaris* is represented by 4 varieties and 2 forms, and *P. laciniata* by 2 varieties. There also occur hybrids between all 3 species. For the first time, the genus *Prunella* is subdivided into sections and subsections, with valid publication of a new section (sect. *Borissovia*) and a new subsection (subsect. *Ciliatae*). A synopsis and a key for determination of the species and infraspecific taxa of the genus *Prunella* in the Caucasus are given. Four new varieties and two forms are described (*P. vulgaris* var. *majoriflora*, var. *subdentata*, var. *pubilabium*, f. *amblyodon*, f. *ciliata*; *P. laciniata* var. *euxina*), one nomenclatural combination is published (*P. vulgaris* var. *gracillicaulia*). The lectotype of *P.* × *spuria* is designated. The formation of races and forms of the genus *Prunella* in the Caucasus is apparently associated with nonsimultaneous immigration of the species and local geographical isolation of their populations.

Keywords: new section, new subsection, new variety, new form, new combination, taxonomy, plant systematics, distribution

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INTRODUCTION

The genus *Prunella* L. is widespread in the temperate zone of the Northern Hemisphere and in total comprises from 7 (Harley et al., 2004) to 10 (our data, but probably more) species. It has long been noted that many species of the genus are highly polymorphic, and moreover, are readily hybridize. The most detailed study of the variability in the genus using *P. vulgaris* L. as an example was performed by Tiege Böcher (Böcher, 1949), who systematically studied its samples of 147 populations from throughout Europe in culture. He distinguished several types of habit (taking into account the direction of growth and density of shoots) and several types of plant development (taking into account the life span of plants, the year and month of the transition to flowering), and on this base he distinguished the ecotypes, which, in his opinion, "...are arbitrarily delimited, ideal combinations of characters, are of no significance whatever, being merely ranges of clines. But from the viewpoint of practical taxonomy, ecology and plant geography, this kind of ecotype is of a certain importance. It is an advantage to be able to single out the most representative character combination in a given locality and give it a name".

Similar results of studying the variability of traits in a number of *P. vulgaris* populations were obtained by Andrew Nelson (1967) in California.

Apparently, currently in the genus *Prunella* the formation of races and species is actively continuing, local races are readily forming, often with a different combination of a small number of characters. Thus, in the populations of *P. vulgaris* from Japan, variation of the corolla

length along the altitudinal gradient correlated with the length of the pollinators' proboscis (Kuriya et al., 2015). In addition, *P. vulgaris* specimens from Japan and China (and Oregon) had flowers with a long column protruding from under the upper corolla lip, that is not characteristic to European populations. The plants are cross-pollinated (according to P.A. Fryxell (1957), and S.I. Warwick and D. Briggs (1979), even self-sterile), but in the absence of pollinators, self-pollination can occur, and the number of seeds per plant in different populations may differ greatly. The flowers are usually bisexual, but we have found one specimen of *P. vulgaris* in the Herbarium LE ([RUSSIAN FEDERATION, CAUCASUS] Balkaria. Agastan. Birch forest on the northern slope of Dorbunla-oly hill, 2200 m [a.s.l.] № 28. 19 July 1925. E. Bush, N. Bush (LE 01043617)) with flowers which had all anthers underdeveloped, i.e. the flowers were functionally feminine. This observation may indicate the presence of facultative gynodioecy in the genus, which is known to favor cross-pollination. All this suggests that the breeding system in the genus *Prunella* is quite complex (Qu, Widrlechner, 2011).

Warwick and Briggs (1979) in their experiments on the cultivation of the plants transferred from hayfields and pastures in the vicinity of Oxford and Cambridge noted that most plants of *P. vulgaris* retain dwarf growth in the culture, the trait fixed by the selection, and having a selective advantage over tall forms.

All this phenotypic diversity was reflected by taxonomists in a great number of described forms and varieties.

An attempt to establish superspecies categories in this genus was undertaken only in the "Flora of the USSR" by A.G. Borisova (1954), who distinguished two series: 1. *Vulgares* Boriss. with species *P. vulgaris* and *P. grandiflora* (L.) Turra, and 2. *Albae* Boriss. with species *P. laciniata* (L.) L. In my opinion, two lines of kinship in the genus *Prunella* L. are other than suggested by Borisova. By such characters as the corolla size, the shape of calyx teeth, the form of the connective appendage – *P. laciniata* is much closer to *P. vulgaris* than *P. grandiflora*, although the former is a xerophilic branch of the evolution of the genus. *P. grandiflora* together with a number of related species formed the second direction in the evolution of the genus, characterized by blunt short appendages of the filament, a long corolla, a distinctly three-toothed upper lip of the calyx, and a pair of stem leaves approximate to the inflorescence. The Borisova's series were not validly published, because they were not accompanied by a Latin diagnosis. In connection with all of the above, I establish the infrageneric categories, which, in my opinion, should be considered as sections. A similar approach to the division of the genus was proposed by F. Buchanan-Hamilton (1830), but he did not give names to his groups of kinship.

The haploid chromosome number in the genus is apparently 7 (2n = 14, 21, 28) (Böcher, 1949; Magulaev, 1979; CCDB, 2018). Böcher (1949) considers the number 2n = 32 (Hrubý, 1932) erroneous because the methods of the chromosome studying at that time did not allow to distinguish accurately between short chromosomes and long ones that often kinked in the preparations to form the parts mistakable for separate chromosomes. A.Yu. Magulaev (1979) showed on the Caucasian material that in a population there can be diploid, triploid, and tetraploid plants. He also suggested that polyploidy of *P. vulgaris* is a main factor promoted its wide spread.

MATERIALS AND METHODS

We used a classical comparative morphological method for studying the variability of the plants on LE herbarium material, using on-line databases from several other herbaria (B, BM, K, LINN, MNA, P), primarily for the study of type specimens. All the quoted samples were examined in the original or from the photograph, so we do not put the "!" sign, which is implied. In the labels written in Latin, the original spelling is preserved, those written in Cyrillic letters (Russian) were translated. The distribution of species in the Caucasus is given according

to Menitsky (1991); if the taxon is found not only in the Caucasus, its general distribution is also given.

RESULTS

Key to the species and hybrids

1. Whole plant, especially leaves and upper part of stem, densely rigidly pubescent. Rosette of radical leaves often persistent. Stem leaves usually pinnately divided to pinnatisect, rarely entire (var. *subintegra*, var. *euxina*). Corolla from white to cream-colored (corolla in hybrids usually with blue tinge, its lower lip is lighter than upper one). Edges of lower calyx teeth long-ciliate throughout their length or above the middle, cilia 0.5–0.75 mm long 2

– Plant usually sparsely hairy with softer hairs. Rosette of radical leaves usually missing, rarely present. Leaves entire (not pinnately divided). Corolla blue, violet, rarely white (in albinos). Edges of lower calyx teeth almost naked or shortly ciliate, with cilia 0.1–0.4 mm long 4

2. Corolla white or cream-colored, bracts and calyces always light green, without a purple tinge ..... *P. laciniata*

– Corolla colored with blue pigment: from purple and dirty whitish-bluish to pale purple, or lower lip lighter than upper one; bracts and calyces often with purple tinge 3

3. Upper stem leaves approximate to inflorescence; filament appendage almost as long as thecae, the latter up to 0.6–0.7 mm long ..... *P.* × *intermedia*

– Upper stem leaves distinctly distant from inflorescence, filament appendage 0.2–0.3 mm long, obtuse or acute, shorter than thecae ..... *P.* × *dissecta*

4 (1). Corolla over 2 cm long, upper stem leaves distant from inflorescence, middle tooth of upper calyx lip triangular, almost as wide as or up to 1.5 times wider than lateral teeth. Stamens end in a very short wide and obtuse appendage always shorter than thecae. Thecae 0.8–1 mm long ..... *P. grandiflora*

– Corolla up to 2 cm long. Upper stem leaves approximate to inflorescence (in *P.* × *spuria* sometimes distant), middle tooth of upper calyx lip broad, blunt or broadly triangular, much (1.5–2 times) wider than lateral ones. Thecae 0.3–0.7 mm long 5

5. Stamens end in a fairly long and sharp appendage, curved or straight, usually equal to or longer than thecae. Middle tooth of upper calyx lip about 2 times wider than lateral ones. Middle stem leaves usually with a rounded base ..... *P. vulgaris*

– Stamens end in a blunted or pointed appendage, usually shorter than or equal to thecae. Middle tooth of upper calyx lip approximately 1.5 times wider than lateral ones. Middle stem leaves usually with a cuneate base ..... *P.* × *spuria*

1. Section **Prunella.** – Upper calyx lip with three short teeth, middle tooth at least twice as wide as lateral ones; filaments of long stamens end in a sharp, straight or arcuate appendage, which is usually longer than anther.

Type: *P. vulgaris* L.

1. Subsection **Prunella.** – Lower calyx teeth with small cilia 0.1–0.4 mm long, rarely without cilia. Leaves entire, in hybrids may be dissected to varying degrees.

Type: *P. vulgaris* L.

Species: *P. pensylvanica* Willd.

1. **P. vulgaris** L. 1753, Sp. Pl.: 600.

Described from Europe: "Habitat in Europae pascuis".

Lectotype (designated by Hedge in Jarvis et al. (1993: 79)): Herb. Clifford: 316, Brunella 1 [beta] (BM-000646146).

Distribution in the Caucasus: WCC; ECC: W. Stavr., Ter.-Kum.; WC; CC; EC; NWTC; WTC; CTC; ETC: Alaz.-Agrich., Shirv., Ior.-Shek., Murgh.-Murovd., Karab.; SWTC; STC; T.

Recorded for ETC: L. Kur. (Gadzhiev, 1957; Ter-Khachaturova, 1967).

General distribution: Europe, the Mediterranean, Northern, Western, Middle, Central, East, South Asia; alien in North and South America and Australia.

Our attempt to describe the variability of this species in the Caucasus faced with a complex pattern of variability and race development not covered by the varieties listed below. Apparently, it is much more complicated. Not all the traits are constant. In this connection the attention probably should be focused on new characters not accounted before. Undoubtedly, the hybridization also takes place, and there are traces of former hybridization and introgression, and local race formation, related to the incomplete isolation of mountain populations. For example, many of the examined herbarium specimens have to some extent the signs characteristic of *P. laciniata* and *P. grandiflora*. We suggest that with the penetration of *P. vulgaris* into the Caucasus, a backcrossing took place to result in the formation of some varieties.

To present more accurate the Caucasian races, specifically varieties, we also give here a description of a type variety, which seems to be missing in the Caucasus.

var. **vulgaris.** Leaves entire, finely pubescent, almost glabrous. Calyx 6–8 mm long. Lower calyx lip bifid to the middle, with lanceolate naked or ciliate teeth; upper lip truncated, with three very short acuminate, sometimes almost blunt teeth. Corolla 8–12 (16) mm long, 1.5–2 times as long as calyx; filaments with subulate, slightly bent or straight appendage located below anthers.

Recorded for the Caucasus (Grossheim, 1932) there is var. *pinnatifida* (Pers.) Benth. (*P. pinnatifida* Pers.). According to its protologue, "Caul[is] ramoso divaricate glabro, fol[iis] pinnatifidis glabris: infimis brevi-ovatis. Hab. in sylvaticis. Flor. purpurei".

The Caucasian specimens, including those examined by Grossheim, have stems pubescent in the upper part along two faces, and all leaves pinnately divided. I believe they belong to a hybrid *P.* × *intermedia* Link, since their reproductive organs are poorly developed: the inflorescences consist of only one verticillaster of flowers, and pollen sacs are weakly developed.

E.I. Bordziłowski on the herbarium label (LE) written Latin description of a new variety, var. *majoriflora*. This was not however an effective publication, and the variety was forgotten. I consider this specimen as a separate variety, and validate its name here.

P. vulgaris var. ***majoriflora*** Bordz. var. nov.

Validating description: "Flores quam in typo multo majores; calyx 9–11 mm long., labio inferiore paullum altius quam ad medium fisso, superiore superne abrupto et minute tridenticulato, denticulis saepe ad mucronem reductis" (Bordziłowski, in schede).

Diagnosis. Differs from the type variety by a larger calyx 9–12 mm long (9–11 mm in the Bordziłowski's label) rather than 6–8 mm long in the type variety, bracts not exceeding the calyx, and wider leaves (up to 25–40 mm wide, *vs* up to 17–20 mm wide in the type variety) with distinct teeth at the base.

Holotype: [ABKHASIA] Transcaucasia. Abkhasia. Distr. Suchum. In herbidis prope monasterium N. Athonense. 5 June1906. E. Bordziłowski (LE 01027531) (Fig. 1).

Paratypes: [RUSSIAN FEDERATION] Black Sea coast of the Caucasus. Black Sea province, Abrau-Dyurso, in the forests often. № 317. 26 May 1911. I.V. Palibin, N.I. Vorobiev (LE 01027532); GEORGIA. Klukhor district, the 10th kilometer from the city Klukhori up the Kuban. The tract Gilyash, on the left bank. Fagetum-magnoherbosum on the northern slope. 1100 m [a.s.l.]. 15 August 1949. I.V. Vasiliev (LE 01027533); [RUSSIAN FEDERATION] The southern part of the Black Sea district between Adler and Tuapse. Aibga. Subalpine meadows. 2 August 1929. S. Sokolov (LE 01027534); [AZERBAIJAN] Karabakh, Shernukha. 22 July 1895. A. Lomakin (LE 01027535); [RUSSIAN FEDERATION] North-Western Caucasus, Krasnodar Region, Seversky District, basin of the Afipse River, Vorovskoy Ridge, top, near the road. 4 June 1999. S.V. Bondarenko (LE 01027536); [RUSSIAN FEDERATION] Stavropol Region, Teberdinsky Reserve, gorge of the Jamagat River 2 km below mineral springs. 11 September 1976. A.Yu. Magulayev (LE 01027537); [RUSSIAN FEDERATION] North Caucasus, Goyta village, beech-chestnut forest on the northeastern slope of Semashko. 8 August 1946. A.V. Gavrilevich (LE 01027538); [RUSSIAN FEDERATION] North-Western Caucasus, upper reaches of the Psekups River, tract Kashtanovoye. Chestnut forest in the lower part of the northern slope. 6 September 1946. V. Sochava (LE 01027539); [ABKHASIA]

Fig. 1. Holotype of *Prunella vulgaris* var. *majoriflora* Bordz. a – general view; b, c – inflorescence; d, e – calyx; f – stem and leaf.

Abkhaz ASSR, Sukhumi environs, Alekseevskoe gorge, beech forest. 27 June 1964. E. Mordak (LE 01027540); [RUSSIAN FEDERATION] Black Sea district, Tuapse district, Tuapse forestry, Makozhin dacha, quarter № 7, type of forest Castanetum. Sect. № 28. № 237. 19 July 1930. A.E. Dyachenko (LE 01027541); ABKHAZIA, the eastern extremity of the Bzyb Ridge, tract Abatz, subalpine zone, alt. 1800–1900 m a.s.l. № 813. 20 August 1990. Dolmatova, Geltman, Averyanov, Sytin, Roskov (LE 01027542); [RUSSIAN FEDERATION] Krasnodar Region, Gelendzhik district, upper reaches of the Papaya River (tributary of the Pshady River), 18–20 km north of the village Pshada; beech forest at the foot of Papai (on the south side).

№ 2435. 12 June 1989. Dolmatova, Dorofeev, Geltman, Medvedeva, Sokolova, Sytin (LE 01027543); [RUSSIAN FEDERATION] The Black Sea district, Tuapse. 12 May 1895. V. Lipsky (LE 01027544); [RUSSIAN FEDERATION] Western Caucasus. Caucasian State Reserve and its security zone. Weedy meadow in the sources of the Belaya River. 17 August 1929. A.I. Leskov, A.P. Rusalev (LE 01027545); [RUSSIAN FEDERATION] Black Sea district, Novorossiysk. 16 June 1890. V.I. Lipsky (LE 01043609); [RUSSIAN FEDERATION] Environs of Novorossiysk, Markotkh Ridge, northern slope. № 179. 26 June 1923. T.F. Poyarkova (LE 01043615).

Distribution in the Caucasus: WCC: W. Stav.; WC: Adag.-Pshish., Bel.-Lab., Urup-Teb.; EC: Ass.-Arg.; NWTC: Anap.-Gel.; WTC: Tuap.-Adl., Abkh.; ETC: Karab.

P. vulgaris var. ***subdentata*** Melnikov var. nov.

Differs from the type variety by presence of 1–2 rather large (up to 1 mm long) teeth at the base of leaf blade, and small teeth along the rest of the blade. Middle tooth of upper calyx lip broadly triangular. Calyx 9 mm long.

Presence of the teeth on leaves is probably resulted from the introgression with *P. laciniata*.

Holotype: [TURKEY] Batumi Region, Artvinsky District, Artvin, clay slopes above the city. № 705. 07 June 1914. S. Turkevich (LE 01027530).

Paratype: [AZERBAIJAN] Transcaucasia, Azerbajdzhan, prov. Baku, distr. Nucha, in pascuis Tashly-Bara. 12 July 1929. V. Dzhebejan (LE 01027546).

General distribution: Turkey (Artvin Province); Azerbaijan; it is possible to be in Adjara.

P. vulgaris var. ***pubilabium*** Melnikov var. nov.

Differs from the type variety by rather dense pubescence of the whole surface (except for the edges) of upper corolla lip, and by style usually exceeding upper corolla lip.

Holotype: [AZERBAIJAN] Gub. Baku. Talysch. Ad fl. Lankoran-czai inter pag. Rwa et Tengivan (Tangovan). № 10786. 2 August 1897. Th. Alexeenko (LE 01027548).

Paratypes: [AZERBAIJAN] Transcaucasia, Azerbajdzhan, distr. Astara, ad 5 km orinetem pag. Mashchan, sovchoz, in silva montana. 3 June 1938. I. Beideman (LE 01027549); [RUSSIAN FEDERATION] Southern part of the Black Sea district between Adler and Tuapse. Between villages Dagomyska and Loo. Next to the former dacha of Prince Konstantin. 21 September 1929. V. Ukhanov (LE 01027550); [AZERBAIJAN] Lesser Caucasus, Dashkesan District, Khachbulag, 1st quarter. 07 July 1970. N. Latifova (LE 01027551); [RUSSIAN FEDERATION] North Caucasus. Farskaya forest cottage (Yaroslavl district of Krasnodar Region). In the valley of the gully near the Fars River. 17 September 1945. V.B. Sochava, A.V. Gavrilevich, V.V. Lipatova, M.M. Shik (LE 01027552); [RUSSIAN FEDERATION] Zheleznovodsk, near Razvalka Mt. 14 August 1906. E.A. Zakharyina (LE 01027553); [RUSSIAN FEDERATION] In desertis Kolmukhorum selin regionibus caucasicus. leg. Sergatschew (LE 01027554); [AZERBAIJAN] Azerbaijan SSR, Zakatalskiy District, village Jary, a mountain 300 meters west of the reserve office. Southern slope, deciduous forest (European and Oriental hornbeams, cherry plum). 12 June 1946. I.A. Ilinskaya. M.I. Kirpichnikov (LE 01027556); [AZERBAIJAN] Azerbaijan SSR, Western Shirvan, middle part of the Geok-chaj River alluvial fan, village Yalman, in the garden. 22 July 1950. A. Rachmanina (LE 01027557); [AZERBAIJAN] [Lankaran] former Lenkoran district. 1½–2 km SW from the village Upper Nyuads, near houses. № 36. 18 June 1931. E. Matveeva (LE 01027558); [RUSSIAN FEDERATION] Black Sea District, Sochi District, Forest Range: Sochi land forestry. Khostinskaya dacha. 2–3 km east of the station. Khosta (plantation of Bureau). № 4. 2 August 1930. Protkonosov, Legantsev (LE 01027559); [AZERBAIJAN] Transcaucasia, Azerbaijan, Zakataly. 28 June 1931. A. Grossheim, M. Sahokia (LE 01027560); [AZERBAIJAN] Transcaucasia, Azerbaijan, prov. et distr. Gandzha, inter p. Chatsh-Bulach et. Dastafur. 16 June 1928. A. Doluchanov (LE 01027561); [GEORGIA, South Ossetia] Forest near Jalabet, tract Khusar. 1300 m. 26 August 1928. E. Bush, N. Bush (LE 01027562); [GEORGIA] Batumi District, Adjara, Near Adzharitskhali village. 23 June 1913. D. Litvinov (LE 01027563); [GEORGIA, South Ossetia] Kudar district, right side of the Kudary River gorge, subalpine hayfield above

Tamajin village. 2100 m. 2 August 1928. E. Bush, N. Bush (LE 01027564); [AZERBAIJAN] Transcaucasia, Azerbaijan, prov. et distr. Gandzha, in faucibus fl. Koshkar-tshaj. 23 July 1928. B. Serdjukov (LE 01027565); [GEORGIA, South Ossetia] Erzoisky hollow, meadow on the southern shore of Lake Erzo. 1615 m. 15 July 1928. E. Bush, N. Bush (LE 01027566); [AZERBAIJAN] Talysch (LE 01027567); [GEORGIA, South Ossetia] The Malaya Liakhva River basin, Chaparuhsky gorge, beech forest under pass Bibilti-vtsek, 1950 m. 28 July 1933. E. Bush, N. Bush (LE 01027568); [GEORGIA, South Ossetia] The Malaya Liakhva River basin. Subalpine meadow. Chaparukhskoe gorge on the descent from the pass Bibilti-vtseg to the village Libir. 1900 m. 26 July 1933. E. Bush, N. Bush (LE 01027569); [ARMENIA] Armenian SSR, Meghri district, environs Meghri village. Shaded place near the irrigation ditch. № 1328. 28 June 1956. T.V. Egorova, N.N. Tsvelev, S.K. Cherepanov (LE 01027570); [AZERBAIJAN] Prope Lenkoran [unreadable]. № 421. Mai [18]80. Leg. G. Radde (LE 01027571); Kaukasus. Leg. Nordmann (LE 01027572); [GEORGIA] Kutais. 27 June 1892. V.I. Lipsky (LE 01027573); [AZERBAIJAN] Talysh, Astara. 20 June 1970. Yu. Menitsky (LE 01027576); [AZERBAIJAN] Prope the colony Helenendorf. Hohenacker (LE 01027577); Anonimus (LE 01027578); [TURKEY] Karass. № 231. 1867. Becker (LE 01027579); [TURKEY?] Batumi Region, Artvin, environs of Kvaruhani village. 21 June 1909. P.V. Nesterov (LE 01027580, LE 01027581); [GEORGIA?] Batumi Region, Artvin district, Arsiansky ridge, river valley ... hrsul-su [unreadable]. 24 July 1909. P.V. Nesterov (LE 01027582); [AZERBAIJAN] Talysh. Village Asakyudzha (lowland). 31 May 1894. A.L. (LE 01027583); [AZERBAIJAN] Gub. Baku, distr. Schemacha, prope Müdshi. 3700 [ft], in pratis. № 11107. 30 July 1900. Alexeenko (LE 01027584); [AZERBAIJAN] Gub. Baku, distr. Goek-czai, prope fauc. Gülalla ad fontes fl. Goek-czai, in pratis humidis. 7000 [ft]. № 15946 [?]. 26 August 1900. Alexeenko (LE 01027585); [GEORGIA] Transcaucasia, Akhaltsikha region, environs of Akhaltsikha village, near the village Rustavi, Kura River. № 1037. 8 July 1926. V.V. Maffert (LE 01027586); [AZERBAIJAN] Gub. Baku, distr. Kuba, in depressis inter p. Tagar-oba (Tiga-ruba) and Selim-oba (Almasian). In oryzetis 200 [ft], in pratis. № 10779. 10 August 1899. Alexeenko (LE 01027587); [AZERBAIJAN] Quba Region, Kusar district, under bushes. 12 July 1925. Gurijskij (LE 01027588); AZERBAIJAN, Talysh, 16 km along the road Lenkoran – Lerik, village. Shovu, on the edge of the rice field. 26 July 1956. Medvedeva L.I., Nadezhdina T.P., Nastenko N.P., Sokolov P.D. (LE 01027589); [AZERBAIJAN] Gub. Baku, Distr. Geokczai, inter Kalynczach et Dshuljan Infer, in oryzetis derelictis. 1900 [ft]. № 10780. 1 August 1899 (?). Alexeenko (LE 01027590); [AZERBAIJAN] Azerbaijan SSR, Lankaran Region, Kirov Tea State Farm. Lowland forest. 10 July 1950. Z.G. Bespalova (LE 01027591); [AZERBAIJAN] Lankoran, near V. Nyuady village (Hyrcan area of IR), in the bushes along the slope. № 196. 16 June 1931. N.V. Shipchinsky (LE 01043605); [GEORGIA, South Ossetia] Tsong hollow, marshy hay meadow near Tsong village. 1675 m. 7 July 1928. E. Bush, N. Bush (LE 01043606); [RUSSIAN FEDERATION] At Lazarevskoe village, the Caucasian coast of the Black Sea, in the valley of the river near the mouth. 27 September 1964. A. Borisova (LE 01043608); [GEORGIA] Ajaro-Imeritinsky Ridge, rocks Samtshevria [?], area Katriani. Early August 1914. Kikodze E.I. (LE 01043610, LE 01043611); [GEORGIA] Guria, Kutaisi Gubernia, Ozurgeti Uyezd, village Achi. 06.15.1914. Kikodze E.I. (LE 01043612).

Distribution: WC: Bel.-Lab.; CC: U. Kum.; EC: Kubin.; WTC: Tuap.-Adl., Ing.-Rion., Rion.-Kvir.; CTC: Kart.-S. Oss.; ETC: Alaz.-Agrich., Ior.-Shek., Murgh.-Murovd.; SWTC: Meskh.; STC: Megr.-Zan.; T.

General distribution: North-Eastern Turkey (Artvin Province), Caucasus.

P. vulgaris var. ***gracillicaulia*** (A.P. Khokhr.) Melnikov comb. et stat. nov.

≡ *P. gracillicaulia* A.P. Khokhr. 1997, Byull. Glavn. Bot. Sada, 175: 54.

Described from Adjara. Holotype and isotypes: "[GEORGIA] Adjaria occidentalis maritima, in adjacentibus opp. Zeleny mys, pratula in plantationibus Theae et hesperridiferum. 20 August 1990. A.P. Khokhrjakov (MHA)".

Distribution in the Caucasus: WTC: Abkh., Adzh.; CTC: Kart.-S. Oss.

A.P. Khokhrjakov (1997) characterized this taxon primarily as possessing long lodging and rooting stems, and distributed throughout Colchis. I believe that this feature, although very noticeable, cannot be used to identify young or poorly developed specimens. Judging from herbarium material, the plants with long lodging stems are quite common in Adjara, the area with most humid climate in the Western Transcaucasus. In this regard, it probably would be more correct to consider *P. gracillicaulia* as an ecological form, but for now, without a reliable evidence we consider it as a variety.

P. vulgaris forma ***amblyodon*** Melnikov f. nov.

Differs from the type form by blunt, truncated teeth of lower calyx lip. Notch between teeth of lower calyx lip is short.

Holotype: [TURKEY] Kars region, environs of Sarykamysh. Meadows on the road to Kars. 27 June 1914. D. Litvinov (LE 01027547).

Distribution in the Caucasus: possibly occurring in the south of Western Transcaucasia.

General distribution: Northeastern Turkey.

P. vulgaris forma ***ciliata*** Melnikov f. nov.

Differs from the type form by presence of cilia along the edge of the lateral lobes of lower corolla lip.

Holotype: [RUSSIAN FEDERATION, Iter caucasicum] Kuban Region, at the edge of deciduous forest in Teberda gorge. 4200 [ft]. 4 July 1907. Endaurowa E.A. (LE 01043616).

Paratypes: [GEORGIA, South Ossetia] Lower-Ermanskoye gorge. Rhododendron thicket. 2500 m. 26 August 1935. E. Bush, N. Bush (LE 01027592); [RUSSIAN FEDERATION] Kuban Region, shady deciduous forest in the Teberda gorge, 4200 [ft]. 14 June 1907. E.A. Endaurowa (LE 01027593); [RUSSIAN FEDERATION] Kuban Region, at the edge of deciduous forest in the Teberda gorge, 4200 [ft]. 4 June 1907. E.A. Endaurowa (LE 01027594, LE 01027595); ARMENIA, circ. lac. Gokča, prope Elenovka, in montibus Komadzor, h 500–7000 [ft]. 3 July 1927. A. Schelkovnikov, E. Kara-Murza (LE 01027596); [RUSSIAN FEDERATION] Balkaria, Agashtan. Pine forest at confluence of the Fytnargy-su with the Karasu. 1990 m. May 1925. E. Bush, N. Bush (LE 01027597); AZERBAIJAN. Quba county. Kusary. Gardens, bushes and roads. 2 July 1925. P.V. Shvan-Gurijskij (LE 01027598); ARMENIA. Alaghez, forestry near the Lower Kosh-bulag, Ehrgya gorge, Quercus macranthera forest. 1900 m. 20 August 1932. E.A. Bush, N.A. Bush (LE 01027599); [RUSSIAN FEDERATION] Dagestan, distr. Kürinsky. In pratis prope st. Jalominskaja. 400 [ft]. № 10785. 20 June 1899. Alexeenko (LE 01043600); [GEORGIA, South Ossetia] Kudar region, wet hay meadows on the bottom of the Segawat saddle. 30 July 1928. E. Bush, N. Bush (LE 01043601); [AZERBAIJAN] Transcaucasia, Azərbajdzhan, Karabach, in pascuis alpinis supra p. Lysogorsk. 21 July 1929. A. Kolakovsky (LE 0104362); Gub. Baku, distr. Kuba. pr. Kussary. In umbrosis. Ad pagum Czelagir versus. 23 June 1989. 2600–2700 [ft]. № 10783. Alexeenko (LE 01043603); [ARMENIA] [Plants of Erivan and Elizavetpol Province.] Environs of Lake Gokczy. 1897 or 1896. Khotsyatovsky (LE 01043604); [AZERBAIJAN] Transcaucasia, Azərbajdzhan, distr. Nucha. In pascuis alpinis Dashly-Bara. 21 July 1927. P. Yarochenko (LE 01043607).

Distribution in the Caucasus: WC: Urup-Teb.; CC: Malk.; EC: Man.-Samur., Kubin.; CTC: Kart.-S. Oss.; ETC: Alaz.-Agrich., Karab.; STC: Sevan.

The described form apparently occurs not only in the Caucasus but in the European part of Russia as well. The presence of the cilia, according to our observations, usually is not a stable feature.

Key to the varieties and forms of *Prunella vulgaris*

1. Upper corolla lip pubescent on the outside almost on the whole surface (except the edges) ..... var. *pubilabium*

– Upper corolla lip pubescent only on the middle fold or naked 2

2. Teeth of lower calyx lip with acute apex 3

– Teeth of lower calyx lip with dilated obtuse apex, but usually mucronate .... f. *amblyodon*

3. Calyx 9–12 mm long 4

– Calyx 6–8 mm long 5

4. Base of leaf blade with 1–2 rather large (up to 1 mm long) teeth ..... var. *subdentata*

– Leaf blade completely entire or shallowly crenate at the base ..... var. *majorifolia*

5. Stems usually very long (up to 50 cm), procumbent and rooted in the nodes, lateral lobes of corolla lower lip without cilia ..... var. *gracillicaulis*

– Stems erect, shorter, lateral lobes of lower corolla lip with cilia along margins (not to be confused with finger-shaped outgrowths of the middle lobe of the lower lip!) ..... f. *ciliata*

2. Subsection ***Ciliatae*** Melnikov subsect. nov. – Edges of lower calyx teeth with long cilia 0.5–0.75 mm long. Leaves from pinnatifid to pinnatisect, rarely entire.

Type: *P. laciniata* (L.) L.

Species: *P. orientalis* Bornm.

2. **P. laciniata** (L.) L., 1763, Sp. Pl., ed. 2, 2: 837.

≡ *P. vulgaris* var. *laciniata* L. 1753, Sp. Pl.: 600.

Described from Europe, "Habitat tam multa habet in fructificatione communia, ut vix videatur distincta (in Europae pascuis)". Lectotype (designated by Hedge in Jarvis et al. (2001: 517): Herb. Linn. № 752.3 (LINN)).

= *P. alba* Pall. ex M. Bieb. 1808, Fl. Taur.-Caucas. 2: 67, nom. illeg.

The name *Prunella alba* Pall. ex M. Bieb. is illegitimate, as the author synonymized his name with the earlier published name *P. laciniata* (L.) L.

Distribution in the Caucasus: WCC; ECC: E. Stavr.; WC: Adag.-Pshish., Bel.-Lab., Urup-Teb.; CC: U. Kum., Malk.; EC: Man.-Samur., Kubin.; NWTC; WTC: Tuap.-Adl., Abkh., Ing.-Rion., Rion.-Kvir.; CTC: Kart.-S. Oss.; ETC: Alaz.-Agrich., Murgh.-Murovd., Karab.; SWTC: Meskh.; Arag.; STC: Erev., Sevan, Dar., Zang., S. Karab.; T.

Recorded for ECC: Ter.-Kum. (Galushko, 1980), WC: U. Kub. (Tanfilev, Kononov, 1987); EC: Ass.-Arg. (Galushko, 1980), U. Sulak.; CTC: Trial.-L. Kart.; ETC: Shirv.; STC: Megr.-Zan. (Ter-Hachaturova, 1967).

General distribution: Atlantic, Central, South-Western Europe, the Mediterranean, Southwest Asia (Turkey, Iran), alien in N. America.

var. **subintegra** Buch.-Ham. 1830, Bull. Bot. (Geneva), 6: 160.

All leaves oblong, entire or subentire.

Type: probably, in LY or TO (Herbarium G.-B. Balbis).

Distribution in the Caucasus: CC: U. Kum.; NWTC: Anap.-Gel.

General distribution: the Mediterranean, Southwest Asia, Caucasus.

According to our observations, the specimens from Northern Turkey, Northwestern Iran and Romania (i. e., in the Black Sea region) have a characteristic habit distinguishing these plants from both the type variety and var. *subintegra* described from Europe. This is probably a polyploid race, since many parts of the plant are larger than in the type variety.

P. laciniata var. ***euxina*** Melnikov var. nov.

Plants usually tall (up to 35–40 cm), stem ascending at base and then more or less erect, with a rosette of radical leaves. Leaves in lower 1/3 of stem lanceolate, with entire subentire margin, with cuneate base. Middle stem leaves with slightly lobed base with distinct lower lobe. Upper stem leaves approximate to inflorescence, directed upwards, lanceolate, with 1–2 pairs of long lobes at base, dentate, sometimes entire; usually noticeably longer than or equal to inflorescence. Calyx 12–13 mm long, teeth of upper calyx lip of almost equal width (lateral

ones 0.6–0.7 mm wide, medium 1 mm wide); edges teeth of lower calyx lip with long (up to 0.5 mm) hard cilia. Corolla (in herbarium) cream-colored (blue pigment is not noticeable).

Affinitiy. The variety is close to var. *subintegra*, differing by a stronger growth and narrowly lanceolate long leaves, approximate to inflorescence.

Holotype: [TURKEY] Aga[g?]lan, Persia bor[ealis]. № 214. Szovitz (LE 01027526) (Fig. 2). Isotypes: Agaglan, Persia bor[ealis]. № 217. Szovitz (LE 01043618); Aga[g?]lan. Szovitz (LE 01027525).

Paratypes: [TURKEY?] Asia minor. Letus aust. Pontus Euxini. Leg. Thirke, mis. C. Koch (LE 01027523); [Herb. Fischer] [unreadable] (LE 01027521); [TURKEY] In Anatolia inter Kutaija et Eski-Schecher. Legit Dr. Wiedemann. 1834 (LE 01027519); [TURKEY] Safranbola. 9–10–11 June [18]95. Dr. Wiedem[ann] (LE 01027520); [TURKEY] Prope Angora. Legit Dr. Wiedemann. 1834 (LE 01027518); [TURKEY] Tokat, Kischkischdagh, Dr. Wiedem[ann]. Juli [18]35 (LE 01027517); [ROMANIA] Babadag i/r Dobrudscha: Wald von [unreadable] C'ukarova. Türkei. Leg. Geb[unreadable] Sintenis. 9 Juni 1873 (LE 01027527); [TURKEY] Anatolia. Trapezud Sanjak. Jevizlik, stony bush, slope. h 350–600 m. 14 June 1917. B. Shishkin (LE 01027528); [RUSSIAN FEDERATION] Caucasus borealis, Majkop, bushes at the foot of a hill, beyond the Belaya River against the city. № 704. 11 June 1911. N. Schestunow (LE 01043619); [AZERBAIJAN] Plantae Caucasi. Shusha. 17 June 1893. W.H. Lipsky (LE 01043620); [GEORGIA] Bakuriani, 5000 [ft]. 12 July 1903. I.Ya. Akinfiew (LE 01043621); [RUSSIAN FEDERATION] [Herbarium Florae URSS, Exsiccatum № 4142] Prov. Krasnodar. In decliviis fl. Aderbe prope Gelendzhik. 7 June 1907. D. Litwinow (LE 01043622); [RUSSIAN FEDERATION] Stavropol Territory, Novoselitsky District, northeastern environ of Severnyj village, meadow areas along the road near forest windbreak, height about 1000 m. № 716. 14 June 1988. A. Dolmatova, V. Dorofeev, L. Krupkina, G. Medvedeva, I. Sokolova, Yu. Roskov (LE 01043624); [RUSSIAN FEDERATION] Shuntuk village near Maykop, eastern longitude from Pulkovo 10°, northern latitude 44°30', Mountain lawn, loamy soil. 4 June 1930. E. Ispolatov (LE 01043625); [AZERBAIJAN] Transcaucasia, Azerbajdzhan, prov. Baku, distr. Nucha, in pascuis Tashly-Bara. 12 July 1929. V. Dzhebejan (LE 01043626); [RUSSIAN FEDERATION] Terskaya Oblast, Nalchik village, Atazhukinsky garden. 7 June 1917. V. Palceva (LE 01043627); [RUSSIAN FEDERATION] Plantae Caucasi. Georgiyevsk. 8 June 1892. W.H. Lipsky (LE 01043628); [AZERBAIJAN] Transcaucasia, Karabach merid. m. Chynysh-tshalasy. In prato subalpino, ca. 1720 ml. 3 July 1932. I. Karjagin, M. Mikulin (LE 01043629); [AZERBAIJAN] Flora Transcaucas[ica]. In promontorio orientali montis Ssarijal, districtus Airum. № 1671. 7 June 1844. Dr. Kolenati (LE 01043630); [GEORGIA] [Herbarium Trautvetter.] Transcaucasia, prope Kodshori, in fruticeta. Mis. Mich. Smirnow 1878 (01043631).

Distribution in the Caucasus: WCC: Az.-Kub.; WC: Bel.-Lab., Urup-Teb.; CC: Malk.; NWTC: Anap.-Gel.; CTC: Kart.-S. Oss.; ETC: Alaz.-Agrich., Karab.

General distribution: Southern coast of Black Sea (Turkey, Romania, probably Bulgaria).

2. Section ***Borissovia*** Melnikov sect. nov.[1]

Upper calyx lip with distinct and subequal teeth; filaments of long stamens ends in a blunt short appendage, the latter much shorter than anther.

Type: *P. grandiflora* (L.) Turra.

Species: *P. hastifolia* Brot., *P. hyssopifolia* L.

3. **P. grandiflora** (L.) Turra, 1764, Giorn. Italia Sci. Nat. 1: 144.

≡ *P. vulgaris* var. *grandiflora* L. 1763, Sp. Pl.: 600.

Described from Europe, "Habitat in rupium fissuris plerumque nascitur (in Europae pascuis)". Lectotype (designated by Paton in Jarvis et al. (2001: 517): Herb. Linn. № 752.1 (LINN)).

[1] The section is named in honor of Antonina Georgievna Borisova.

Fig. 2. Holotype of *Prunella laciniata* var. *euxina* Melnikov.

Distribution in the Caucasus: ECC: E. Stavr.; WC: Bel.-Lab., Urup-Teb., U. Kub.; CC; EC; WTC: Abkh., Rion.-Kvir.; CTC: Lori; ETC: Murgh.-Murovd.

General distribution: Atlantic, Central, Southern, South-East and Eastern Europe, the Mediterranean, Southwest Asia (Turkey).

Hybrids:

P. × spuria Stapf in A.J.R. Kerner, 1886, Sched. Fl. Exs. Austro-Hung. 4: 69. (*P. grandiflora* × *P. vulgaris*).

Described from Austria (Tyrol): "Tirolia centralis. In pratis siccis vallis Gschnitz; solo calcar.; 1200 mt. s. m. Kerner".

Lectotype (Melnikov, designated here): [AUSTRIA] [Flora exsiccata Austro-Hungarica, 1421. *Brunella spuria*] "Tirolia centralis. In pratis siccis vallis Gschnitz; solo calcar.; 1200 mt s.m. A. Kerner." LE 01027509 (LE), isolectotype P03391914 (P).

Distribution in the Caucasus: WC: Bel.-Lab., U. Kub.; CC: U. Kum., Malk.; EC: Kubin.; WTC: Tuap.-Adl., Ing.-Rion.; STC: Erev.; T.

P. × dissecta Wender., 1831, Schriften Ges. Beförd. Gesammten Naturwiss. Marburg 2: 257. (*P. grandiflora* × *P. laciniata*).

Described from Germany (Marburg). Type: not known.

= *P.* × *bicolor* Beck, 1883, Verh. K. K. Zool.-Bot. Ges. Wien 32: 185.

= *P.* × *variabilis* Beck, 1883, Verh. K. K. Zool.-Bot. Ges. Wien 32: 186.

Recorded for WCC: Az.-Kub. under the name of the *P. grandiflora* var. *lagovskyi* N. Pop. (Grossheim, 1932). We failed to find the place of publication of the name of this variety.

P. × intermedia Link, 1791, Ann. Naturgesch. 1: 32. (*P. vulgaris* × *P. laciniata*).

Described from Germany. Type: not known.

= *P. pinnatifida* Pers., 1806, Syn. Pl. 2: 137.

= *P. alba* var. *violacea* Opiz, 1853, Lotos, 3: 66.

= *P.* × *hybrida* Knaf 1864, Lotos 14: 84.

= *P. laciniata* var. *coerulea* Čelak. 1870, Oesterr. Bot. Z., 20: 13.

= *P. vulgaris* subsp. *laciniata* var. *violacea* (Opiz) Čelak. 1871, Prodr. Fl. Böhmen, 2: 363.

= *P. violacea* (Opiz) Podpěra, 1911, Květena Hané: 160.

= *P.* × *elatior* Beck 1887, Ann. K. K. Naturhist. Hofmus. 2: 146.

= *P. laciniata* var. *purpurascens* Link et Hoffmanns., 1810, Flore Portug., 1: 154.

Distribution in the Caucasus: WCC: Az.-Kub.; WC: Bel.-Lab.; EC: Man.-Samur.; NWTC: Anap.-Gel.; WTC: Tuap.-Adl., Abkh., Ing.-Rion., Rion.-Kvir.; CTC: Kart.-S. Oss., Trial.-L. Kart.: ETC: Karab.; T.

Note. Perhaps some of the plants we defined as *P.* × *intermedia* are hybrids of *P. vulgaris* var. *majoriflora* × *P. laciniata* rather than *P. vulgaris* var. *vulgaris* × *P. laciniata*.

CONCLUSIONS

As a result of the taxonomic study of the genus *Prunella* in the Caucasus, we found that there are 3 species, 4 varieties and 2 forms of *P. vulgaris*, 2 varieties of *P. laciniata*, and also hybrids between all these species. The formation of races and forms of the genus in the Caucasus is apparently associated with non-simultaneous immigration of the species and local geographical isolation of their populations.

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РОД *PRUNELLA* (LAMIACEAE) НА КАВКАЗЕ

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В статье обсуждается природа изменчивости рода *Prunella*. На основании изучения богатых гербарных коллекций Гербария LE для Кавказа приводится 3 вида этого рода, при этом *P. vulgaris* представлен 4 разновидностями и 2 формами, а *P. laciniata* – 2 разновидностями. Кроме того, между всеми 3 видами образуются гибриды. Род *Prunella* впервые разделен на секции и подсекции, описана новая секция *Borissovia* и подсекция *Ciliatae*. Приводится конспект и ключ для определения видов и внутривидовых таксонов рода *Prunella* на Кавказе. Описаны 4 новых разновидности и 2 формы (*P. vulgaris* var. *majoriflora*, var. *subdentata*, var. *pubilabium*, f. *amblyodon*, f. *ciliata*; *P. laciniata* var. *euxina*), опубликована одна номенклатурная комбинация (*P. vulgaris* var. *gracillicaulia*). Обозначен лектотип *P.* × *spuria*. Высказано предположение, что формо- и расообразование в этом роде на Кавказе, по-видимому, связано с разными периодами иммиграции видов и локальной географической изоляцией их популяций.

Ключевые слова: новая секция, новая подсекция, новая разновидность, новая форма, новая комбинация, таксономия, систематика растений, распространение