

A. A. NERSESIAN

NOTES ON *ARENARIA BRACHYPETALA* (GROSSH.) T. N. POPOVA (CARYOPHYLLACEAE)

Independence of *Arenaria brachypetala* (Grossh.) T. N. Popova is confirmed as a result of field investigations and study of herbarium material (ERE, K, LE, TBI, TGM). Additional features have been revealed (petal shape and colour, expression degree of sepal nerves) which clearly differ *A. brachypetala* from the closely related *A. graminea* C. A. Mey., together with comparative length of petals and sepals, number of sepal nerves and pedicel length of the central flowers in dichasia. The distribution of the both species has been made more precise. The chromosome number of *A. brachypetala* has been presented for the first time.

Ներքային Ա. Ա. Նոթեր *Arenaria brachypetala* (Grossh.) T. N. Popova (Caryophyllaceae) տեսակի վերաբերյալ: Դաշտային հերբարիումների և հերբարիումային նյութերի (ERE, K, LE, TBI, TGM) ուսումնասիրության արդյունքում հաստատվում է *Arenaria brachypetala* (Grossh.) T. N. Popova տեսակի ինքնուրույնությունը: Հայտնաբերված են լրացուցիչ հատկանիշներ (պսակաթերթիկների ձևն ու գույնը, բաժակաթերթիկների ջղերի ուռուցիկության աստիճանը), որոնք պսակաթերթիկների և բաժակաթերթիկների հարաբերական երկարության, ջղերի բանակի և դիպագիտման կենտրոնական ծաղիկների ծաղկառարկի երկարության հեր միասին, հստակ տարբերում են *A. brachypetala* տեսակը մոտիկ *A. graminea* C. A. Mey. տեսակից: Հարակից են երկու նշված տեսակների արևալները: Առաջին անգամ բերվում է *A. brachypetala* տեսակի քրոմոսոմային թիվը:

Нерсесян А. А. Заметки к *Arenaria brachypetala* (Grossh.) T. N. Popova (Caryophyllaceae). В результате наблюдений в природе и исследования гербарного материала (ERE, K, LE, TBI, TGM) подтверждается самостоятельность вида *Arenaria brachypetala* (Grossh.) T. N. Popova. Выявлены дополнительные признаки (форма и цвет лепестков, степень выпуклости жилок чашелистиков), которые, наряду с соотношением длины лепестков и чашелистиков, количеством жилок чашелистиков и длиной цветоножки центрального цветка в дихазии, четко отличают *A. brachypetala* от близкого вида *A. graminea* C. A. Mey. Уточнены ареалы обоих видов. Впервые приводится число хромосом для *A. brachypetala*.

Introduction

A. Grossheim (1927) described *Arenaria graminea* C. A. Mey. var. *brachypetala* basing on his own collections from 25.06.1924 (S.-W. Iran: near Tabris). In the protologue the following diagnostic features of the variety were mentioned: petals 2x shorter than sepals; sepals 3–5-nerved, indistinctly carinate. For the type specimens of *A. graminea* from Talysch (Suwant) petals 1.5x longer than sepals and 1-nerved, clearly carinate sepals have been pointed out.

A. graminea, described by C. A. Meyer (1831) from neighbourhood of Suwant, was indicated by A. Grossheim (1945, 1949), and later by G. Akhundov (1952) for mountainous Nakhichevan (Urmys, Szovits collections).

J. McNeill (1963) in the "Taxonomic studies in the Alsinoideae II. A revision of the species in the Orient" just ignored *A. graminea* var. *brachypetala*: "Grossheim's var. *brachypetala* seems merely to be an immature plant with the petals not fully expanded" (p. 292).

T. Popova (1972) after investigating new collectings of short-petaled sandwort from Armenia and Nakhichevan raised the variety into the rank of species *Arenaria brachypetala* (Grossh.) T. N. Popova. She noted: «this species differs from *A. graminea* C. A. Mey. not only by petal length, ... but also by narrower (in comparison with its length) inflorescence, by more numerous dichasium secondary axes addressed to the main axis (but not directed under 45°) and by shorter pedicels (2–4, but not 5–10 mm long)» (p. 160). According to Popova *A. brachypetala* grows in the South of Armenia, in Nakhichevan and in the Atropatene Province of N.-W. Iran, and *A. graminea* occurs in Talysch (Suwant) – the only location in the Caucasus, as well as in Iranian Azerbaijan. Grossheim's data on *A. graminea* from Nakhichevan remained without any comments.

In "Flora Iranica" (K. H. Rechinger, 1988) *A. brachypetala* isn't mentioned even as a variety, although it was described from N.-W. Iran. Its features aren't included in the description of *A. graminea* as well. Only two samples of *A. graminea* are quoted from Iran, from the neighbourhood of the

Lake Ormiyeh (Persia: W: Azerb.: M. Sahand prope Maragheh, Shar. 6648-E; Qazemlu 44 km S Rezaieyeh, 1900 m, Matin & Daneshpajouh 38229-E). Not only Eastern, but also Southern Transcaucasia is indicated in the general distribution of *A. graminea*.

G. Lazkov (2002) publishing the samples from v. Azna-bjurt (Nakhichevan), once more took *A. brachypetala* down to the short-petaled variety of *A. graminea*. Nevertheless, in the private conversation he let me know, that he was still not completely sure about the taxonomic rank of *A. brachypetala*, although such features as pedicel length seemed to be very doubtful.

Material and Methods

Herbarium material (ERE, K, LE, TBI and TGM) on *A. brachypetala* and *A. graminea* from Southern Armenia, Nakhichevan, Talysch and N.-W. Iran, including type specimens, has been investigated. Field observations and collections have been carried out (Yerevan floristic region of Armenia, 2002). Morphological and geographical methods of investigation have been applied.

Results and Discussion

According to our investigations besides petal length (*A. brachypetala* petals are always shorter than sepals: $\frac{1}{2}$ – $\frac{3}{5}$ as long as sepals, and petals of *A. graminea* are $\frac{1}{2}$ as long as sepals), *A. brachypetala* and *A. graminea* distinctly differ from each other by sepals nervation and petals shape. All the investigated samples of *A. brachypetala*, including type specimen (Fig. 1), are characterized by sepals with 5–7 distinct nerves, particularly prominent by fruits, and by oblong, almost not widened to the apex, very rarely scarcely widened, on the upper margin almost always uneven petals. At the same time, sepals of all the studied specimens of *A. graminea* have 3(5) indistinct, not prominent nerves, and petals are upwards more or less widened, often spatulate, almost always with even upper margin. Pedicels of the central flower in the dichasium of *A. brachypetala* do not exceed 8(9) mm, meantime those of all treated *A. graminea* specimens are 9(10)–15 (20) mm long (Fig. 1, 2).

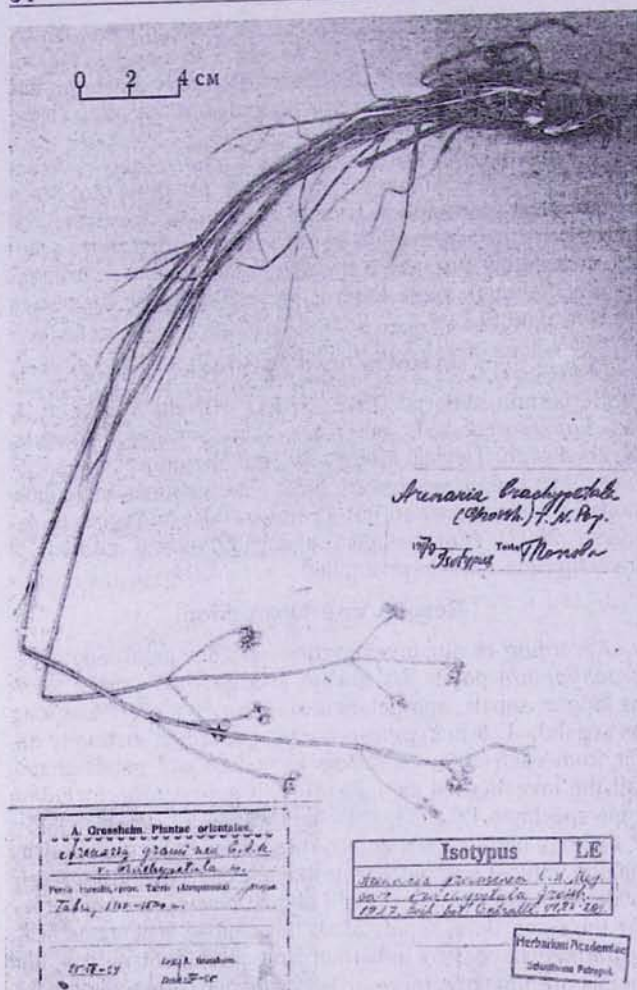
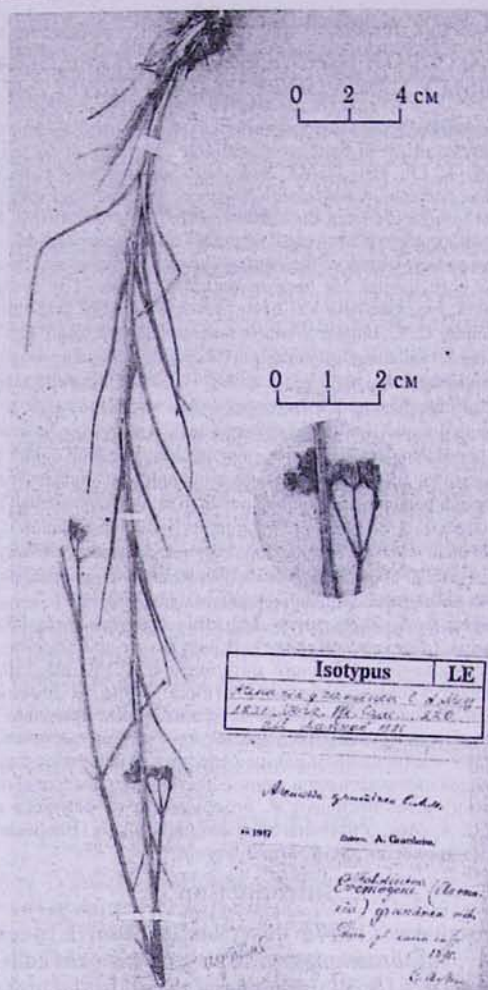
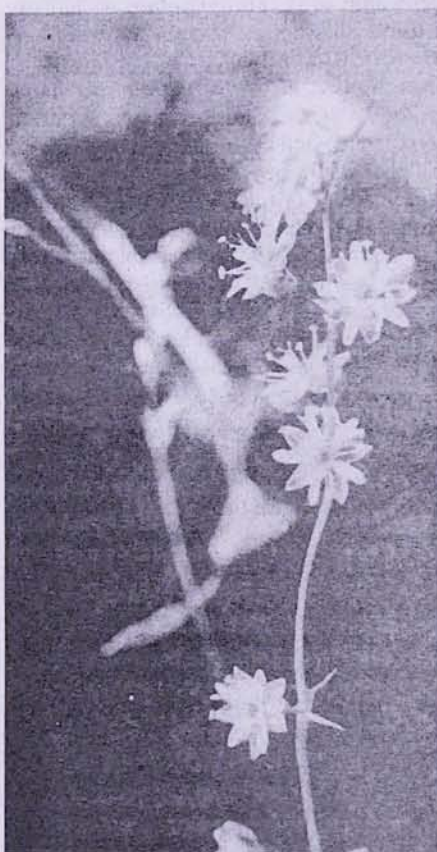
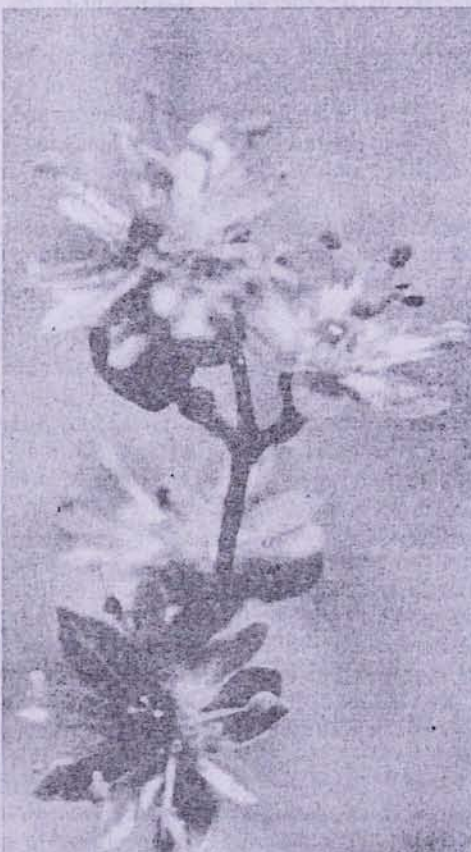
Majority of the investigated *A. brachypetala* specimens are distinguished also by a narrower, in the upper part often almost spike-like inflorescence and by conferted flowers (Fig. 3, 4). But some variability of these features is possible. For example, type specimen of *A. brachypetala* (LE) has not got a very constricted inflorescence. And the specimen of *A. brachypetala* from distr. Khoi with short, oblong petals and prominent sepal nerves, quoted by Boissier (1867) as *A. graminea*, has loosely conferted flowers, with lateral flowers over the central one in the dichasia (at least in the lower ones). Meantime, although flowers of one of the type specimens of *A. graminea* seem to be congested, it is most likely explained by the fact that all the flowers, except central ones, are in buds, and pedicels weren't lengthened yet. I. e., according to our observations, conferted flowers and narrow inflorescence are characteristic only to *A. brachypetala*.

The whitish-yellowish-greenish colour of *A. brachypetala* petals is very peculiar, because only white colour is mentioned in the literature for *A. graminea*, which is typical for sandworts. White petals are also indicated by C. A. Meyer on the authentic specimen of *A. graminea* (LE).

Although Grossheim (1927) mentioned, that sepals of *A. brachypetala* are indistinctly carinate, and those of *A. graminea* are clearly carinate, we couldn't reveal any clear difference by this feature.

Despite the Grossheim's indications, we couldn't find any *A. graminea* material from Nakhichevan.

According to our data, the two very rare species have following distribution (Fig. 5). *A. brachypetala* occurs in Southern Transcaucasia (Nakhichevan, Armenia [Yerevan

Fig. 1. Isotypus of *Arenaria brachypetala* (Grossh.) T. N. Popova.Fig. 2. Isotypus of *Arenaria graminea* C. A. Mey.Fig. 3. Inflorescence of *Arenaria brachypetala*.
Photo E. GabrielianFig. 4. Flowers of *Arenaria brachypetala*.
Photo E. Gabrielian

floristic region]) and N.-W. Iran to the North and North-East from Lake Ormiyeh (Khoi, Tabriz), and *A. graminea* is distributed in Talysch and adjacent regions of N.-W. Iran, as well as to the south-west and south-east from Lake Ormiyeh (Qazemlu, Maragheh). There is a possibility of overlapping of the areas near the Lake Ormiyeh.

Thus, according to the results of our investigations, *A. brachypetala* fully deserves the rank of independent species, distinctly differing from the undoubtedly closely related *A. graminea* by comparative length of petals and sepals, by number and expression degree of sepal nerves, by petal shape, by length of pedicels of central flowers in the dichasia and also by petal colour (Table 1).

Below the original complete description of *Arenaria brachypetala* is given, as well as the chromosome number, habitats and geographical distribution.

Arenaria brachypetala (Grossh.) T. N. Popova, 1972, Novit. Syst. Pl. Vasc., 9: 160. — *A. graminea* C. A. Mey. var. *brachypetala* Grossh. 1927, Beih. Bot.

Table 1. Diagnostic features of *A. brachypetala* and *A. graminea*.

	<i>A. brachypetala</i>	<i>A. graminea</i>
Petal length / Sepal length	$1\frac{1}{2}$ – $\frac{5}{6}$	$1\frac{1}{2}$
Petal shape	Oblong, upwards not widened, rarely a little widened, upper margin mostly uneven	Often spatulate, upwards more or less widened, upper margin almost always even
Sepal nerves number	5–7	3(5)
Sepal nerves expression degree	Distinct, prominent	Indistinct, not prominent
Pedicle length of the central flower in the dichasium	5–8(9) mm	(9)10–15 (20) mm
Petals colour	Whitish-yellowish-greenish	White

Centralbl., 44, 2: 209; Lazkov 2002, Sched. Herb. Fl. Ross., 29: 54. – *A. graminea* auct. non C.A. Mey.: McNeill, 1963, Notes Roy. Bot. Gard. Edinb. 24, 3: 292, p. p.

Tufted perennial. Stems erect, 25–60 cm tall, glabrous; internodes of inflorescence zone glandular-pubescent. Caulicular branches short, congregated, in the upper part densely covered with more or less adpressed dead leaf bases. Leaves glabrous, sparsely short-ciliate; basal linear, slightly coarse, 120–150×0.8–1 mm; cauline narrowly lanceolate, lower ones 100–160 mm×1.5–2 mm, longer than internodes, upper ones smaller, shorter than internodes. Bracts 2–7 mm long, lanceolate, tapered at the apex, scarious, with 1–3 whitish

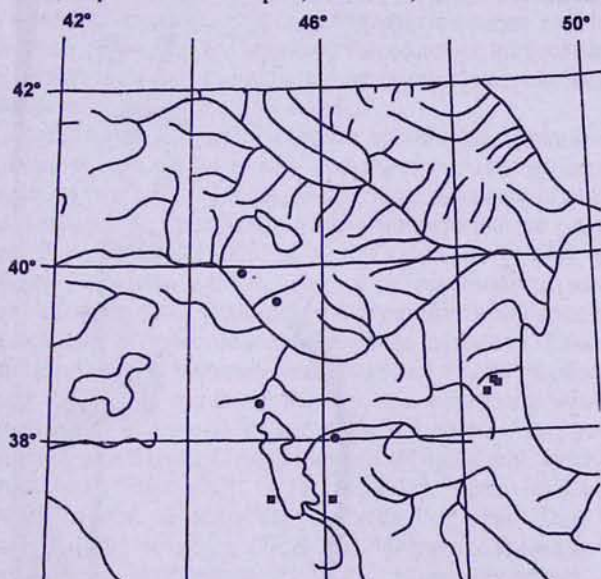


Fig. 5. Distribution of: ● – *Arenaria brachypetala*, ■ – *A. graminea*

nerves, short-ciliate at margin. Inflorescence thyrsoidal, narrow, with more or less upwards directed, gradually shortened towards the inflorescence apex lateral branches carrying double dichasia of (1)3–7, almost always conferted flowers. Pedicels glabrous, 2–5 mm long, by central flower in dichasium up to 8(9) mm long. Sepals 3–5 mm long, glabrous, obtuse, with broad scarious margin and 5–7 distinct nerves, more prominent by fruits. Petals 2–3.5 mm long, $1\frac{1}{2}$ – $\frac{5}{6}$ as long as sepals, whitish-yellowish-greenish, oblong, not widened to the apex, rarely slightly widened, blunt, mostly weakly uneven on top. Nectaries 10, funnel-shaped at the top. Stamens 10. Capsule 4–5×3.5–4 mm, broad-ovate, with 6 teeth. Seeds black, reniform, 1–1.2 mm in diam., with equal, slightly domed tubercles.

2n=22 (Armenia, Ararat region, near v. Vedy, Erakh ridge, dry stony slopes, ca. 1050 m., 01.08.2002, A. Nersesian, ERE 154944, C-3622). The chromosome number is presented for the first time.

Typus: ?Lecto. (Popova, 1972, Novit. Syst. Pl. Vasc., 9: 160): "Persia borealis, Atropatania, prope Tabris, 1500 m., in lapidosis, 25.06.1924, A. Grossheim, Pl. or. exs., no. 278", LE; iso. LEI, KI, TBI, TGM 933!

Habitats: Dry stony, loamy slopes, sage-brush semi-desert, phryganoid vegetation.

Altitude: 1000–1500 m

Distribution: S. Transcaucasia (Armenia – Yerevan Floristic Region, Nakhichevan), N.-W. Iran.

Specimina visa

Arenaria brachypetala: Armenia: Artashat region, m-t Pokr Ilkassar, 1100–1200 m, 27. 06.1970, A. Takhtajan, T. Popova (ERE 95937, 95938) [Russ.]; Ararat region, near v. Vedy, Erakh ridge, dry stony slopes, ca. 1050 m., 18.06.2002, A. Nersesian (ERE 154947–154950) [Russ.]; l.c., 01.08.2002, A. Nersesian (ERE 154944–154946); **Nakhichevan**: near Aznaburt village, ca. 1450 m, on the dark stony schists on southern slopes, 8.06.1947, A. Grossheim, I. Iljinskaya, M. Kirpichnikov (LE) [Russ.]; **N.-W. Iran**: Persia borealis, prov. Tabris (Atropatania), prope Tabris, 1350–1500 m., 25.06.1924, A. Grossheim (iso. LE, TBI); Atropatania, prope Tabris, 1500 m.; in lapidosis, 25.06.1924, A. Grossheim; A. Grossheim et B. Schischkin, Pl. or. exs., no. 278, 1928 (iso. K, TGM 933); 322. In collibus ad pedem. montis Tshilachana. Distr. Khoi. Prov. Azerbajdzhan. 31.05.1828, Szovits (LE)

Arenaria graminea: Talysch: In campis et collibus siccis lapidosis prope pagum Swant, Enum. cauc. casp. no. 1895, 20.06.1830, C. A. Meyer (holo., iso. LE); In campis et collibus siccis lapidosis prope pagum Swant, 20.06.1830, C. A. Meyer (sp. auth. LE); Talysh, Swant, Prope Sueyul in Tatuni, no.2383, 07–08.1834, Hohenacker (LE); Mountain steppe between Kjalvaz and Orant, 5500', 22.06.1894, A. Lomakin (TBI) [Russ.]; Swant, m-t Mara-jurt (ca. 8000'), 15.07.1906, A. Schelkovnikov (TGM 12491) [Russ.]; Mountains to the S.-W. from Lerik, 25.06.1970, G. Menitsky (LE) [Russ.]; **N.-W. Iran**, In ... montium Talysch, in valle Ambarani, Ardebil versus, no. 72, 24.06.1880, G. Radde (LE, TBI, TGM 12492);

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I thank very much Directors and Curators of K, LE, TBI and TGM Herbaria for letting me to investigate herbarium material. I am very grateful to Prof. E. Gabrielian (Yerevan) for valuable scientific recommendations. My gratitude to Dr. A. Gukasyan (Yerevan) for making karyological preparations and to Dr. A. Sennikov (St. Petersburg) for preparing digital images of type specimens.

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Институт ботаники НАН РА, Ереван, 375063

М. Ш. ХУЦИШВИЛИ

О НОМЕНКЛАТУРНОМ ТИПЕ *SCROPHULARIA HYRCANA* (GROSSH.) GROSSH. (*SCROPHULARIACEAE*)

Произведена лектотипификация *Scrophularia hyrcana* (Grossh.) Grossh. (= *S. vernalis* L. var. *hyrcana* Grossh.). Лектотип и 3 пара-лектотипа хранятся в гербарии ТБИ.

Խուցիշվիլի Մ. Շ. *Scrophularia hyrcana* (Grossh.) Grossh. նուննկլատուրային տիպի վերաբերյալ: Կարգաված է *Scrophularia hyrcana* (Grossh.) Grossh. (= *S. vernalis* L. var. *hyrcana* Grossh.) փաթկոնի լեկտոտիպի ֆիկացիա: Լեկտոտիպը եւ 3 պարալեկտոտիպերը պահվում են ԹԽԻ հերբարիումում:

Khutsishvili M. Sh. On the nomenclature type of *Scrophularia hyrcana* (Grossh.) Grossh. LECTOTYPIFICATION OF THE *Scrophularia hyrcana* (Grossh.) Grossh. (= *S. vernalis* L. var. *hyrcana* Grossh.) is carried out. LECTOTYPE AND 3 PARALECTOTYPES ARE KEPT IN HERBARIUM TBI.

А. А. Гроссгейм (1920: 21) описал из Талыша разновидность *Scrophularia vernalis* L. var. *hyrcana* Grossh. Основанием послужили гербарные образцы, процитированные при первоописании: 1) Талыш, ущ. р. Астарай близ сел. Алаша, 16/29.III.1904, Шелковников; 2) Талыш, лесистая вершина г. Нудусь-Галаси, 7000', 17.V.1894, А. Ломакин; 3) Prov. Baku, distr. Lenkoran (Talysh), Lerik, in faucibus fl. Jata-gamanov-tshaj, in silva, 21.IV.1915, A. Grossheim; 4) Prov. Baku, distr. Lenkoran (Talysh), inter Tshjru et Gamaramyschi, in silva, 27.IV.1915, A. Grossheim. Данные перечисленные экземпляры, как это указывает Гроссгейм, были определены А. В. Фоминым как *Scrophularia vernalis* L., а затем переопределены А. В. Вульфом как *S. chrysantha* Jaub. et Spach β *calycina* Boiss., *S. chrysantha* Jaub. et Spach β *lunariaefolia* Boiss., *S. scopoli* Hoppe.

Позднее, на основании дополнительного материала из Талыша, Гроссгейм в «Определителе растений Кавказа» (1949: 307) возвел свою вариацию в ранг вида, приведя его с указанием «in schedis, 1941», конкретно не указывая типовой гербарный образец.

С. Г. Горшкова (1955: 251) местом хранения типового экземпляра *Scrophularia hyrcana* указывает Ленинград (LE). Однако хранящийся в LE (!) гербарный образец с этикеткой Гроссгейма: «*Scrophularia hyrcana* Grossh. Azerb. distr. Lerik inter p. p. Orand et Schinabad in silva 13.V.1946/47» (приклеена и печатная этикетка «Typus»), не может считаться типом, поскольку он не автентичен по отношению к *S. vernalis* var. *hyrcana*.

Как выяснилось, все 4 автентичные образца хранятся в гербарии Института ботаники им. Н. Н. Кеңховели АН Грузии (ТБИ). Нами произведена лектотипификация этого таксона. Лектотипом выбран образец с 3 определениями. На основной этикетке Фомина написано: «*Scrophularia vernalis* L. Teste: А. Фомин». Второе определение: «*S. chrysantha* J. et Sp. β *calycina* Boiss. Det. E. Wolff». Третье определение: «*Scrophularia vernalis* L. v. *hyrcana* m. Det. A. Grossheim».

Scrophularia hyrcana (Grossh.) Grossh. 1949, Определ. раст. Кавк.: 307. — *S. vernalis* L. var. *hyrcana* Grossh. 1920, Тр. Тифл. бот. сада, 1: 21.

Lectotypus (hoc loco designatus): «Талыш, ущ. р. Астарай близ сел. Алаша, 16/29. III. 1904, Шелковников», ТБИ (фото 1).

Paralectotypi: «Талыш, лесистая вершина г. Нудусь-галаси, 7000', 17.V.1894, А. Л [омакин]», ТБИ; «Prov. Baku, distr. Lenkoran (Talysh), Lerik, in faucibus fl. Jata-gamanov-tshaj, in silva, 31. IV, 1915, A. Grossheim», ТБИ; «Prov. Baku, distr. Lenkoran (Talysh), inter Tshjru et Gamaramyschi, in silva, 27.IV.1915, A. Grossheim», ТБИ

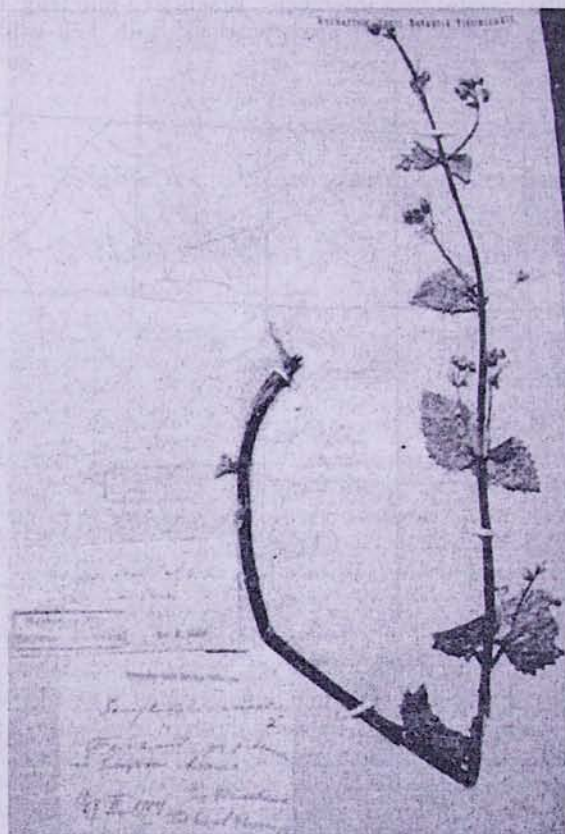


Фото 1. Лектотип *Scrophularia hyrcana* (Grossh.) Grossh. (= *S. vernalis* L. var. *hyrcana* Grossh.).

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Институт ботаники им. Н. Н. Кеңховели АН Грузии.
Тбилиси, 380007, Коджорское шоссе, 1.
E-mail: mananakhuts@yahoo.com