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**On the Systematic Position of *Silene propinqua*
SCHISCHK. within the Critical Group of *S. marschallii*
C. A. MEY. (*Caryophyllaceae*)**

By

Anoush NERSESIAN*)

With 2 Figures

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Summary

NERSESIAN A. 1996. On the systematic position of *Silene propinqua* SCHISCHK. within the critical group of *S. marschallii* C. A. MEY. (*Caryophyllaceae*). – *Phyton* (Horn, Austria) 36 (1): 43–52, 2 figures. – English with German summary.

Herbarium material (including type specimens – G. G-Bois, LE) of *Silene marschallii* C. A. MEY. and *S. propinqua* SCHISCHK. from Transcaucasia and from Anatolia, N. Iraq and Iran, as well as living material from Southern Transcaucasia has been investigated. The abundance of the intermediates, similarity in the most morphological features, as well as the nature of the geographical distribution of the species, allow one to consider them as a single species *S. marschallii* with the two subspecies: *S. marschallii* subsp. *marschallii* and *S. marschallii* subsp. *propinqua* (SCHISCHK.) NERSESIAN, comb. nov.

Zusammenfassung

NERSESIAN A. 1996. Zur systematischen Stellung von *Silene propinqua* SCHISCHK. innerhalb des variablen Formenkreises von *S. marschallii* C. A. MEY. (*Caryophyllaceae*). – *Phyton* (Horn, Austria) 36 (1): 43–52, 2 Abbildungen. – Englisch mit deutscher Zusammenfassung.

Umfangreiches Herbariummaterial, einschließlich der Typusbelege (G, G-Bois, LE) aus Transkaukasien, aus Anatolien, aus dem N-Irak und aus dem Iran, sowie lebendes Material diverser südtranskaukasischer Populationen von *Silene marschallii* C. A. MEY. und *S. propinqua* SCHISCHK. wurde untersucht. Aufgrund der großen

*) PhD Anoush NERSESIAN, Dept. of Plant Systematics, Herbarium, Institute of Botany, Acad. Sci. Armeniae, 375063 Yerevan, Armenia.

Variabilität und der zahllosen Übergänge zwischen beiden Arten, sowie der geographischen Verbreitung, erscheint es am besten, die beiden als Subspecies ein und derselben Art zu behandeln: *S. marschallii* subsp. *marschallii* und *S. marschallii* subsp. *propinqua* (SCHISCHK.) NERSESIAN, comb. nov.

Introduction

The genus *Silene* L. s.l., that counts nearly 700 species (MELZHEIMER 1988), is one of the taxonomically most difficult genera in the *Caryophyllaceae* family. The taxonomic position of many *Silene* species is still not clear. The species *S. marschallii* C. A. MEY. and *S. propinqua* SCHISCHK. [S. sect. *Lasiostemones* (BOISS.) SCHISCHK.] are among such interesting ones.

S. sect. Lasiostemones consists of more than 20 species. Most of them are distributed in the Near East. The representatives of the section are perennial, often caespitose; the inflorescence is usually paniculate; calyx veins fuse with each other only in the teeth, and the anastomoses are almost invisible; filaments are, as a rule, hairy; petal claws are often hairy or ciliate. Within the section, the species *S. ruprechtii* SCHISCHK. and *S. lasiantha* C. KOCH are most closely related to *S. marschallii* and *S. propinqua*, but they distinguish from the latter ones by the glabrous pedicels.

The species *S. marschallii* was described by MEYER 1831 from Talysch: "In altioribus montibus Talüsch, locus siccis lapidosis (alt. 600–1000 hexap.) MEYER, 1830". Later BOISSIER 1867 described the species *S. puberula* related to *S. marschallii* from the Baibout area (Anatolia): "in collibus Armeniae prope Baibout (BOURG)". SCHISCHKIN 1922 described the species *S. propinqua* closely related to *S. marschallii* from Boz-dagh mountains (N. W. Azerbaijan): "Bozdagh, in faucibus Pirseid, 26. 05. 1911, SCHELKOVNIKOV". SCHISCHKIN pointed out that the new species is distinguished from the *S. marschallii* by its higher stems (up to 1 m) and broader leaves (up to 15 mm). Later it became clear that the species *S. propinqua* and *S. puberula* are identical. However the name *S. propinqua* is valid because of an earlier homonym of *S. puberula*.

S. marschallii and *S. propinqua* slightly differ from each other in the growing conditions. *S. propinqua* occurs usually in more mesophytic conditions (stony and grassy slopes, meadows and afforestations), whereas *S. marschallii* grows more often in more arid conditions (dry stony slopes, mountains steppes).

S. propinqua occupies middle and upper mountain areas [c. 1300–2500 (–2700) m], and *S. marschallii* occur from lower to upper mountain areas [c. 800–2500 (–2800) m].

Both of the species are distributed in Anatolia, N. Iraq, Iran, Transcaucasia. *S. marschallii* probably grows also in Greece (COODE &

CULLEN 1967), and *S. propinqua* occurs also in N.E. Afghanistan (MELZHEIMER 1988). The species are considered to be armeno-atropatenical elements.

In many investigations the independence of both species is recognised (ROHRBACH 1868, WILLIAMS 1896, GROSSHEIM 1945, KARJAGIN 1952, AVETISIAN 1956, CHOWDHURI 1957, MELZHEIMER 1988, etc.). In the others they are considered as the same species with the name *S. marschallii* having priority (COODE & CULLEN 1967, POPOVA 1972, PONERT 1972, GREUTER & al. 1984, etc.).

We came across the problem of the relations between *S. marschallii* and *S. propinqua* while investigating monographically the representatives of the genus *Silene* s. l. in Southern Transcaucasia.

Material and Methods

The type specimens of *S. marschallii* and *S. propinqua* (Conservatoire et Jardin botaniques, Geneva G, G-Bois, Herbarium of the Institute of Botany of the Academy of Science of Russia, St.-Petersburg LE), abundant material from Transcaucasia (G, Herbaria of Institutes of Botany of the Academy of Science of Armenia ERE, Russia LE, Georgia TBI, of the State Museum of Georgie TGM, of Herbarium Haussknecht, Jena JE, of Natural-Historical Museum, Vienna W) and a number of specimens from Anatolia, Iraq and Iran (ERE, G, G-Bois, JE, LE, TBI, W, Herbarium of the University of Vienna WU) were investigated. In total, more than 200 herbarium specimens were studied. Field investigations of the species and our own material collections during expeditions in Southern Transcaucasia in 1989–1990 were made.

The main working methods were comparative-morphological and phytogeographical. Leaf breadth, stem height, depth of petal blade division were measured for each specimen. The indumentum of the vegetative and generative organs, as well as existence and quantity of shortened shoots at the base of fertile stems and in the axils of stem leaves were observed. The geographical distribution of the species is investigated and a map of the geographical distribution in Transcaucasia, adjacent regions of Anatolia and Iran and in the northern parts of N. Iraq was drawn up.

Results and Discussion

The type specimens of *S. propinqua* are distinguished by very thick (up to 2–5 mm) and high (50–100 cm) stems and very broad (4–10 mm) leaves (Fig. 1). And *S. marschallii* is characterized by thin (1–2 mm), not so high (20–30 (40) cm) stems and by narrow (2–4 (5) mm) leaves (Fig. 2). Moreover, typical *S. marschallii* specimens have numerous shortened rosette-like sterile shoots gathered at the base of the fertile stems. Nevertheless, a lot of specimens (more than 10% of all the specimens studied) with the intermediate features were found.

According to the obtained data there are no vivid differences between the typical specimens of *S. propinqua* and *S. marschallii* by the features that are diagnostic for many *Silene* species (calyx shape, petal structure,

kind of indumentum of the vegetative and generative organs, etc.). It is only possible to point out, that the calyx of *S. propinqua* has hairs more often than that of the *S. marschallii* and that the petal blade of *S. propinqua* is usually divided up to 3/4 of its length, whereas that of the *S. marschallii* is divided up to 2/3. Nevertheless, both groups have specimens with a pubescent, as well as with a glabrous calyx, and some of the *S. marschallii* specimens, including the type specimens, have up to 3/4 divided petal blade.

In some investigations the existence of the shortened shoots in the lower half of the stems in the axils of stem leaves was used as a distinguishing feature of the species (SCHISCHKIN 1936, GROSSHEIM 1945, KARJAGIN 1952, AVETISIAN 1956, etc.). According to the obtained data such shoots occur among the typical *S. marschallii*, as well as among the typical *S. propinqua* specimens. That is why that feature cannot be used as a diagnostic one.

During the investigations of the geographical distribution of the species in Transcaucasia and the adjacent regions of Anatolia and Iran the obvious prevalence of the plants with the high stems and broad leaves (typical *S. propinqua*) in the north-east part of Anatolia, in Central Transcaucasia, northern parts of the Yerevan floristic region of Armenia (at the boundary with the Aragats and Abaran floristic regions) and in the Sevan and Abaran floristic regions of Armenia was revealed. The plants with lower and thinner stems, narrower leaves and rosette-like basal shoots (typical *S. marschallii*) are gathered further to the South: in Southern Armenia (Yerevan, Darelegis, Megri floristic regions), Nachit-shevan, Talysh and in Iran regions near to Southern Transcaucasia (Fig. 3).

Thus, in our opinion, the abundance of the intermediates, the similarity of the most morphological features, as well as the nature of the geographical distribution of *S. marschallii* and *S. propinqua* allow us to consider them as a single species *S. marschallii* with the two subspecies: *S. marschallii* C. A. MEY. subsp. *marschallii* and *S. marschallii* subsp. *propinqua* (SCHISCHK.) NERSESIAN.

Silene marschallii C. A. MEY., 1831, Verz. Pfl. Cauc.: 214

1. stems 20–30 (40) cm high, leaves (1.5) 2–4 (5) mm broad, numerous shortened rosette-like sterile shoots are gathered at the base of fertile stems subsp. *marschallii*
- stems 50–100 cm high, leaves 4–10 (15) mm broad, lack of shortened sterile shoots at the base of fertile stems or shortened sterile shoots are not numerous subsp. *propinqua* (SCHISCHK.) NERSESIAN
- subsp. *marschallii*

Typus: "In altioribus montibus Talüsich, locus siccis lapidosis (alt. 600–1000 hexap.)" (holo., iso.LE!)

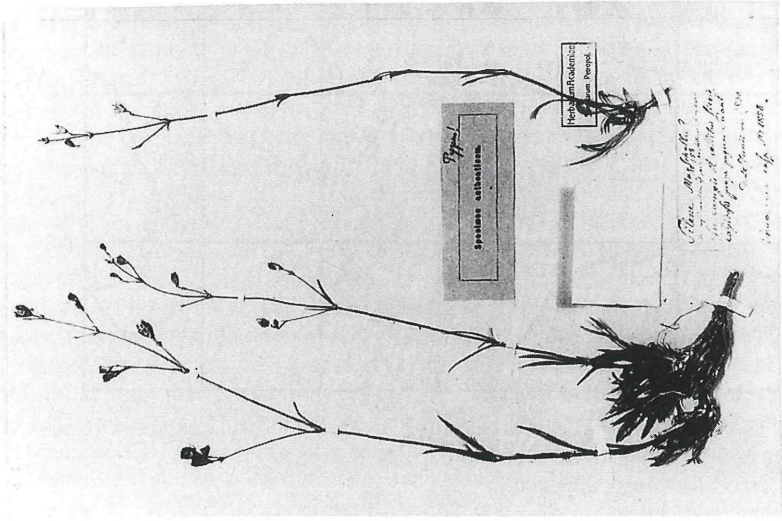


Fig. 1. Holotype of *Silene marschallii* subsp. *propinqua* (G-Bois)

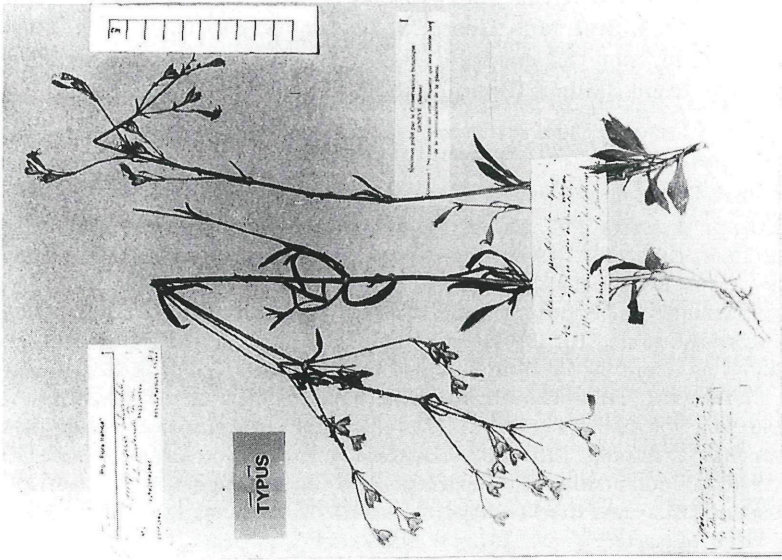


Fig. 2. Isotype of *Silene marschallii* subsp. *marschallii* (LE)

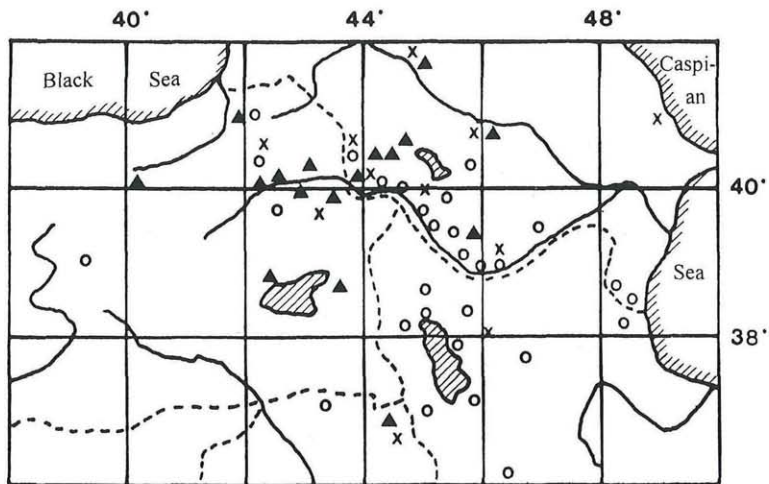


Fig. 3. Distribution of *Silene marschallii* in Transcaucasia, adjacent regions of Anatolia and Iran and in the northern parts of N. Iraq.

○ *S. marschallii* subsp. *marschallii*

▲ *S. marschallii* subsp. *propinqua*

× intermediates

– subsp. *propinqua* (SCHISCHK.) NERSESIAN, comb. nov. – *S. propinqua* SCHISCHK., 1922, Bull. Mus. Georg., 1: 14–15. – *S. puberula* BOISS., 1867, Fl.Or., 1: 636, non *S. puberula* BERTOL., 1842. Typus: “In collibus Armeniae prope Baibout (Bourg.)” (holo., iso. G-Bois!, iso.G!).

Specimina visa

Silene marschallii C. A. MEY. subsp. *marschallii*

Armenia: pr. p. Mastara, G. RADDE, LE. – Ildir-Orgov. stony steppe, 1. 05. 1916, B. SCHISCHKIN, ERE 1867. – Vardenis region, Dara village canyon, 23. 07. 1989, A. NERSESIAN, ERE 139952. – Distr. Vedi, Urz mountain, 18. 05. 1965, JA. MULKIDZHANIAN, A. POGOSJAN, ERE 100534. – Gorovan village, sands, 23. 05. 1957, V. AVETISIAN et al., ERE 65104. – as before, 26. 05. 1960, A. TAKHTADZHIAN & al., ERE 73052. – as before, 29. 05. 1948, A. ACHVERDOV, N. MIRZOEVA, TBI. – near Zovashen village, 17. 06. 1921, TBI. – Garni reservation, the right bank of the river Khosrov, 7. 07. 1961, JA. MULKJANIAN et al., ERE 72702. – supra pag. Avdallar, 26. 06. 1936, S. TAMAMSHIAN, T. AVAKIAN, ERE 1753. – between Arazdaian and Tshaikend villages, 30. 05. 1960, JA. MULKJANIAN, E. GABRIELIAN, ERE 73051. – Arazdaian, 11. 05. 1914, A. GROSSHEIM, TBI. – near Kiarki village, 5. 06. 1973, N. KHANJIAN & al., ERE 108590. – Khor-Virab monastery 5. 06. 1973, V. MANAKIAN & al., ERE 108602. – Eranos mountain, near the river Azat, 9. 05. 1961, A. TAKHTADZHIAN & al., ERE 74592, 74593. – mons Dagna, 10. 05. 1914, A. GROSSHEIM, TBI. – Yerevan bot. garden, 1945, A. AKHVERDOV, ERE 124041. – as before, 11. 10. 1950, N. MIRZOEVA, ERE 124040. – Erivan, 29. 04. 1922, A. GROSSHEIM, LE. – near Yerevan, right bank of the river Zanga,

7. 05. 1936, V. TRANSHÉL, LE. – near Yerevan, B. SCHISCHKIN, LE. – between Yerevan and Dzhrvezh, 17. 07. 1919., A. GROSSHEIM, TBI. – prope Eilar, 21.–30. 05. 1926, A. SCHELKOVNIKOV, ERE 1873. – Distr. Abovian, Nor-Giugh-Elgovan village, 14. 06. 1960, ERE 108591. – Arzni, canyon, 7. 06. 1933, ERE 195525. – Eghegnadzor region, Aiozdzor pass, steppe, 1900 m, 11. 07. 1989, A. NERSESIAN, ERE 139699. – between Areni and Khatshik villages, steppe-meadow, 1900 m, 13. 07. 1989, A. NERSESIAN, ERE 140069, 141075. – Distr. Migri, inter p. Migri et m-tem Kala-dash, 26. 06. 1934, I. KARJAGIN, LE. – between Legvas and Kuris villages, 26. 05. 1947, A. DOLUKHANOV, TBI. Nachitshevan: prope salinas, 12. 05. 1923, A. GROSSHEIM, ERE 1868. – inter st. viae ferr. Negram et Kyzyl-Wank, 15. 05. 1923, A. GROSSHEIM, ERE 1869, LE. – as before, 26. 05. 1933, L. PRILIPKO, LE. – prope oppidum Ordubad, 26. 05. 1923, A. GROSSHEIM, ERE 1872. – canyon to the north of Ordubad, 17. 04. 1914, JU. WORONOW, LE. – as before, 20. 05. 1933, A. GROSSHEIM, LE. – inter Dzhulfa et Aza, 24. 05. 1923, A. GROSSHEIM, ERE 1870, 1871. – Darry-Dagh mountains, 23. 05. 1914, JU. WORONOW, LE. – Norashen mountain, 7. 05. 1947, A. GROSSHEIM & al., TBI, LE. – Munkh-bala-ogly mountain slopes, 15. 05. 1947, A. GROSSHEIM & al., LE. – Kabakh-jal mountain slopes, 8. 05. 1947, A. GROSSHEIM & al., TBI; LE. – Akhura village, 19. 05. 1947, A. GROSSHEIM & al., LE. – Distr. Shakhbuz, between Keliany et Betshenak vilalgés, 15. 06. 1947, A. GROSSHEIM & al., LE. – as before, 27. 05. 1900, A. FOMIN, TBI. – domin Bejuk-djuz, 27. 05. 1933, T. HEIDEMAN, LE. – near Sadarak village, 4. 05. 1947, A. GROSSHEIM & al., LE. – Vellidagh mountain slopes, 2. 06. 1982, E. GABRIELIAN, ERE 129953.

Azerbaijan: Kharabagh, between Khanlykh and Dzhebrail villages, 22. 06. 1931, M. SAKHOKIA, LE. – as before, 19. 05. 1911, JU. WORONOW, LE. – prov. Karabagh, 23. 05. 1847, BUHSE, LE. – Talysh, in altioribus montibus Talüsçh, 20. 06. 1830, MEYER, LE. – pr p. Shona-Tshola, 7. 06. 1935, A. GROSSHEIM, GURVITSH, LE. – pr. Konualjun, 23. 05. 1916, A. GROSSHEIM, TBI.

Anatolia: Vilajet Kastambuli, in declivibus saxos. prope Dikmen, 23. 06. 1892, P. SINTENIS 4368, JE. – in m-te Tauro, Aestate 1836, TH. KOTSCHY 88, W. – Sivas, Gürün-Sivas, 22 km N. Gürün, 1750 m, Kalksteppe, 10. 07. 1981, M. NIDEGGER 16833, G. – in pascuis mont. haud pr. ab oppido Ardaghan, 1908, T. ROOP, LE. – pr. pagum Bardus, 1909, T. ROOP, LE. – distr. Kars, distr. Kaghysman, near “Zheleznyje Vorota”, 2. 06. 1913, JU. WORONOW, LE. – prope p. Bardus, 22. 06. 1911, D. SOSNOVSKI, TBI. – Kharput, 28. 05. 1889, P. SINTENIS, JE, LE. – as before, 8. 06. 1889 P. SINTENIS 668, W. – inter Beychehr et Koniah, 06. 1845, HELDREICH, G. G-Bois, LE, W.

Iraq: distr. Mosul (Kurdistan), ad confines Turciae prov. Hakari, in ditione pagi Sharanish, in mont. calc. a Zakho septentrionem versus Jubal Khatur, 1300 m, 4–9. 07. 1957, K.-H. RECHINGER 12069, W.

Iran: prov. Azerbaijan. occid., in monte Chalil Kuh prope Pesan, 1800–2400 m, 1. 07. 1974, J. RENZ 48635, W. – in valle fl. Qotur W. Khvoy versus fines Turcicas river, 1800–2000 m, 10. 06. 1971, K.-H. RECHINGER 41692, G, W. – in saxosis serpent., 15 km NE Khvoy, 1100 m, 9. 06. 1971, K.-H. RECHINGER 41543, W. – ad pg. Seidhadzi, 4. 05. 1828, LE. – in jugo Quschchi inter Schahpur et Resajeh, 1600–1850 m, 13. 06. 1971, K.-H. RECHINGER 41961, G. – Shahpour, Quschchi pass, 1700 m, 26. 06. 1976, AMINI 1329, W. – Rezaiyeh, hill by the lake just north of Golman Khaneh, stony slope 1400 m, 1. 06. 1974, WENDELBO & al. 18001, W. – near Danalu, E of Urmija lake, 10. 05. 1916, A. SCHELKOVNIKOV, N. SCHIPTSCHINSKI, LE. – a Rezajeh, 26 km N.W. versus Sero, 1600–1700 m, 14. 06. 1971, K.-H. RECHINGER 41998, G, W. – in collibus argilloso S. W. Rezaiyeh, 1500 m, 12.–13. 07. 1974, K.-H. RECHINGER 49344, G, G-Bois, 49332,

W. – lake Rizaiyeh, S. W. side, 1300 m, sandy soil in limestone region, 12. 06. 1963, M. JAKOBS 6858, W. – Prov. Azerbaijan orientalis, 2–12 km W Zonuz, 1500–1700 m, 7. 06. 1971, K.-H. RECHINGER 41407, G. – prope Tabris, 1350–1500 m, 25. 06. 1924, A. GROSSHEIM, LE. – inter Tehran et Tabris, 06. 1859, BUNGE, G-Bois – in valle Ambarani Ardebil versus 11 km W. Saqgez, 1550 m, 8. 07. 1971, K.-H. RECHINGER 43111, W. – in saxosis et an versuras 47 km W Bijar versus Divandarreh, 2000 m, 2. 07. 1971, K.-H. RECHINGER 42636, G, W. – in graminosis siccis jugi prope Salavatabad, 25 km E. Sanandaj, 2300 m, 3. 07. 1971, K.-H. RECHINGER 42808, G, W. – auf sehr felsigen Orten am Elwendgebirge, 10. 07. 1882, Th. PIHLER, G. – Elwind, 1837, AUCHER-ELOY 449, G. – In monte Elwend, 08. 1903, STRAUSS, JE. – Persia, 13 km S.W. Hamadan, 2350 m, 8. 06. 1959, PABOT 1460, G. – Persia occid., bei Tefresch, STRAUSS, JE. – W. Persia: Qushqai: Kuh-e Surmandeh (Kuh-e Alijuq) N Semirom, in decl. boreo-occid., substr. calc., 7. 06. 1974, K.-H. RECHINGER 47549, G, W. – a. Kohruyeh, 25–36 km meridian versus inter Shahreza et Semirom, substr. calc., 2600 m, 5. 06. 1974, K.-H. RECHINGER 47344, W. – Bordekan a Kohruyeh 40 km meridiem versus inter Shahreza et Semirom, substr. calc., 2700 m, 5. 06. 1974, K.-H. RECHINGER 47401, W. – Mazandaran: Feruzkuh – Teheran, 28 km Feruzkuh Kuh-e Velvelch, 1950–2200 m, 28. 05. 1980, TERMEH & al. 39762, E, W. – Prov. Mazandaran, Zentral Elburs: oberes Talartal, Kalkhügel östlich Gaduk bei Kahud-Tscheschmeh, 2300 m, 21. 07. 1948, E. BEHBOUDI, P. AELLEN 1487, 1489, W. – Elhurg: Elika, Makliz (montis), 3. 08. 1972, TERMEH 13083, E, W. – N. E. Tehran, colline de Jagerud, 23. 05. 1962, PABOT 7352, G. – Prov. Tehran, Vardavard valley, 1900 m, sandy soil, W. slope, 27. 05. 1974, WENDELBO & al. 17751, W. – Lar valley, 2450–2550 m, dry ground, 2. 07. 1974, WENDELBO, ASSADI 13325, W. – Elburz, Nezva Kuh area, c. 2800 m, 7. 07. 1859, WENDELBO, 1138a, W. – Prov. Mazandaran: Kandavan Kuh-e, Tunnel 2400–2500 m, 16. 07. 1980, TERMEH & al. 39761, E, W. – Elbursgebirge, nördlich von Kendevanpaß, 2800 m, sandiger Boden, 3. 07. 1936, A. GILLI, W. – Elburz mts, Kendevan pass, northern side, ca. 2500 m, 26. 06. 1959, WENDELBO 2203, W. – Elburs Cochisar, 50'NE Karaj, 7000 ft., stony banks and fields, 20. 06. 1962, P. FURSE 2676, W. – jugi Elbursensis, in subalpinis ad basin septentr. alpium Totschal, prope Scheheristanek, 2200 mm, 4 et 12. 06. 1902, J. & A. BORNMÜLLER 6369, JE, LE. – In aridis m. Elburs pr. Derbend, 5. 07. 1843, TH. KOTSCHY, G-Bois. – as before, 06. 1843, TH. KOTSCHY 240–529, G. – m-tes Elburz, in saxosis summi montis Kuh Dashteh e. 30 km. a Tehran, occid. versus 2400–2500 m, 28. 06. 1977, K.-H. RECHINGER 57264, G, W. – Tehran foothills of the southern range of Elburs mountains, just above Velenjak, west side of Velenjak creek, 13. 06. 1972, REINO ALAVA 10508, W. – mont. Elburs, in valle, 13. 07. 1843, TH. KOTSCHY, W. – Montes Elburs centralis, in dittoing opted Queried, in montibus Kuh-e Dascht, 2. 05. 1937, K.-H. RECHINGER 317, W. – Alburz, Gatchsar-Gadjereh, Varangroad-Sorkhab, 2240–2450 m, 9. 07. 1977, TERMEH, MATINE 36853, E, 36860, E, W. – prov. Kazvin, in dit. oppidi Keredj in montibus ad pagum Kalak, 17. 05. 1937, K.-H. RECHINGER 120, W. – Kalak prope Keredj, GAUBA 2158, W. – Mont Elmalu, region alpine, 9. 06. 1860, E. BOURGEAU, G-Bois. – Persia, 1847, BUHSE, G-Bois.

Silene marschallii C. A. MEY. subsp. *propinqua* (SCHISCHK.) NERSESIAN

Georgia: Iberis caucasica, pr. Tiflis, 10. 1860, RUPRECHT, LE. – near the D. Garidji monastery, 15. 06. 1927, N. TRAPEZNIKOV, TBI. – near the lake Lisiy, 13. 06. 1960, Ts. GVINIASHVILI, TBI. – Telet mountains, 24. 05. 1928. O. ZEDELMEIER, TBI.

Armenia: Distr. Ashtarak, Aragats mountain, Nor-Amberd, 17. 08. 1965, R. KARAPETJAN, SH. ASLANJAN, ERE 112335. – as before, 18. 06. 1910, A. GROSSHEIM, LE. – Propoe Ashtarak, 1837. C. KOCH, LE. – Noemberian region, limestone mountains, 10 km from Bagratashen village, 2. 06. 1980, E. GABRIELIAN, K. TAMANIAN, ERE 122174. – near Suchoi Fontan, 9. 07. 1923, A. GROSSHEIM, ERE 1874, 1879, LE, TBI, TGM. – as before, 3. 08. 1919, A. GROSSHEIM, LE, TBI. – near Razdan town, in afforestation, 24. 06. 1989, A. NERSESIAN, ERE 141000. – mont Karny-Jarych, 7000 ped., 9.–13. 07. 1926, A. SCHELKOVNIKOV, ERE 1877. – Arailer, in vicinitate pagi Egward, 1300–1900 m, 15. 07. 1975, VACA, G. – DARATSHITSHAK, 7. 08. 1924, E. KARAMURZA, ERE 7893, LE. – pr. pag. Rachmachkend, 6500 ped., 7. 08. 1923, A. GROSSHEIM, O. ZEDELMEIER, ERE 1876, TBI. – distr. Sisian, near Aravus village, 8. 07. 1966, V. MANAKIAN, ERE 101339.

Nachitshevan: base of Bitshenek pass, 19. 07. 1968, L. KUZMINA, L. TRUCHALEVA, LE.

Azerbaijan: Boz-dagh mountains, Pir-Seid canyon, 26. 05. 1911, A. SCHELKOVNIKOV, JU. WORONOW, LE.

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