

A Revision of the Scrophulariaceae in Korea

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韓國產 玄蔘科植物의 學名訂正

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摘 要

日本 東京大學, 京都大學 및 自然史博物館 그리고 韓國 서울大學校 農科大學 附屬 冠岳樹木園에 所藏된 植物標本을 바탕으로 지금까지 玄蔘科植物에 대하여 分類學的으로 研究한 結果를 다음과 같이 要約 하였다.

개종용속(Lathraea)은 그 外觀上의 類似性으로 인하여 列當科로 취급한 傾向이 많았으나 本屬植物은 2선 자방으로 되었고 各室에 2개의 胚珠가 들어있음으로 玄蔘科에 넣는 것이 타당하다고 지적하였다.

꼬리풀속(Veronica)을 Veronica, Pseudolysimachion 및 Veronicastrum등 3속으로 分離하는 나선형을 재강조 하였고 외물속(Vandelia)은 발복외물속(Lindernia)으로 통합시켰고, 변종이상의 분류군에 대한 檢索表를 만들어서 識別의 據點을 提示함과 동시에 分類群에 대한 文獻의 所在을 밝혔다. 分類學的인 所見은 全的으로 山崎가 研究한 結果에 依하였다.

Centranthera R. Br.

Centranthera cochinchinensis(Lour.) Merr. subsp. *lutea*(Hara) Yamazaki in Journ. Jap. Bot. 57:213(1982).

Razumowia cochinchinensis(Lour.) Merr. var. *luteus* Hara in Journ. Jap. Bot. 17:397(1941).

Centranthera cochinchinensis(Lour.) Merr. var. *lutea*(Hara) Hara, Enum. Sperm. Jap. 1: 246(1948).

Centranthera cochinchinensis sensu T. Lee, Bull. Kwanak Arb. 1:88(1976).

Centranthera chevalieri Bonati in Bull. Soc. Bot. France 24:1099(1924), Yamazaki in Journ. Jap. Bot. 55:10(1980).

Distr. C. and W. Honshu, Shikoku, Kyushu, Ryukyu, S. Korea, C. and S. China, N. Indochina.

Specimens*. 全南. 德津(I. Hurusawa, Aug. 1943, TI). 全北. 南原(T. Mori, Aug. 1912, TI). 慶北 · 星州(T. Lee, no. 10303, HAS). 珍島(T. Lee, Sept. 1964, HAS)

* The specimens referred to this paper are preserved in the following herbaria; Dept. Bot. Fac. Sci. Univ. Tokyo (TI). Dept. Bot. Fac. Sci. Univ. Kyoto (KYO), Nat. Sci. Museum Tokyo (TNS) and Coll. Agric. Seoul Nat. Univ. Korea(HAS).

(1) Former professor of botany, Tokyo University, Japan.

(2) Director of Kwanak Arboretum, S.N.U.

***Deinostema* Yamazaki**

1. Leaves ovate to ovate-orbicular, 5-8 mm long, 2-6 mm wide, obtuse to acute at apex.
.....*Deinostema adenocaulum*

1. Leaves linear or subulate, 4-10 mm long, 0.3-1.5 mm wide, tapered-acuminate at apex
.....*Deinostema violaceum*

Deinostema adenocaulum (Maxim.) Yamazaki in Journ. Jap. Bot. 28: 132, f.4.1 (1953). Lee, T.B., Ill. Fl. Korea: 673, t. 2690 (1980).

Gratiola adenocaula Maxim., in Bull. Acad. Sci. St. -Petersb. 32: 513(1888). Nakai, Fl. Sylv. Koreana 14: 65(1923).

Distr. Honshu, Shikoku, Kyushu and S. Korea.

Specimens. 濟州道 (Taquet, no. 1179, TI, KYO).

Deinostema violaceum (Maxim.) Yamazaki in Journ. Jap. Bot. 28: 132, f.4, 2-8 (1953). Lee, T. B., Ill. Fl. Korea: 673. t. 2689 (1980).

Gratiola violacea Maxim. in Bull. Acad. Sci. St. -Petersb. 20: 440 (1875). Komarov, Fl. Mansh. 3:422, Pl. V, 5-8 (1907). Nakai, Fl. Koreana 2:120 (1911). Chung, T. H., Korean Fl., 2:575, t. 1150 (1957).

Distr. Hokkaido, Honshu, Shikoku, Korea & S. Manchuria.

Specimens. 濟州道 (Faurie, no. 313, 1163, KYO). 慶南. 晋州 (T. Mori, no. 407, TI). 京畿. 水原(H. Uyeki, no. 454, TI. T. Lee, Sept. 1963, HAS). 慶南. 台報(T. Uchiyama, Oct. 1902, TI).

***Dopatrium* Buch.-Ham.**

Dopatrium junceum(Roxb.) Buch.-Ham. ex Benth., Scroph. Ind.: 30 (1835). Nakai, Fl. Koreana 2: 119 (1911). Chung, T. H., Korean Fl. 2:573, t. 1145 (1957). Lee, T. B., Ill. Fl. Korea: 673, t. 2691 (1980).

Distr. Widespread over the temperate to tropical regions of Asia and Australia.

Specimens. 濟州道 (Taquet, no. 1482, TI). 慶南. 德山 (T. Mori, no. 303, TI). 京畿. 水原(H. Uyeki, no. 452, TI). 光陵(T. Lee, no. 3976, 1964, HAS)

***Euphrasia* L.**

Wettstein, Monogr. *Euphrasia*: 1-309, Pl. 14 (1896). Pugsley in Journ. Linn. Soc. Bot. 48: 467-544 (1930); in Journ. Bot. 74: 273-288 (1936). Du Rietz in Svensk Bot. Tidsk. 25: 500-539 (1931); 42: 112-115, 359-361 (1948). Yamazaki in Acta Phytotax. Geobot. 20: 158-163; 21: 164-172 (1963).

1. Calyx tubular-campanulate, much shorter than capsule; corolla 4-5 mm long; capsule elliptic-oblong.....*Euphrasia coreanalpina*

1. Calyx tubular or tubular-campanulate, as long as or a little shorter than capsule;

corolla 6-10 mm long; capsule oblong or narrowly oblong.

2. Stems and leaves pubescent, eglandular.

3. Calyx tubular-campanulate; capsule oblong; upper leaves with acute teeth; corolla 6-7 mm long.....*Euphrasia retrotricha*

3. Calyx tubular; capsule narrowly oblong; upper leaves with aristate teeth.

4. Corolla 8-10 mm long; lower and middle leaves with acute teeth.....*Euphrasia pectinata*

4. Corolla 7 mm long; leaves with elongate aristate teeth.....*Euphrasia coreana*

2. Stems and leaves glandular; corolla 7-8 mm long; capsule narrowly oblong; lower and middle leaves with acute teeth, upper ones aristate.....*Euphrasia hirtella*

Euphrasia coreana W. Becker in Fedde Rep. Nov. Veget. 17:126 (1921). Yamazaki in Acta Phytotax. Geobot. 21:168 (1963). Lee, T. B., Ill. Fl. Korea: 682, t. 2725 (1980). *Euphrasia multifolia* auct. (non Wettst.): Nakai, Veget. Quelpaert: 80 (1914), ut. *multicaulis*.

Distr. Korea. Jeju-do.

Specimens. Jeju-do (Taquet, no. 1195, Isotype in TI. Faurie, no. 261, TI. Taquet, no. 5846, TI. T. Lee et M. Cho, Oct. 1966, HAS).

Euphrasia coreanalpina Nakai ex Y. Kimura in Journ. Jap. Bot. 17: 530, 538, f.I.d. II, 6 (1941). Chung, T. H., Korean Fl. 2: 573, t. 1146 (1957). Yamazaki in Acta Phytotax. Geobot. 21: 166 (1963). Lee, T. B., Ill. Fl. Korea: 682, t. 2726 (1980).

Euphrasia mucronulata Nakai ex Y. Kimura in Journ. Jap. Bot. 17: 530, 538, f.I.e. II, 7 (1941). Chung, T. H., Korean Fl. 2: 574, t. 1148 (1957). Lee, T. B., Ill. Fl. Korea: 683, t. 2729 (1980).

Distr. N. Korea.

Specimens. 咸北. 頭流山(J. Ohwi, Jul. 1930, KYO). 咸南. 雲仙嶺(T. Nakai, no. 15681, Type in TI). 漢岱里 (T. Nakai, no. 15683, TI). 遮日峯 (T. Nakai, no. 15680, TI). 平北. 周峯頂(M. Furumi, no. 501, TI).

Euphrasia hirtella Jordan var. ***paupera*** Yamazaki in Act. Phytotax. Geobot. 21: 167 (1963).

Euphrasia tatarica auct. (non Fisch.): Nakai, Fl. Mt. Paig-tu-san: 69 (1918).

Euphrasia hirtella Jordan sensu Y. Kimura in Journ. Jap. Bot. 17: 529, 537, f. I.c. II, 4 (1941). Lee, T. B., Ill. Fl. Korea: 682, t. 2727 (1980).

Distr. N. Korea.

Specimens. 咸北. 白頭山. 神武城 (M. Furumi, no. 375. Type in TI). 雪嶺 (T. Nakai, no. 7540, TI). 渡正山 (G. Koidzumi, Aug. 1933, KYO). 冠帽峯 (G. Koidzumi, Aug.

1934, KYO). 威南. 胞胎山~虛項峯 (T. Nakai, no. 3333, 3338. TI).

Euphrasia pectinata Ten. var. ***simplex*** (Freyn) Hong in Fl. Reip. Pop. Sinic. 67(2): 375 (1979).

Euphrasia maximowiczii Wettst. in Monogr. Gatt. Euphr.: 8 (1896), *pro parte, quoad specim.* Manchuria et Amur., excl. Japan. Komarov, Fl. Mansh. 3: 442 (1907). Nakai, Fl. Koreana 2: 124 (1911). Chung, T. H., Korean Fl. 2: 682, t. 2728 (1957). Lee, T.B., Ill. Fl. Korea, 682, t. 2728 (1980).

Euphrasia tatarica Fisch. var. ***simplex*** (Freyn) Yamazaki in Act. Phytotax. Geobot. 21: 168 (1963).

Distr. Manchuria, Amur, Ussuri and Korea.

Specimens. 威北. 城津 (Ikuhashi, Sept. 1903, TI). 朱乙 (T. Nakai, no. 7541, TI). 威南. 漢岱里 (T. Nakai, no. 15682, TI). 遮日峯 (T. Nakai, no. 15678, TI). 平北. 楚山 (H. Imai, no. 55, TI). 江原. 洗浦~蘭谷 (T. Nakai, Sept. 1916, TI). 雪岳山 (T. Lee & M. Cho, no. 8629 HAS). 慶北. 清道 (T. Uchiyama, Oct. 1902, TI). 星州 (T. Lee & M. Cho, no. 8901 HAS). 慶南. 東萊郡. 樂明洞 (K. Yanagi, no. 29, TI). 全南. 智異山, 老姑壇 (T. Yamazaki, no. 3312, TI. T. Lee & M. Cho, no. 8752, HAS). 德裕山 (T. Lee & M. Cho, no. 2887, HAS).

Euphrasia retrotricha Nakai ex Chung, T. H., Korean Fl., 2: 575, t. 1149 (1957), nom. illeg. Yamazaki in Acta Phytotax. Geobot. 21: 166 (1963). Lee, T. B., Ill. Fl. Korea, 683, t. 2730 (1980).

Distr. N, Korea.

Specimens. 威南. 遮日峯 (T. Nakai, no. 15676. Type in TI).

***Gratiola* L.**

Gratiola japonica Miq. in Ann. Mus. Lugd.-Bat. 2: 117 (1865). Komarov, Fl. Mansh. 3: 421, f. 5, 12-14 (1907). Nakai, Fl. Sylv. Koreana 14: 65 (1923). Lee, T. B., Ill. Fl. Korea: 672, t. 2685 (1980).

Distr. C. and N. China, Manchuria, Amur, Ussuri, Korea and Japan.

Specimens. 京畿. 水原 (T.B. Lee & M.Y. Cho, no. 8204, TI. HAS).

***Lathraea* L.**

This genus is frequently treated as a member of the Orobanchaceae by the similarity of appearance. The ovary of this genus consists of two locules with 2 ovules in each. This character indicates that this genus should not be belonged to Orobanchaceae but Scrophulariaceae.

Lathraea japonica Miq. in Ann. Mus. Lugd.-Bat. 3: 205 (1876). Nakai, Rep. Veg. Isl. Ullungdo or Dagelet Isl., 25 (1919). Chung, T. H., Korean Fl. 2: 606, t. 1212

(1957). Lee, T. B., Ill. Fl. Korea: 688, t. 2749 (1980).

Distr. C. and W. Honshu, Shikoku, Kyushu and Korea (Isl. Ullung).

Specimens. Isl. Ullung (T. Nakai, May 1917, TI).

Limnophila R. Br.

Philcox in Kew Bull. 24: 101-170 (1970).

1. Herbs aquatic sometimes terrestrial, non aromatic; stems floating in water; leaves verticillate, pinnately lobed.

2. Flowers sessile; calyx pubescent.....*Limnophila sessiliflora*

2. Flowers shortly pedicellate; calyx glabrous.*Limnophila indica*

1. Herbs terrestrial, aromatic; leaves opposite rarely 3-verticillate, oblong to lanceolate, obtusely serrate.....*Limnophila chinensis*

Limnophila chinensis (Osbeck) Merr. subsp. ***aromatica*** (Lam.) Yamazaki in Journ. Jap. Bot. 53: 313 (1978).

Ambulia aromatica Lam., Encycl. Méth. 1: 128 (1783).

Limnophila aromatica (Lam.) Merr., Interpr. Rumph. Herb. Amboin.: 466 (1917). Lee, T. B., Ill. Fl. Korea: 671, t. 2683 (1980).

Distr. Widespread over the temperate to tropical regions of E. Asia, Australia, New Guinea and Pacific islands.

Specimens. Jeju-do (Faurie, no. 1179. Taquet, no. 1181. TI).

Limnophila indica (L.) Druce, Rep. Bot. Exch. Club. Brit. Isl. 3: 420 (1914), not seen. Merrill in Philipp. Journ. Sci. Bot. 9: 140 (1914). Philcox in Kew Bull. 24: 115 (1969). Lee, T. B., Ill. Fl. Korea: 691, t. 2682 (1980).

Hottonia indica L., Sp. Pl. ed. 2: 208 (1762).

Ambulia trichophylla Komarov in Acta Hort. Petrop. 18: 429 (1901), Nakai, Fl. Koreana 2: 121 (1911).

Limnophila trichophylla (Kom.) Komarov, Fl. Mansh. 3: 421, f. 5, 1-4 (1907).

Distr. Widespread over the temperate to tropical regions of Africa, Asia, Australia, New Guinea and Micronesia.

Specimens. 慶南. 勿禁 (T. Uchiyama, Oct. 1902, TI).

Limnophila sessiliflora (Vahl) Bl., Bijdr. Fl. Nederl. Ind.: 749 (1826). Nakai, Bull. Nat. Sci. Mus. 31: 101 (1952). Lee, T. B., Ill. Fl. Korea: 671, t. 2681 (1980).

Hottonia sessiliflora Vahl, Symb. Bot. 2: 36 (1791).

Ambulia sessiliflora (Vahl) Baill. ex Wettst. in Engl. et Prantl. Nat. Pflanzenfam. IV 3, 3B: 73 (1891). Nakai, Fl. Koreana 2: 120 (1911).

Ambulia trichophylla auct. (non Kom.) Chung, T. H., Korean Fl.: 572, t. 1143 (1957).

Distr. Temperate to tropical regions of E. Asia.

Specimens. 咸南. 元山 (T.Nakai, June 1909, TI). 江原. 通川 (T.Nakai, Aug. 1916, TI). 京畿. 高陽 (T. Uchiyama, Sept. 1902, TI), 水原 (H. Uyeki, Aug. 1912, TI. T. Lee, 1961, HAS). 慶南. 勿禁 (T. Uchiyama, Oct. 1902, TI). 全南. 智異山 (T. Mori, Aug. 1912, TI). 濟州道 (Taquet, no. 4476, 6266, TI). 喬洞島 (T. Lee, Sept. 1975, HAS)

***Limosella* L.**

***Limosella aquatica* L.**, Sp. Pl.: 631 (1753). Komarov, Fl. Mansh. 3: 423 (1907). Nakai, Fl. Sylv. Koreana 14: 65 (1923). Lee, T.B., Ill. Fl. Korea: 670, t. 2678 (1980).

Distr. A cosmopolitan plant in northern hemisphere.

Specimens. 서울 (R. G. Mills, June 1914, TI). 牧洞 (T. Lee & M. Cho, HAS)

***Linaria* Mill.**

1. Ascendent herbs growing in sandy beaches; leaves elliptic, obtuse at apex.....*Linaria japonica*
1. Erect herbs growing in sunny herbage of waste lands; leaves linear to linear-lanceolate, acuminate at apex.*Linaria vulgaris*

***Linaria japonica* Miq.** in Ann. Mus. Lugd.- Bat. 2: 115 (1865). Komarov, Fl. Mansh. 3: 412 (1907). Nakai, Fl. Koreana 2: 117 (1911). Chung, T. H., Korean Fl. 2: 576, t. 1151 (1957). Lee, T. B., Ill. Fl. Korea: 668, t. 2669 (1980).

Linaria japonica Miq. var. *geminiflora* (Fr.Schm.) Nakai, Fl. Koreana 2: 117 (1911).

Distr. Ussuri, Sachalin, Hokkaido, Kuriles, Shikoku and Korea.

Specimens. 咸北. 城津 (T.Nakai, June 1909, TI). 漁大津 (T.Nakai, Aug. 1918, TI). 元山 (T.Nakai June 1909, TI). 江原. 通川 (T.Nakai, Aug. 1916, TI). 江陵 (T. Lee & M. Cho, no. 9090, HAS). 長箭 (T. Nakai, July 1916, TI). 慶南. 崩山~江東 (K.Yanagi, Sept. 1930, TI).

***Linaria vulgaris* Hill,** Brit. Herb.: 108 (1756). Pennell in Acad. Nat. Sci. Philad. Monogr. 1: 300 (1936).

Anthirrhinum linaria L., Sp. Pl.: 616 (1753).

***Linaria vulgaris* Mill.,** Gard. Dict. ed. 8: no.1 (1768). Palibin, Consp. Fl. Korea 2: 20(1900). Komarov, Fl. Mansh. 3: 410 (1907). Nakai, Fl. Koreana 2: 117 (1911). Lee, T. B., Ill. Fl. Korea: 668, t. 2670 (1980).

Distr. Europe to Siberia, N. China, Manchuria, Korea, Ussuri, Sachalin and Hokkaido.

Specimens. 平北. 宜川 (T.Nakai, Sept. 1915, TI). 義州 (T.Nakai, Sept. 1915, TI). 서울 (R. G. Mills, Aug. 1909, TI).

***Lindernia* Allioni**

1. Leaves palmately 3-5-nerved, entire; seeds smooth, never scrobiculate.....*Lindernia pro-*

cumbens

1. Leaves pinnately nerved, serrate; seeds scrobiculate.
2. Calyx deeply 5-lobed; capsule cylindric, much longer than persistent calyx.....

Lindernia micrantha

2. Calyx shortly 5-lobed; capsule oblong to subglobose, about as long as persistent calyx.....*Lindernia crustacea*

Lindernia crustacea (L.) F. Muell, Syst. Cens. Austral. Pl. 1: 97 (1882). Philcox in Kew Bull. 22: 17, f. 1, 9-12 (1967). Yamazaki in Journ. Fac. Sci. Univ. Tokyo Sect. III, 13: 37 (1981).

Capraria crustacea L., Mant. Pl. 1: 87 (1767).

Torenia crustacea (L.) Cham. et Schl. in Linnaea 2: 570 (1827). Chung, T. H., Korean Fl. 2: 593, t. 1186 (1957).

Vandellia crustacea (L.) Benth., Scroph. Ind.: 25 (1835). Yamazaki in Journ. Jap. Bot. 30: 178 (1955). Lee, T. B., Ill. Fl. Korea: 674, t. 2695 (1980).

Distr. Widespread over the temperate to tropical regions of Asia, Africa and America.

Specimens. 全南. 徳津 (I. Hurusawa, Aug. 1943, TI). 濟州道 (Faurie, Oct. 1906, TI. Taquet, no. 6038, 6042, TI).

Lindernia micrantha D. Don, Prodr. Fl. Nepal: 85 (1825). Yamazaki in Journ. Fac. Sci. Univ. Tokyo Sect. III, 13: 31 (1981).

Vandellia angustifolia Benth., Scroph. Ind.: 37 (1835). Yamazaki in Journ. Jap. Bot. 30: 175 (1955). Lee, T. B., Ill. Fl. Korea: 674, t. 2694 (1980).

Lindernia angustifolia (Benth.) Wettst. in Engl. et Prantl, Nat. Pflanzenfam. IV, 3B: 79 (1891). Nakai, Fl. Sylv. Korea 14: 65 (1923). Yamazaki in Journ. Jap. Bot. 52: 255 (1977).

Vandellia serrata auct. (non Thunb.): Nakai in Bull. Nat. Sci. Mus. 31: 103 (1952). Chung, T. H., Korean Fl. 2: 594, t. 1187 (1957).

Distr. Widespread over the warm-temperate to tropical regions from India, Malaysia to Japan, eastwards in New Guinea.

Specimens. 京畿. 水原 (H. Uyeki, no. 453, TI. T. Lee, no. 10072, HAS). 濟州道 (Taquet, no. 6040, TI).

Lindernia procumbens (Krock.) Borbás, Békésm Fl., 80 (1881), not seen. Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 13: 3, f. 1, a-d (1981).

Lindernia pyxidaria Allioni, Fl. Pedem. 1: 57 (1785), not seen, non L. 1771. Nakai, Fl. Koreana 2: 120 (1911). Komarov, Fl. Mansh. 3: 423 (1907). Chung, T. H., Korean Fl. 2: 576, t. 1152 (1957).

Anagalloides procumbens Krock., Fl. Siles. 2: 398, t. 26 (1790).

Lindernia procumbens (Krock.) Philcox in Taxon 14: 30 (1965). Lee, T. B., Ill. Fl. Korea: 673, t. 2692 (1980).

Distr. Widespread over the warm-temperate to tropical regions from E. Europe to E. Asia.
Specimens. 仁川 (T. Uchiyama, Sept. 1902, TI). 水原 (H. Uyeki, no. 308, 329, TI). T. Lee, Park & Cho, no. 2900, 1964, HAS). 光陵 (T. Lee et al, no. 3956, HAS). 慶南. 東萊郡. 金山里 (T. Uchiyama, Oct. 1902, TI). 濟州道 (Taquet, no. 6039, TI).

Mazus Lour.

1. Annual herbs, without stolons.

2. Stems erect; leaves mostly cauline; corolla 18-30 mm long.....*Mazus stachydifolius*

2. Stems ascendent; leaves mostly radical; corolla 7-11 mm long.....*Mazus pumilus*

1. Perennial herbs, with stolons; corolla 15-20 mm long.....*Mazus miquelii*

Mazus miquelii Makino in Bot. Mag. Tokyo 16: 162 (1902). Lee, T. B., Ill. Fl. Korea: 671, t. 2684 (1980).

Distr. Honshu, Shikoku, Kyushu, Korea, C. and S. China.

Specimens. 京畿. 水原 (H. Uyeki, April 1912, TI). T. B. Lee, April 1965, TI).

Mazus pumilus (Burm.f.) van Steenis in Nova Guinea, n.s. 9: 31 (1958).

Lobelia pumilia Burm.f., Fl. Ind.: 186, f. 60, 3 (1768).

Lindernia japonica Thunb., Fl. Jap.: 253 (1781).

Mazus japonicus (Thunb.) O. Kuntze, Rev. Gen. Pl. 2: 462 (1891). Nakai, Fl. Koreana 2: 119 (1911); Fl. Sylv. Koreana 14: 66 (1923). Chung, T. H., Korean Fl. 2: 577, t. 1153 (1957). Lee, T. B., Ill. Fl. Korea: 672, t. 2685 (1980).

Mazus rugosus Lour., Fl. Cochinch.: 385 (1790). Palibin, Consp. Fl. Koreae 2: 20 (1900). Komarov, Fl. Mansh. 3: 419 (1907).

Distr. Widespread in E. and S. E. Asia.

Specimens. 咸北. 鏡城 (T. Nakai, no. 7436, TI). 咸南. 元山 (T. Nakai, June 1909, TI). 京畿. 水原 (Lee, T. B., May 1965, TI). 慶南. 馬山 (T. Mori, no. 304, TI). 全南. 巨文島 (T. Nakai, no. 12143, TI). 濟州道 (Taquet, no. 5872. T. Nakai, no. 1427, TI).

Mazus stachydifolius (Turcz.) Maxim. in Bull. Acad. Sci. St.- Pétersb. 20: 437 (1885). Komarov, Fl. Mansh. 3: 418 (1907). Nakai, Fl. Sylv. Koreana 14: 66 (1923). Chung, T. H., Korean Fl. 2: 577, t. 1154 (1957). Lee, T. B., Ill. Fl. Korea: 672, t. 2686 (1980).

Tittomania stachydifolia Turcz. in Bull. Soc. Nat. Mosc. 7: 156 (1837).

Distr. N. to S. China, Mongolia, Manchuria and Korea.

Specimens. 平南. 平壤 (H. Imai, May 1911, TI). 黃海. 九味浦 (R. G. Mills, no. 4276,

TI).

Melampyrum L.

Beauverd, Monogr. Gen. *Melampyrum*. in Mém. Soc. Phys. et Hist. Nat. Genève 36: 293-657 (1916). Soò in Journ. Bot. 65: 138-145 (1927); in Fedde Rep. Spec. Nov. Veget. 24: 127-193 (1927). Yamazaki in Journ. Jap. Bot. 29: 97-109 (1954).

1. Bracts green; leaves lanceolate-oblong to ovate, shortly acute at apex.....*Melampyrum roseum*

2. Inflorescences elongate; bracts with 1-5 paired bristle-like teeth; calyx glabrous or sparsely ciliate.....var. *roseum*

2. Inflorescences generally compact sometimes elongate; bracts with many paired filiform teeth.

3. Calyx glabrous or sparsely ciliate.....var. *ovalifolium*

3. Calyx densely ciliate.....var. *japonicum*

1. Bracts rose-purple; leaves linear-lanceolate to broadly lanceolate, attenuate-acuminate at apex.....*Melampyrum setaceum*

4. Leaves linear-lanceolate to lanceolate, 1.5~8 cm long, 0.2~1 cm wide; bracts lanceolate.....var. *setaceum*

1. Leaves broadly lanceolate, 4-12 cm long, 1-3.5 cm wide; bracts ovate.....var. *nakaiianum*

Melampyrum roseum Maxim., Prim. Fl. Amur.: 210 (1859). Palibin, Consp. Fl. Koreae 2: 22 (1900). Komarov, Fl. Mansh. 3: 438 (1907). Nakai in Bot. Mag. Tokyo 23: 7 (1909); Fl. Koreana 2: 122 (1911). Yamazaki in Journ. Jap. Bot. 29: 104 (1954). Chung, T. H., Korean Fl. 2: 579, t. 1158 (1957). Lee, T. B., Ill. Fl. Korea: 680, t. 2720 (1980).

var. ***roseum***

Distr. C. and N. China, Manchuria, Korea, Kyushu, W. and C. Honshu.

Specimens. 威北. 三池淵 (M. Furumi, no. 374, TI). 威南. 元山 (T. Nakai, no. 4016, TI). 平南. 大興里 (T. Nakai, no. 3467, TI). 京畿. 光陵 (T. Yamazaki, Aug. 1982, TI). 冠岳山 (T. Lee, Sept. 1959, HAS). 大阜島 (T. Lee July 1963, HAS). 江原. 洗浦-蘭谷 (T. Nakai, Sept. 1916, TI). 黃海. 首陽山 (I. Hurusawa, Aug. 1943, TI).

var. ***ovalifolium*** Nakai ex Beauverd, Monogr. Gen. *Melampyrum*: 548 (1916). Yamazaki in Journ. Jap. Bot. 29: 105 (1954). Lee, T. B., Ill. Fl. Korea: 681, t. 2721 (1980).

Melampyrum ovalifolium Nakai in Bot. Mag. Tokyo 23: 7 (1909); Fl. Koreana 2: 122 (1911). Chung, T. H., Korean Fl. 2: 579, t. 1157 (1957).

Melampyrum roseum Maxim. subsp. *aristatum* Beauv. var. *aristatum* Beauv., Monogr. Gen. *Melampyrum*: 542, f. 9, 2 (1916).

Melampyrum aristatum (Beauv.) Soò in Journ. Bot. 65: 143 (1927).

Distr. Korea and Kyushu (Isls. Iki and Tsushima).

Specimens. 咸北. 茂峯-農事洞 (M. Furumi, no. 413, TI); 朱乙 (T. Nakai, no. 7443, TI). 江原. 金剛山 (T. Uchiyama, Aug. 1902, TI). 慶南. 三峯山 (S. Okamoto, no. 75, TI). 全北. 完州郡 上關面 (I. Hurusawa, Aug. 1943, TI). 全南. 智異山 老姑壇 (T. Yamazaki, Aug. 1982, TI). 都草島 (T. Lee, July 1979, HAS). 濟州道 (Taquet, no. 5833, TI).
var. *ovalifolium* Nakai f. *albiflorum* Nakai ex T. Lee in Bull. Kwanak Arb. no. 1, 78 (1976)

Melampyrum roseum Maxim. f. *albiflorum* Nakai in Bot. Mag. Tokyo 31: 108 (1917).

Specimens. Jeju-do (Taquet, no. 1171, type in TI).

var. *japonicum* Fr. et Sav., Enum. Pl. Jap. 2: 460 (1879). Nakai in Bot. Mag. Tokyo 21: (333) (1907); Fl. Koreana 2: 122 (1911). Yamazaki in Journ. Jap. Bot. 29: 105 (1954).

Melampyrum ciliare Miq. in Ann. Mus. Bot. Lugd.-Bat. 2: 122 (1865).

Distr. S. Korea, Kyushu, Shikoku, Honshu and Hokkaido.

Specimens. 慶南. 佛國寺 (H. Yoshinaga, Aug. 1940, TI). 慶南. 釜山 (T. Uchiyama, Oct. 1902, TI). 全南. 大黑山島 (T. Ishidoya, no. 3702, TI). 濟州道 (T. Mori, no. 102, TI). 仙遊島 (T. Lee, July 1980, HAS)

There are many intermediate forms between varieties. so it is difficult to distinguish clearly one another.

Melampyrum setaceum (Maxim.) Nakai in Bot. Mag. Tokyo 23: 9 (1909); Fl. Koreana 2: 122 (1911). Yamazaki in Journ. Jap. Bot. 29: 105 (1954). Chung, T. H., Korean Fl. 2: 580, t. 1159 (1957). Lee, T. B., Ill. Fl. Korea: 681, t. 2723 (1980).

Melampyrum roseum Maxim. var. *setaceum* Maxim. ex Palibin, Consp. Fl. Koreae 2: 22 (1900).

Melampyrum setaceum Nakai var. *latifolium* Nakai in Bot. Mag. Tokyo 23: 9 (1909). Chung, T. H., Korean Fl. 2: 580, t. 1160 (1957).

Melampyrum roseum Maxim. var. *alpinum* Kitamura in Acta Phytotax. Geobot. 10: 6 (1941).

Melampyrum kawasakianum Kitamura, l.c.: 13 (1941).

Distr. Manchuria, Korea, Kyushu, Shikoku and W. Honshu.

Specimens. 咸北. 鏡城郡. 七寶山 (T. Nakai, no. 7445, TI). 咸北. 元山 (T. Nakai, no. 4017, TI). 江原. 金剛山. 新金剛 (T. Nakai, no. 5834, TI). 雪岳山 (T. Lee & M. Cho, no. 9088, HAS). 서울. 北漢山 (T. Uchiyama, Oct. 1900, TI); 南山 (T. Uchiyama, Jul. 1902, TI). 慶北. 佛國寺 (H. Yoshinaga, Aug. 1940, TI). 全北. 金山寺 (T. Uchi-

yama, Jul. 1902, TI). 白雲山(T. Lee, Sept. 1957, HAS)

var. **nakaianum** (Tuyama) Yamazaki in Journ. Jap. Bot. 29: 9 (1954). Lee, T. B., Ill. Fl. Korea: 681, t. 2724 (1980).

Melampyrum latifolium Nakai in Bot. Mag. Tokyo 31: 107 (1918), non Muehlenberg (1813).

Melampyrum nakaianum Tuyama in Journ. Jap. Bot. 17: 85 (1941).

Distr. C. Korea.

Specimens. 金剛山. 彌勒峯 (T. Nakai, no. 5840, Type in TI). 金剛山. 群仙峽(T. Nakai, no. 5839, TI). 金剛山. 昆盧峯 (T. Nakai, no. 5838, TI). 五臺山(玄基岳, no. 234, TI). 點岫山(T. Lee, Aug. 1979, HAS). 俗離山 (T. Lee & M. Cho, Sept. 1966, HAS).

Microcarpaea R. Br.

Microcarpaea minima (Koenig) Merrill in Philip. Journ. Sci. Bot. 7: 100 (1912). Lee, T.B., Ill. Fl. Korea: 672, t. 2687 (1980).

Paederota minima Koenig in Retzius Observ. 5: 10 (1789).

Microcarpaea muscosa R. Br., Prod. Fl. Nov. Holl. 1: 436 (1810). Nakai, Fl. Koreana 2: 121 (1911).

Distr. India, Nepal, Burma, Indochina, Malaysia, Philippines, N. Australia, S. and C. China, Korea and Japan.

Specimens. 慶南. 金山里 (T. Uchiyama, Oct. 1902, TI). 濟州道 (Taquet, no. 3079, TI).

Mimulus L.

1. Pedicels 15-22 mm long; flowers longer than the leaves; calyx truncate at apex with setaceous or shortly triangular 5-teeth; corolla 10-12 mm long.....*Mimulus nepalensis*

1. Pedicels 4-7 mm long; flowers as long as or shorter than the leaves; calyx 5-lobed at apex, lobes triangular ovate; corolla 7-8 mm long.....*Mimulus tenellus*

Mimulus nepalensis Benth., Scroph. Ind.: 29 (1835). Yamazaki in Journ. Jap. Bot. 37:267, f. 3-4 (1962); 57:213 (1982).

Mimulus nepalensis Benth. var. *japonica* Miq. in Ann. Mus. Bot. Lugd.-Bat. 2:116 (1865), ut forma. Yamazaki in Journ. Jap. Bot. 37: 267, f. 3-2,5 (1962). Lee, T. B., Ill. Fl. Korea: 670, t. 2679 (1980).

Torenia inflata Miq. in Ann. Mus. Bot. Lugd.-Bat. 3:192 (1867).

Mimulus inflatus (Miq.) Nakai in Bot. Mag. Tokyo 33:209 (1919). Chung, T. H., Korean Fl. 2: 581 t. 1161 (1957).

Mimulus tenellus Bunge var. *japonicus* (Miq.) Hand.-Mazz., Symb. Sin. 7: 833(1936).

Mimulus tenellus Bunge subsp. *nepalensis* (Benth.) Hong in Icon. Corm. Sinic. 4:13

(1975).

Mimulus tenellus Bunge var. *nepalensis* (Benth.) Tsoong in Fl. Reip. Popul. Sin. 67(2):171 (1979).

Distr. Himalayas (Nepal to Bhutan), N. Vietnam, W. and C. China, Formosa, Korea and Japan.

Specimens. 京幾. 光陵 (T. Mori, July 1912, TI). 江原. 加里旺山 (S. Hohozawa, July, 1939, KYO). 雪岳山 (T. Lee, no. 8547, HAS). 慶南. 河東 (T. Nakai, July 1913, TI); 德裕山 (S. Hohozawa, Aug. 1941, KYO). 內藏山 (T. Lee, Aug. 1975, HAS)

Mimulus tenellus Bunge, Enum. Pl. China bor.: 49(1831). Komarov, Fl. Mansh. 3: 417, f. 5, 9-11 (1907). Nakai, Fl. Koreana 2:121 (1911). Yamazaki in Journ. Jap. Bot. 37:267, f. 3, 3 (1962). Lee, T. B., Ill. Fl. Korea: 670, t. 2680 (1980).

Distr. N. China, S. Manchuria and Korea.

Specimens. 平南. 价川 (H. Imai, July 1912, TI). 京幾. 開城-錦川 (T. Uchiyama, Sept. 1902, TI). 金剛山 (T. Nakai, Aug. 1916, TI).

***Omphalotrix* Maxim.**

Maxim. Prim. Fl. Amur., 208(1859)

Omphalotrix longipes Maxim., Prim. Fl. Amur.: 298, t. 10 (1859). Komarov, Fl. Mansh. 3:445 (1907). Nakai, Fl. Sylv. Koreana 14:67 (1923). Chung, T. H., Korean Fl. 2: 582, t. 1163 (1957).

Distr. Mongolia, Manchuria, Amur and N. Korea.

Specimens. 咸北. 白頭山 (T. Mori, no. 105, TI). 咸南. 長津郡 西關面 (全錫奎 no. 33, TI); 元豐-道宇 (B.S. Toh & C.S. Hack, no. 88, 117, TI).

***Pedicularis* L.**

Maximowicz in Bull. Acad. Imp. Sci. St.-Petersb. 24:51-89 (1877), 32:515-619 (1888). Prain in Ann. Roy. Bot. Gard. Calcutta 3:1-196 (1891). Li in Proc. Acad. Nat. Sci. Philad. 100:205-378 (1948), 101:1-214 (1949). Tsoong in Fl. Reip. Pop. Sinic. 68:1-449 (1963).

1. Leaves 4, verticillate; flowers verticillate in terminal spikes.
 2. Leaves lanceolate to linear-lanceolate, acuminate at apex; corolla ca. 13 mm long; galea about 1/2 times as long as the lower-lip, rounded at apex.....*Pedicularis spicata*
 2. Leaves oblong to oblong-lanceolate, obtuse or subacute at apex; corolla 14~16 mm long; galea truncate at apex.
 3. Stems with sparse curved hairs; galea ca. 5mm long, about 2/3 times as long as the lower-lip, ca. 7 mm long, 8 mm wide.....*Pedicularis verticillata*

3. Stems with dense spreading hairs; galea ca. 4 mm long, about 1/2 times as long as the lower-lip, ca. 7 mm long 11 mm wide.....*Pedicularis hallaisanensis*
1. Leaves alternate, or opposite at the lower part; flowers alternate, axillary and solitary or in terminal racemes or spikes.
 4. Galea not or slightly beaked, obtuse or truncate at apex.
 5. Corolla 35~50 mm long; galea with villose or pilose hairs on the lower margins.
 6. Stems slender, short, 7~8 cm long, with prostrate rhizomes; flowers axillary, with long pedicels.....*Pedicularis ishidoyana*
 6. Stems stout, erect, 20~100 cm long; flowers many, in terminal racemes or panicles, with short pedicels.
 7. Leaves mostly cauline; bracts lanceolate, pinnately lobed; galea densely villose on the lower margins, acute at apex.
 8. Stems densely lanate; leaves pinnately lobed, 3~6 cm long, 0.8~1.5 cm wide, sparsely lanate; calyx and corolla villose.....*Pedicularis lunaris*
 8. Stems glabrous; leaves bipinnately parted, 10~25 cm long, 2~6 cm wide, glabrous; calyx and corolla glabrous.....*Pedicularis grandiflora*
 7. Leaves mostly radical; bracts orbicular, shallowly lobed; galea with pilose hairs on the lower margins obtuse at apex.....*Pedicularis aceptrum-carolinum*
 5. Corolla 18~30 mm long; galea glabrous.
 9. Leaves mostly radical, cauline ones much smaller; calyx 5-lobed; corolla without teeth on the lower margins near the throat.
 10. Leaves larger, 7~24 cm long, 2~8cm wide; galea shortly beaked.....*Pedicularis mandshurica*
 11. Calyx glabrous; galea with 2 slender teeth on the anterior side of the apexvar. *mandshurica*
 11. Calyx pilose; galea without teeth on the anterior side of the apexvar. *coreana*
 10. Leaves smaller, 3~11 cm long, 1~1.8 cm wide; galea without beak.....*Pedicularis nigrescens*
 9. Leaves mostly cauline; calyx bilobed; corolla with a pair of teeth on the lower margins near the throat.....*Pedicularis adunca*
 4. Galea prolonged into a beak.....*Pedicularis resupinata*
 12. Leaves alternate; inflorescences elongate, sparsely flowered.....var. *resupinata*
 12. Leaves opposite, below middle alternate; inflorescences densely flowered.
 13. Leaves charthaceous; teeth broadly ovate to ovate, obtuse or slightly acute.....

var. *oppositifolia*

13. Leaves membranaceous; teeth ovate, acute.....var. *umbrosa*

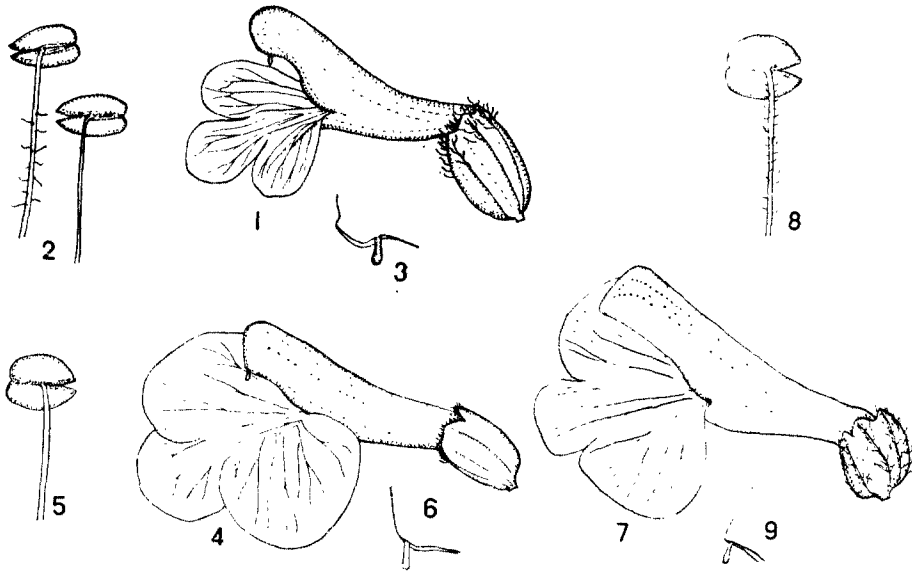


Fig. 1. *Pedicularis* spp. 1-3 *P. spicata* (Nakai no. 7453): 1, flower $\times 6.5$. 2, stamen 3, apex of galea. 4-6 *P. hallaisanensis* (Taquet no. 5843): 4, flower $\times 3$. 5, anterior stamen $\times 6.5$ 6, apex of galea. 7-9 *P. verticillata* (specimen from Japan): 7, flower $\times 3$. 8, anterior stamen $\times 6.5$. 9, apex of galea.

Pedicularis adunca M. Bieb. ex Steven, Monogr. *Pedicularis*: 29 (1823). Maxim. in Bull. Acad. Imp. Sci. St. Pétersb. 24:75 (1877); 32:607, t. 138 (1888). Ohwi in Acta Phytotax. Geobot. 1:81 (1932).

Pedicularis palustris auct. (non L.). Nakai in Bull. Nat. Sci. Mus. 31:102 (1952). Lee, T.B., Ill. Fl. Korea: 685, t. 2737 (1980).

Distr. Ussuri, N. Korea and Sachalin.

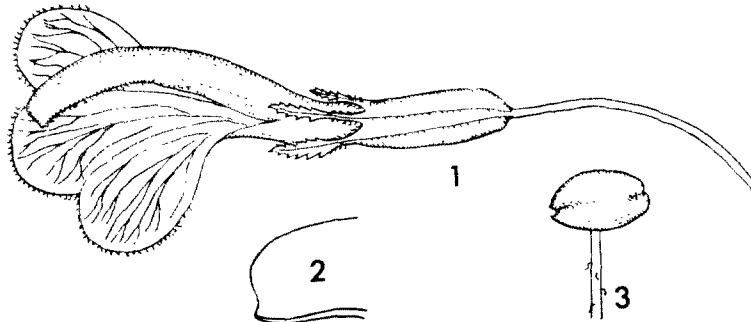


Fig. 2. *Pedicularis ishidoyana*. (Kutani, May 1939): 1, flower $\times 1$. 2, apex of galea. 3, anterior stamen $\times 3$.

Specimens. 咸北. 茂山郡. 三社面 (T. Nakai, no. 18981, TI); 吉州郡. 賜社面 (T. Nakai, no. 18980, TI. J. Ohwi, no. 2652, TI).

Pedicularis grandiflora Fisch. in Mem. Soc. Nat. Mosc. 3:60 (1812). Komarov, Fl. Mansh. 3:453 (1907). Nakai, Fl. Sylv. Kxreana 14:67 (1923). Chung, T. H., Korean Fl. 2: 582, t. 1164 (1957). Lee, T. B., Ill. Fl. Korea: 683, t. 2732 (1980).

Distr. Dauria, Amur, Ussuri, Manchuria and N. Korea.

Specimens. 白頭山 (T. Mori, Aug. 1913, TI; Y. Numaziri, Aug. 1937, KYO); 茂山郡. 農事洞 (Y. Ikuma, Aug. 1914, TI).

Pedicularis hallaisanensis Hurusawa in Bot. Mag. Tokyo 60:74 (1947).

Pedicularis taquetii Tsoong in Kew Bull. 1954:448 (1954).

Pedicularis amaena auct. (non Adams) Takeda et Nakai in Bot. Mag. Tokyo 23:53 (1909). Nakai, Fl. Koreana 2:125 (1911); Fl. Sylv. Koreana 14:76 (1923).

Pedicularis verticillata auct. (non L.). Y. N. Lee, Ill. Fl. & Fauna Korea 18:643. pl. 151-736 (1976).

Distr. Korea (Jeju-do).

Specimens. Jeju-do (Taquet, no. 7843. Type in TI; T. Nakai, no. 6475, TI; Faurie, no. 836, 837, TI).

Pedicularis ishidoyana Koidz. et Ohwi in Acta Phytotax. Geobot. 6:291 (1937). Lee, T. B., Ill. Fl. Korea 684, t. 2733 (1980).

Pedicularis songdonensis Chung, T. H., Koreana Fl. 2: 588, t. 1175 & col. pl. (1957).

Pedicularis artselaeri Maxim. var. *koraiensis* Hurusawa (Journ. Jap. Bot. 22:71, 1948) seems to be the same with *P. ishidoyana*, but I have not seen the specimen.

Distr. C. Korea.

Specimens. 京畿. 開城, 天摩山 (T. Ishidoya, May 1936, Type in KYO; N. Kutani, May 1939, TI).

Pedicularis lunaris Nakai in Bot. Mag. Tokyo 34:49 (1920); Fl. Sylv. Koreana 14:67 (1923). Chung, T. H., Korean Fl. 2: 583, t. 1165 (1957). Lee, T. B., Ill. Fl. Korea: 684, t. 2734 (1980).

Distr. N. Korea.

Specimens. 咸北. 冠帽峯 (T. Nakai, no. 7460, Type in TI); 雪嶺 (T. Nakai, no. 7458, 7459, TI); 合水~島內 (J. Ohwi, Jul. 1930, KYO).

Pedicularis mandshurica Maxim. in Bull. Acad. Sci. St.-Petersb. 24:79 (1877); 32: 609, t. 154 (1888). Komarov, Fl. Mansh. 3:454 (1907). Nakai, Fl. Koreana 2:126 (1911); Fl. Sylv. Koreana 14:67 (1923). Chung, T. H., Korean Fl. 2: 583, t. 1166 (1957), pro parte, excl. specimen Kum-gang-san. Lee, T. B., Ill. Fl. Korea: 684, t. 2735 (1980),

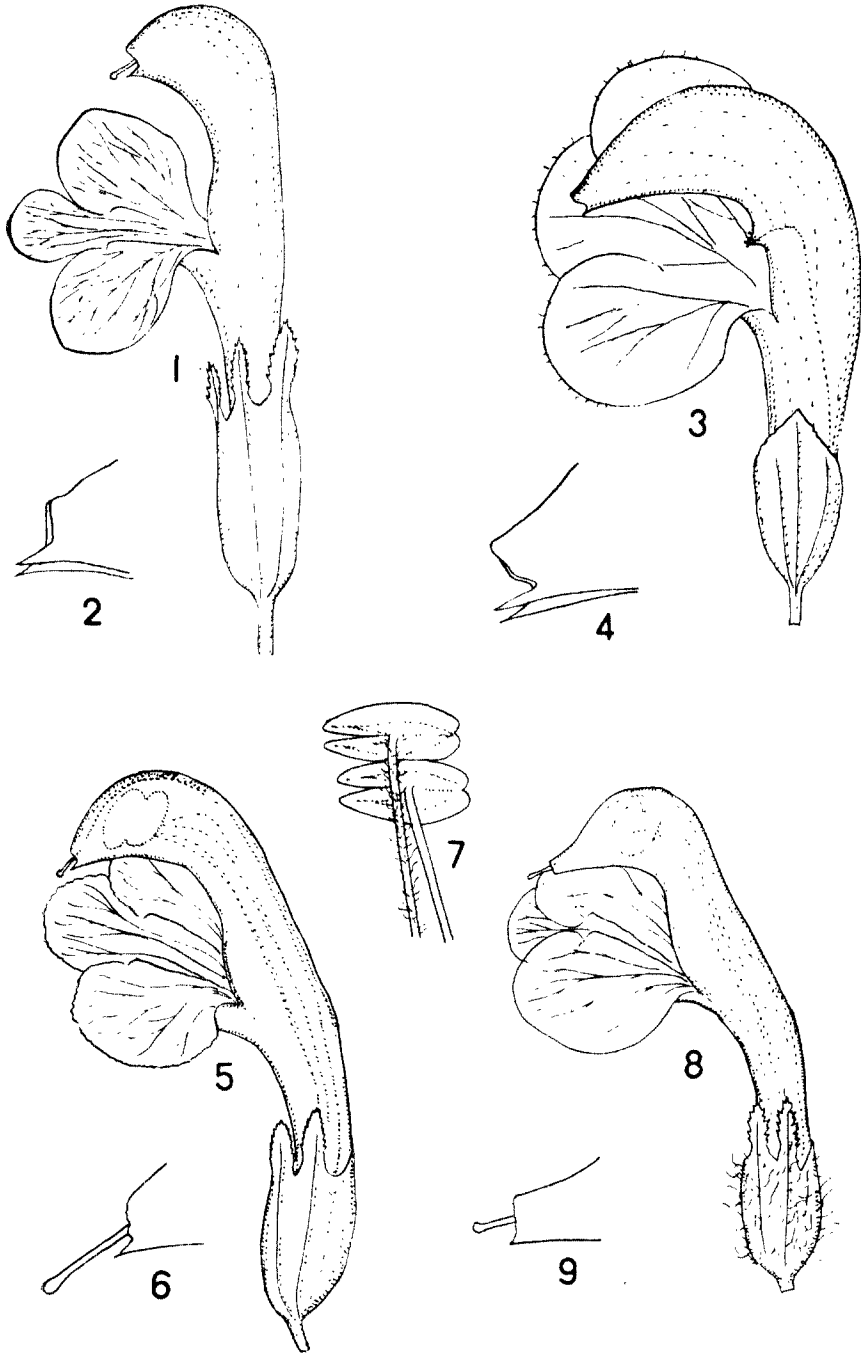


Fig. 3. *Pedicularis* spp. 1-2 *P. nigrescens* (Nakai, Jul. 1913): 1, flower $\times 2$. 2, apex of galea. 3-4 *P. adunca* (Nakai no.18981): 3, flower $\times 2.5$. 4, apex of galea. 5-7 *P. mandshurica* (Nakai no.7451): 5, flower $\times 1.7$. 6, apex of galea. 7, stamens. 8-9 *P. mandshurica* var. *coreana* (Faurie no.831): 8, flower $\times 1.7$. 9, apex of galea.

pro parte.

var. **mandshurica**

Distr. Manchuria, Ussuri and N. Korea.

Specimens. 威北. 茂峯-農事洞 (T. Nakai, no. 3331, TI); 冠帽峯 (T. Nakai, no. 7452, TI); 雲嶺 (J. Ohwi, no. k864, TI). 雪岳山 (T. Lee, nos. 8120, 7989-1, 8142-1, HAS)

The figures of T. H. Chung and T. B. Lee are difficult to determine whether it is var. *mandshurica* or var. *coreana*.

var. **coreana**. (Bonati) Hurusawa in Journ. Jap. Bot. 22: 74 (1948).

Pedicularis coreana Bonati in Bull. Soc. Bot. France 54: 374 (1907). Nakai, Fl. Koreana 2: 125 (1911).

Distr. C. Korea.

Specimens. 金剛山 (Faurie. no. 831. Isotype in TI); 金剛山, 大長峯 (T. Nakai, no. 5826, TI); 金剛山, 神仙峯 (T. Nakai, No. 5827, TI); 雪岳山 (T. Nakai, Jul. 1936, TI, T. Lee, nos. 7989, 8101, 8120, 8142, HAS).

Pedicularis nigrescens Nakai in Bot. Mag. Tokyo 30:145 (1916); Fl. Sylv. Koreana 14: 67 (1923). Chung, T. H., Korean Fl. 2: 584, t. 1167 (1957). Lee, T. B., Ill. Fl. Korea: 684, t. 2736 (1980).

Pedicularis atropurpurea Nakai in Bot. Mag. Tokyo 29: 3 (1915), non Nordm. 1837.

Distr. N. Korea.

Specimens. 平北. 狼林山, 鷲峯 (T. Nakai, Jul. 1914. Type in TI). 威南. 遮日峯 (T. Nakai, Aug. 1935, TI); 北白水山 (S. Hohozawa, Aug. 1935, TI).

Pedicularis resupinata L., Sp. Pl.: 608 (1753). Palibin, Consp. Fl. Koreae 2: 22 (1900). Komarov, Fl. Mansh. 3: 447 (1607). Nakai, Fl. Koreana 2:125 (1911), pro parte.

var. **resupinata**

Pedicularis resupinata L.f. *spicata* Nakai, Fl. Koreana 2:126 (1911).

Pedicularis resupinata L. var. *spicata* Nakai, Fl. Sylv. Koreana 14:68 (1923). Chung, T. H., Korean Fl. 2: 586, t. 1172 (1957).

Distr. Europe to Siberia, Ussuri, Sachalin, Manchuria, Korea, Hokkaido, Kuriles and Kamtschatika.

Specimens. 威南. 大興里~山羊 (T. Nakai, no. 3646, TI). 威北. 明川郡, 七寶山 (T. Nakai, no. 7464, TI). 平北. 楚山 (H. Imai, no. 239, TI). 平南. 平壤, 牡丹峯 (T. Uchiyama, Sept. 1902, TI). 江原. 草木洞 (T. Uchiyama, Aug. 1902, TI). 蘭谷 (T. Nakai, Sept. 1916, TI).

var. **oppositifolia** Miq., Prodr. Fl. Jap.: 54 (1866-67). Nakai, Fl. Koreana 2: 125 (1911). Chung, T. H., Korean Fl.: 585, t. 1170 (1957).

Pedicularis resupinata L. f. *oppositifolia* (Miq.) Komarov, Fl. Mansh. 3:447 (1907).

Pedicularis resupinata L. f. *ramosa* Komarov, Fl. Mansh. 3:447 (1907). Nakai, Fl. Koreana 2:125 (1911).

Pedicularis resupinata L. f. *gigantea* Nakai, Fl. Koreana 2:126 (1911).

Pedicularis sanguinea Nakai ex Mori, Enum. Pl. Corea: 315 (1922).

Pedicularis resupinata L. var. *gigantea* Nakai, Fl. Sylv. Koreana 14:68 (1923). Chung, T. H., Korean Fl. 2: 585, t.1169 (1957).

Pedicularis resupinata L. var. *oppositifolia* Miq. f. *ramosa* Nakai ex Chung, T. H., Korean Fl. 2: 586, t.1171 (1957).

Pedicularis resupinata L., sensu Lee, T.B., Ill. Fl. Korea: 684, t.2738 (1980).

Distr. Korea, Kyushu, Shikoku, Honshu and Hokkaido.

Specimens. 咸北. 朱乙 (T. Nakai, no. 7463, TI). 咸南. 元山 (T. Nakai, June 1909, TI). 平北. 狼林山 (Leg.?, July. 1915, TI). 서울. 南漢山 (T. Uchiyama, Oct. 1900, TI). 江原. 五臺山 (Y.N. Lee, Aug. 1954, TI). 雪岳山 (T. Lee, no. 2936, HAS). 慶北. 伽倻山 (Y.N. Lee, Aug. 1966, TI). 全南. 智異山, 般若峯 (T. & F. Yamazaki, no. 3246, TI); 無頭山 (I. Hurusawa, Aug. 1943, TI). 濟州道 (Taquet, no. 5839, 5840, 5841, TI; T. Nakai, no. 346, TI).

var. *umbrosa* Komarov ex Nakai, Fl. Sylv. Koreana 14:68 (1923). Chung, T. H., Korean Fl. 2: 587, t. 1173 (1957).

Pedicularis resupinala L.f. *umbrosa* Komarov, Fl. Mansh. 3: 447 (1907). Nakai, Fl. Koreana 2:125 (1911).

Pedicularis vaniotiana (non Bonati) Chung, T. H., Korean Fl. 2: 589, t. 1177 (1957).

Distr. N. and C. Korea.

Specimens. 咸北. 雪嶺 (T. Nakai, no. 7465, TI). 咸南. 遮日峯 (T. Nakai, no. 15685, TI); 千佛山 B. S. Toh & H. C. Shim, no. 42, TI). 江原. 金剛山 (M. Honda & H. C. Shim, no. 202, TI); 雪岳山 (T. Nakai, no. 17576, TI). 桂芳山 (T. Lee, July 1981, HAS). 慶北. 太白山 (Y. N. Lee, July 1964, TI).

There are many intermediate forms between var. *oppositifolia* and var. *umbrosa*, so it is difficult to distinguish them accurately.

Pedicularis sceptrum-carolinum L. var. *pubescens* Bunge in Ledeb., Fl. Ross. 3: 303 (1847~49). Komarov, Fl. Mansh. 3: 452 (1907).

Pedicularis sceptrum-carolinum L., sensu Nakai, Fl. Koreana 2:126 (1911); Fl. Sylv. Koreana 14:69 (1923). Chung, T. H., Korean Fl. 2: 587, t. 1174 (1957). Lee, T. B., Ill. Fl. Korea: 685, t. 2739 (1980).

Pedicularis pubescens (Bunge) Pai in Contr. Inst. Bot. Nat. Acad. Peiping 2:125 (1934).

Pedicularis sceptrum-carolinum L. subsp. *pubescens* (Bunge) Tsoong in Fl. Reip. Pop. Sinic. 68: 37 (1963).

Pedicularis sceptrum-calorinum L.f. *pubescens* (Bunge) Kitagawa, Neo-Lineam. Fl. Mansh.: 568 (1979).

Distr. Siberia, Mongolia, Manchuria and N. Korea.

Specimens. 咸北. 茂山郡. 農事洞 (Y. Ikuma, Aug. 1913, TI); 白頭山 (T. Nakai, no. 3398, TI); 雲嶺 (M. Furumi, Jul. 1917, TI). 咸南. 甲山郡, 明花洞 (M. Furumi, no. 491, TI). 平南. 龍岡郡, 金谷 (T. Nakai, no. 7457, TI).

Pedicularis spicata Pallas, Reis. Russ. 3: 738 (1776), not seen; Voyag Pall. 4: 704, pl. 33, f. 2 (1793). Komarov, Fl. Mansh. 3:450 (1907). Nakai, Fl. Sylv. Koreana 14:68 (1923). Chung, T. H., Korean Fl. 2: 588, t. 1176 (1957). Lee, T.B., Ill. Fl. Korea: 686, t. 2741 (1980).

Distr. Siberia, Mongolia, Manchuria, N. China, Korea and Hokkaido.

Specimens. 咸北. 茂山 (T. Nakai, June 1909, TI). 咸南. 惠山~普天堡 (T. Nakai, Aug. 1914, TI); 漢岱里 (T. Nakai, Aug. 1925, TI). 平南. 龍岡郡, 金谷 (T. Nakai, Jul. 1918, TI). 慶北. 伽倻山 (G. Koidzumi, Aug. 1935, KYO). 濟州道 (T. Lee, no. 9157, HAS).

Pedicularis verticillata L., Sp. Pl.: 608 (1753). Komarov, Fl. Mansh. 3:457 (1907). Nakai, Fl. Sylv. Koreana 14:68 (1923). Chung, T. H., Korean Fl. 2: 589, t. 1178 (1957). Lee, T. B., Ill. Fl. Korea: 685, t. 2740 (1980).

Distr. Widespread over the arctic and alpine regions of northern hemisphere. In eastern Asia, it is distributed in N. China, N. Korea, Hokkaido and C. Honshu.

Specimens. 白頭山 (T. Mori, Aug. 1913, TI); 冠帽峯 (T. Nakai, Jul. 1918, TI); 雲嶺 (J. Ohwi, June 1930, KYO). 咸南. 遮日峯 (T. Nakai, Aug. 1933, TI).

Phtheiospermum Bunge

Phtheiospermum japonicum (Thunb.) Kanitz, Anthophyta Jap.: 12 (1879), ut *Pteirospermum*. Nakai in Bull. Nat. Sci. Mus. 31: 103 (1952). Chung, T. H., Korean Fl. 2: 590, t. 1179 (1957). Lee, T.B., Ill. Fl. Korea: 683, t. 2731 (1980).

Gerardia japonica Thunb., Fl. Jap.: 251 (1784).

Phtheiospermum chinense Bunge ex Fish. et Mey. in Ind. Sem. Hort. Pétrop. 1:35 (1835), not seen; in Linnaea 10 Litter.: 99 (1836), cum f. *simplex* Kom. et f. *ramosa* Kom. Nakai, Fl. Koreana 2:22 (1911); Fl. Sylv. Koreana 14: 67 (1923).

Distr. Japan, Korea, China and Indochina.

Specimens. 平北. 雲山郡, 白碧山 (T. Ishidoya, no. 13, TI). 서울. 北漢山 (T. Uchiyama, Oct. 1900, TI). 瑞興 (T. Nakai, no. 2847, TI). 冠岳山 (T. Lee, 1960, HAS). 忠

南. 鷄龍山(T. Nakai, no. 8176, TI). 慶南. 東萊. 樂明洞 (K. Yanagi, no. 8, TI). 全南. 甫吉島(T. Nakai, Jul. 1922, TI). 濟州道 (Taquet, no. 5835, TI).

***Pseudolysimachion* Opiz**

D. Hartl in Hegi, Ill. Fl. Mitteleuropa, n.s. 6(1): 146-155 (1966). Yamazaki in Journ. Jap. Bot. 43: 405-412 (1968).

This genus characterized by inflorescences elongate-racemose with dense many flowers, chalazal and micropylar haustoria consisted of 4-cells and basic chromosome numbers of $x=17$. These characters indicate that this genus more closely relates to the genus *Veronicastrum* than the genus *Veronica*.

1. Corolla-tube distinct, about 1/3 times as long as or more longer than corolla-length.
2. Leaves opposite, with distinct petioles.
 3. Leaves serrate.
 4. Leaves membranous, linear-lanceolate or lanceolate, acuminate at apex; petioles 3~6 mm long.....*Pseudolysimachion longifolium*
 4. Leaves chartaceous or subcarnose, rarely membranous, lanceolate to ovate, acute or subacuminate at apex; petioles 7~20 mm long.
 5. Leaves broadly triangular-ovate; corolla 3~3.5 mm long, with rounded lobes.....*Pseudolysimachion ovatum*
 5. Leaves lanceolate to ovate; corolla 5~7 mm long, lobes obtuse at apex...
...*Pseudolysimachion kiusianum*
 6. Leaves glabrous or sparsely pubescent.....subsp. *kiusianum*
 7. Stems glabrous or sparsely pubescent; leaves glabrous on both surfaces.....var. *glabrifolium*
 7. Stems pubescent; leaves pubescent on both surfaces, or glabrous above and pubescent on the nerves beneath.
 8. Leaves subregularly serrate; sepals ovate to lanceolate, acute or mucronate at apex; petals ovate to ovate-orbicular, obtuse at apex.....var. *kiusianum*
 8. Leaves irregularly duplicate-serrate generally; sepals linear-lanceolate, obtuse at apex; petals oblong to ovate, acute or subacute at apex.....var. *diamantiacum*
 6. Leaves lanceolate, attenuate-acuminate at apex, villose on under surface.....subsp. *miyabei*
 3. Leaves grossly subinciso-serrate or pinnatisect.
 9. Leaves subinciso-serrate or pinnately lobed; corolla 5~7.5 mm long; capsule 3

mm long, 2.5 mm wide.....*Pseudolysimachion dahuricum*

9. Leaves pinnatisect; corolla 3 mm long; capsule 1.5 mm long, 2 mm wide.....

Pseudolysimachion pyrethrinum

2. Leaves opposite below the middle, alternate at the upper, attenuate to base, obscurely petiolate or subsessile.....*Pseudolysimachion linarifolium*

10. Leaves linear to linear-lanceolate, glabrous or sparsely pubescent.....var. *linarifolium*

10. Leaves oblanceolate-oblong to narrowly obovate, with dense soft short villose hairs.....var. *villosulum*

1. Corolla-tube short, about less than 1/4 times of corolla-length; leaves opposite.

11. Inflorescences stout, densely flowered; leaves sessile, subsessile, obscurely petiolate.....*Pseudolysimachion rotundum*

12. Leaves linear-lanceolate, lanceolate or oblong-lanceolate.....var *subintegrum*

12. Leaves narrowly oblong, oblong-ovate or elliptic.

13. Leaves 6~12 cm long, 2.5~5.5 cm wide.....var. *coreanum*

13. Leaves 2~4 cm long, 1~2 cm wide.....var. *rotundum*

11. Inflorescences slender, laxly flowered; leaves distinctly petiolate.....*Pseudolysimachion insulare*

Pseudolysimachion dahuricum (Stev.) Holub in Fol. Geobot. Phytotax. (Praha) 2, 4: 424 (1967), not seen.

Veronica dahurica Stev. in Mém. Soc. Nat. Mosc. 5: 33 (1817), not seen. Borisova in Fl. U. R. S. S. 22: 372 (1955).

Veronica grandis Fisch. ex Spreng., Syst. Veget. 1: 71 (1825). Komarov, Fl. Mansh. 3: 429 (1907).

Veronica neglecta (non Vahl) Nakai, Fl. Koreana 2: 128 (1911).

Veronica grandis Fisch. var. *pubescens* Nakai, Fl. Sylv. Koreana 14:69 (1923).

Veronica grandis Fisch. var. *pinnata* Nakai in Journ. Jap. Bot. 19: 159 (1943). Chung, T. H., Korean Fl. 2: 597, t. 1193 (1957).

Distr. Dauria, Mongolia, Manchuria, Amur, Ussuri, N. China and Korea.

Specimens. 威北 清津 (T. Nakai, Jun. 1909, TI); 茂山 (M. Furumi, no. 411, TI). 威南. 惠山鎮~普天堡 (T. Nakai, no. 3947, TI). 慶北. 達城, 解顔面 (T. Nakai, no. 8177, TI). 慶南. 遮川里~三水 (T. Nakai, no. 6440, TI); 釜山 (T. Nakai, Sept. 1910, TI).

通高山 (T. Lee, J. Park, M. Cho, Aug. 1964, HAS). 蔚珍 (T. Lee, J. Park, M. Cho, July 1964, HAS)

Pseudolysimachion kiusianum (Furumi) Holub in Fol. Geobot. Phytotax. (Praha) 2: 425 (1967), not seen.

Veronica kiusiana Furumi in Bot. Mag. Tokyo 30: 122 (1916). Lee, T. B., Ill. Fl. Korea: 676, t. 2702 (1980).

Veronica longifolia L. var. *ovata* Miq. in Ann. Mus. Bot. Lugd. Bat. 2: 119 (1865).

Veronica grandis Fish. var. *holophylla* Nakai in Bot. Mag. Tokyo 23: 190 (1909); Fl. Koreana 2: 129 (1911).

Veronica holophylla (Nakai) Nakai in Bot. Mag. Tokyo 32: 229 (1918).

subsp. ***kiusianum*** var. ***kiusianum***

Distr. Korea and N. Kyushu.

Specimens. 咸南. 大興里~山羊 (T. Nakai, no. 6434, TI). 서울. 南漢山 (T. Uchiyama, Aug. 1902, Type of *Veronica holophylla*, TI) : 南山 (N. Okada, Jul. 1909, TI) 水理山 (T. Lee, July. 1968. HAS). 江原. 平康郡. 劔拂浪 (T. Nakai, no. 13962, TI). 全南. 無等山 (I. Hurusawa, Aug. 1943, TI).

var. ***diamantiacum*** (Nakai) Yamazaki in Journ. Jap. Bot. 43: 409 (1968).

Veronica diamantiaca Nakai in Bot. Mag. Tokyo 31: 29 (1917). Chung, T. H., Korean Fl. 2: 596, t. 1192 (1957).

Veronica kiusiana Furumi var. *diamantiaca* (Nakai) Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 7: 136 (1957). Lee, T. B. Ill. Fl. Korea: 679, t. 2714 (1980).

Distr. C. Korea.

Specimens. 金剛山. 彌勒寺 (T. Nakai, no. 5818. Type in TI); 金剛山. 群仙峽 (T. Nakai, no. 5816, TI). 雪岳山 (T. Lee, Aug. 1979, HAS)

var. ***glabrifolium*** (Kitagawa) Yamazaki, comb. nov.

Veronica spuria L. var. *maxima* Nakai in Veget. Mt. Jiri: 44 (1915), nom. nud.; Fl. Sylv. Koreana 14: 71 (1923), nom. nud.

Veronica glabrifolia Kitagawa in Journ. Jap. Bot. 17: 328 (1941).

Veronica luxurians auct. (non Ledeb.) Nakai in Journ. Jap. Bot. 19: 15 (1943).

Veronica luxurians Ledeb. *glabrifolia* (Kitagawa) Nakai in Journ. Jap. Bot. 19: 16 (1943).

Veronica kiusiana Furumi var. *maxima* (Nakai) Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 7: 135 (1957).

Pseudolysimachion kiusianum (Furumi) Yamazaki var. *maximum* (Nakai) Yamazaki in Journ. Jap. Bot. 43: 409 (1968).

Veronica kiusiana Furumi var. *glabrifolia* (Kitagawa) Kitagawa, Neo-Lineam. Fl. Manch.: 572 (1979).

Distr. S. Manchuria and Korea.

Specimens. 咸南. 普天堡~寶泰洞 (T. Nakai, no. 3349, TI); 大興里~山羊 (T. Nakai,

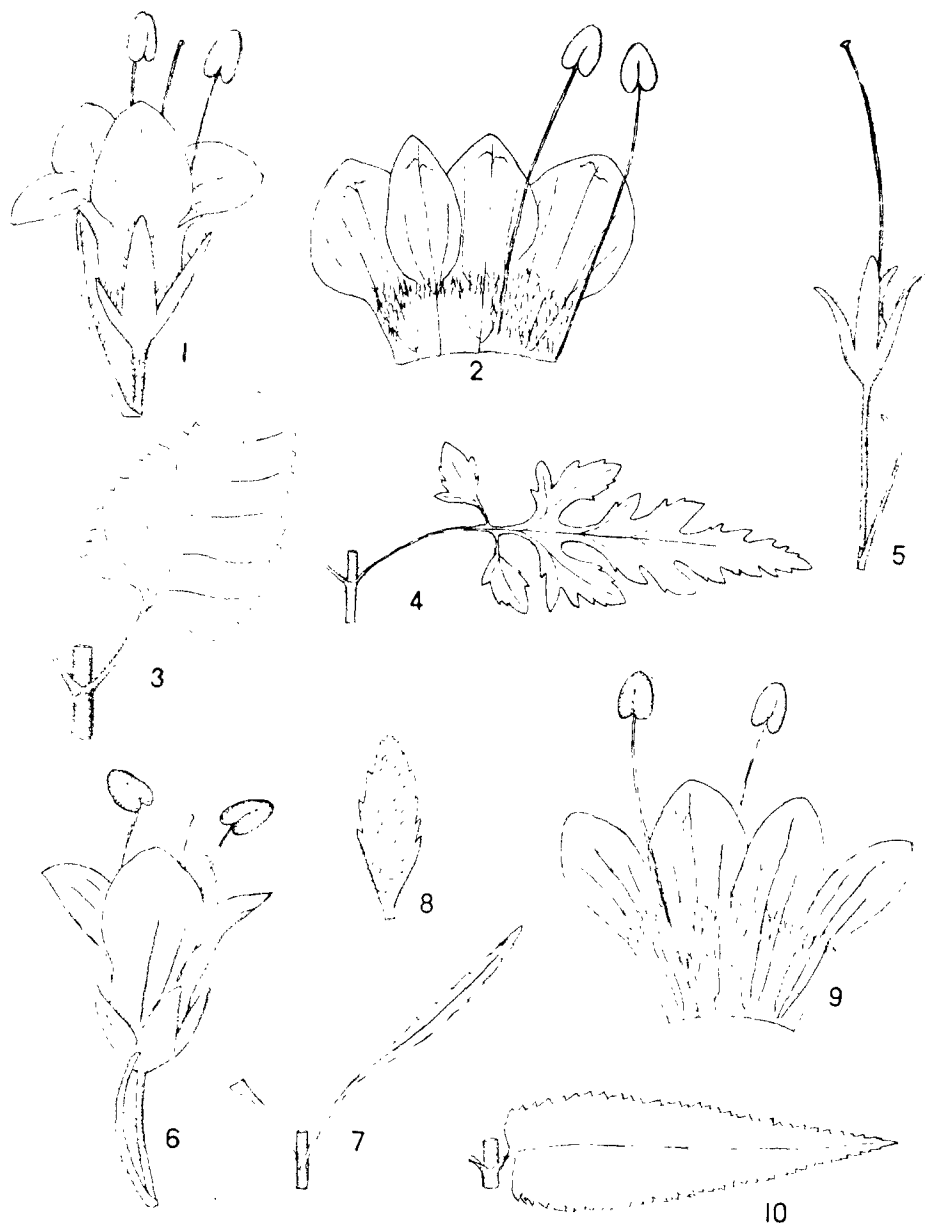


Fig. 4. *Pseudolysimachion* spp. 1-3 *P. kiusianum* (Zyo, Aug. 1912): 1, flower $\times 4.5$. 2, corolla opened $\times 4.5$. 3, leaf $\times 6.5$. 4-5, *P. pyrethrinum* (Kobayashi no.4): 4, leaf $\times 6.5$. 5, calyx $\times 4.5$. 6-8 *P. linariiifolium*: 6-7 var *linariiifolium* (specimen from Japan): 6, flower $\times 4.5$. 7, leaf $\times 6.5$. 8, leaf of var. *villosulum* (Taquet no. 6267) $\times 6.5$. 9-10 *P. longifolium* (Nakai no. 3223): 9, corolla opened $\times 4.5$. 10, leaf $\times 6.5$.

no. 3611, TI). 黄海. 九味浦 (K. Smith, no. 99, TI) 서울 (N. Okada, s.n., TI). 全南智異山 (T. Mori, no. 297, TI).

subsp. **miyabei** (Nakai et Honda) Yamazaki in Journ. Jap. Bot. 43: 409 (1968).

Veronica miyabei Nakai et Honda in Journ. Jap. Bot. 11: 355 (1935). Nakai in Journ. Jap. Bot. 19: 15 (1943).

Veronica kiusiana Furumi subsp. *miyabei* (Nakai et Honda) Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 7: 136 (1957).

Distr. S. Hokkaido, N. Honshu and N. Korea.

Specimens. 威北. 明川郡, 雲滿岩 (T. Nakai, Aug. 1918, TI).

The figure of *Veronica luxurians* in Chung, T. H., Korean Fl. 2: 599, t. 1197, seems to be the same with *Pseudolysimachion rotundum* var. *coreanum*.

Pseudolysimachion linariifolium (Pall. ex Link) Holub in Fol. Geobot. Phytotax. (Praha) 2, 4: 422 (1967), not seen.

Veronica linariaefolia Pallas ex Link in Jahrb. Gewaschkunde 1: 35 (1820), not seen. Komarov, Fl. Mansh. 3: 432 (1907). Nakai, in Journ. Jap. Bot. 19: 86 (1945). Tsoong & Hong in Ic. Corm. Sinic. 4: 36, t. 5485 (1975).

Veronica angustifolia Fish. ex Link, Enum. Pl. Hort. Berol. 1: 19 (1821). Nakai, Fl. Koreana 2: 129 (1911); Fl. Sylv. Koreana 14: 69 (1923).

Distr. Jenisei, Dauria, Amur, Manchuria, N. and C. China, Kyushu, Shikoku and Formosa.

Specimens. 威南. 威興 (T. Seki, 1928, TI) 平北. 江界 (R. G. Mills, no. 1017, TI): 雲山郡, 松峴里 (T. Ishidoya, no. 20, TI). 平南. 平壤 (H. Imai, no. 79, TI); 流山 (T. Nakai, no. 18017, TI). 江原. 通川 (T. Nakai, no. 6089, TI); 下仙里 (T. Uchiyama, Aug. 1902, TI). 서울. 南山 (K. Zyo, Aug. 1911, TI); 高陽 (T. Uchiyama, no. 1, 2, TI); 光陵 (T. Mori, Sept. 1912, TI). 水原·清溪 (T. Lee, Aug. 1967, HAS). 慶北·豐基 (T. Lee, Aug. 1970, HAS). 慶南. 東萊郡, 院里 (K. Yanagi. no. 68, 103, TI). 濟州道 (Taquet, no. 6269, TI).

for. *album* (T. Lee) T. Lee, comb. nov. *Veronica linariaefolia* for. *alba* T. Lee in Bull. Kwanak Arb. no. 1, 89(1976) Specimens. 京畿 水理山 (T. Lee & M. Cho, Aug. 1966, HAS).

var. *villosulum* (Nakai) Yamazaki, comb. nov.

Veronica villosula Nakai in Bot. Tokyo 29: 4, (111) (1915). Chung, T. H., Korean Fl. 2: 603, t. 1205 (1957).

Veronica linariifolia Pall. f. *villosula* (Nakai) Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 7: 140 (1957).

Veronica linariifolia Pall. var. *villosula* (Nakai) T. B. Lee, Ill. Fl. Korea: 675, t. 2699 (1980).

Distr. Korea, Jeju-do.

Specimens. 濟州道 (Faurie, no. 928, Type in TI; Taquet, no. 6267, TI; T. Nakai, no. 6467, TI. T. Lee & M. Cho, no. 9135, HAS). 西光牧場 (T. Lee, Aug. 1970, HAS).

Figures of *Veronica angustifolia* in Chung, T. H., Korean Fl.:595, t. 1190 and *Veronica linariifolia* in Lee, T. B., Ill. Fl. Korea are incorrect by the leaf arrangement. They are like the narrow leaved form of *Pseudolysimachion rotundum* var. *subintegrum*.

Pseudolysimachion longifolium (L.) Opiz, Seznam Rostlin Kvéteng Ceské: 80 (1852), not seen. D. Hartl in Hegi. Ill. Fl. Mitteleur. 6(1): 150 (1966). Yamazaki in Journ. Jap. Bot. 43: 409 (1968).

Veronica longifolia L., Sp. Pl.: 10 (1753). Komarov, Fl. Mansh. 3: 428 (1907). Nakai, Fl. Koreana 2: 128 (1911).

Veronica pseudolongifolia Printz, Contr. Fl. Asiae Inter. Pertin. 3: 380, f.105, 10 (1921). Nakai in Journ. Jap. Bot. 19: 16 (1943).

Veronica longifolia L. var. *angustata* Nakai, Fl. Sylv. Koreana 14: 70 (1923), *nom. nud.*

Veronica pseudolongifolia Printz var. *angustata* (Nakai) Nakai in Journ. Jap. Bot. 19: 17 (1943). Chung, T. H., Korean Fl. 2: 600, t. 1199 (1957).

Veronica exortiva Kitagawa in Journ. Jap. Bot. 26: 17 (1951), pro parte, excl. Sachalin.

Veronica longifolia L. subsp. *exortiva* (Kitagawa) Kitagawa, Neo-Lineam. Fl. Mansh.: 573 (1979).

Distr. Widespread over from Europe to Siberia, Manchuria and N. Korea.

Specimens. 咸北. 農事洞-三下面 (T. Nakai, no. 3223, TI). 咸南. 甲山郡 合水 (M. Furumi, no. 391, TI). 普天堡-寶泰洞 (T. Nakai, no. 3239, 3963, 3966, TI).

The figure of *Veronica pseudolongifolia* in Chung, T. H., Korean Fl. 599, t. 1198 resembles *Pseudolysimachion kiusianum*. The figure of *Veronica longifolia* in Lee, T. B., Ill. Fl. Korea: 676, t. 2701 coincides with *Pseudolysimachion rotundum* var. *subintegrum*.

Pseudolysimachion insulare (Nakai) Yamazaki, comb. nov. (1968).

Veronica insularis Nakai in Bot. Mag. Tokyo 31: 29 (1917), not seen.

Veronica nakaiana Ohwi in Acta Phytotax. Geobot. 7: 29 (1938). Chung, T. H., Korean Fl. 2: 597, t.1194 (1957). Lee, T. B., Ill. Fl. Korea: 678, t. 2712 (1980).

Pseudolysimachion nakaianum (Ohwi) Yamazaki, J. J. B. 43:411 (1968)

Distr. Korea. (Isl. Ullüng-do).

Specimens. Isl. Ullüng-do, 道洞 (T. Ishidoya, no. 129, Type in TI. T. Lee, nos. 8352, 8429, HAS); 尊洞 (T. Nakai, May 1917, TI. T. Lee, Aug. 1961, HAS).

Pseudolysimachion ovatum (Nakai) Yamazaki in Journ. Jap. Bot. 43: 409 (1968).

Veronica ovata Nakai in Bot. Mag. Tokyo 29: 3 (1915). Lee, T. B., Ill. Fl. Korea: 670,



Fig. 5. *Pseudolysimachion* spp. 1-5 *P. rotundum*: 1-3 var. *subintegrum* (specimen from Japan): 1, flower $\times 5$. 2, corolla opened $\times 5$. 3, leaf $\times 0.65$. 4, leaf of var. *rotundum* (Faurie no.786) $\times 0.65$. 5, leaf of var. *coreanum* (Mori no. 281) $\times 0.65$. 6-8 *P. insulare* (Nakai no.4544): 6, corolla opened $\times 6$. 7, calyx $\times 6$. 8, leaf $\times 0.65$.

t. 2711 (1980).

Veronica ovata Nakai var. *dentata* Nakai in Jour. Jap. Bot. 19: 160 (1943).

Distr. Korea (Isl. Jeju-do).

Specimens. Jeeju-do (Taquet, 1912, s.n. Type in TI; Taquet, no.6270, Type of var. *dentata* in TI).

Pseudolysimachion pyrethrinum (Nakai) Yamazaki in Journ. Jap. Bot. 43: 410

(1968).

Veronica pyrethrina Nakai in Journ. Jap. Bot. **19**: 160 (1943).

Distr. S. Korea.

Specimens. 慶北. 大邱, 公山面 (T. Kobayashi, no. 4. Type in TI). 大邱, 桃洞 (T. B. Lee, no. 6330, Aug. 1965 HAS). 慶州(Woo, J.K. Aug. 1952, HAS)

The figure of *Veronica pyrethrina* in Lee, T. B., Ill. Fl Korea: 675, t. 2697 coincides with *Pseudolysimachion dahuricum*.

Pseudolysimachion rotundum (Nakai) Holub in Fol. Geobot. Phytotax. (Praha) 2: 423 (1967).

var. ***rotundum***

Veronica rotunda Nakai in Bot. Mag. Tokyo **32**: 228 (1918).

Veronica amplexens Nakai in Bot. Mag. Tokyo **35**: 137 (1921).

Dist. Korea (Jeju-do).

Specimens. Jeju-do (Faurie, no.786. Type of *V. rotunda* in TI; Taquet, no.6268. Type of *V. amplexens* in TI).

var. ***subintegrum*** (Nakai) Yamazaki in Journ. Jap. Bot. **43**: 411 (1968).

Veronica spuria L. var. *subintegra* Nakai in Bot. Mag. Tokyo **25**: 62 (1911); Fl. Koreana 2: 129 (1911).

Veronica spuria auct. (non L.). Komarov, Fl. Mansh. **3**: 430 (1907). Nakai, Fl. Koreana **2**: 128 (1911). Chung, T. H. Korean Fl. **2**: 602, t. 1203 (1957).

Veronica komarovii Monjuschko in Not. Syst. ex Herb. Hort. Bot. Petrop. **5**: 114, t. in p.123 (1924). Nakai in Journ. Jap. Bot. **19**: 18 (1943).

Veronica rotunda Nakai var. *subintegra* (Nakai) Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect.III, **7**: 142 (1957). Lee, T. B., Ill. Fl. Korea: 675, t.2700 (1980).

Distr. Amur, Manchuria, Korea, N. Kyushu, Shikoku, C. and W. Honshu.

Specimens. 白頭山 (T. Mori, no.171, TI); 茂峯-農事洞 (M.Furumi, no. 415, TI). 咸南, 漢岱里 (T. Nakai, no. 15692, TI); 白岩山 (T. Nakai, Aug. 1935, TI). 慶南. 刁禁 (T. Uchiyama, Oct. 1902, Type of var. *subintegra* in TI). 全北. 全州 (T. Mori, no. 293, TI). 慶北. 伽倻山 (Y. N. Lee, Aug. 1956, TI). 全南. 無頭山 (I. Hurusawa, Aug. 1943, (TI)); 智異山, 七佛庵 (T.Nakai, no.445, TI). 八公山(T. Lee, July 1974, HAS)

var. ***coreanum*** (Nakai) Yamazaki in Journ. Jap. Bot. **43**: 411 (1968).

Veronica coreana Nakai in Bot. Mag. Tokyo **32**: 228 (1918).

Veronica rotunda Nakai var. *coreana* (Nakai) Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, **7**: 142 (1957).

Distr. S. Korea.

Specimens. 太白山(T. Lee et al, no. 3425, HAS). 智異山(T. Mori, no.281. Type of *V. coreana* in TI). 老姑壇~般若峯(T. Yamazaki, Aug. 1982, no. 3301, TI). 白雲山(T. Lee et al, Aug. 1963, HAS)

The intermediate forms between var. *subintegrum* and var. *coreanum* are found in Mt. Jiri.

The figures of *Veronica luxurians* in Chung, T. H., Korean Fl. 2: 599, t. 1197 and *Veronica kiusiana* var. *maxima* in Lee, T. B., Ill. Fl. Korea: 679, t. 2713 coincides with *Pseudolysimachion rotundum* var. *coreanum*.

Scrophularia L.

Stiefelhagen in Engl. Bot. Jahrb 44: 406-496 (1910). Yamazaki in Journ. Jap. Bot. 23: 79-88 (1949), 37: 263-265 (1962).

1. Stems with winged angles; main thick root freshy; leaves freshy.
 2. Leaves with winged petioles; sepals ovate or orbicular ovate, obtuse or rounded at apex.
 3. Leaves broadly ovate, obtuse at apex, rounded to subcordate at base, rounded teeth; sepals orbicular-ovate, rounded at apex; corolla 9~10 mm long, 4 mm wide; capsule subglobose, ca. 8 mm long and wide.....*Scrophularia takesimensis*
 3. Leaves ovate-oblong, acuminate at apex, obtuse to acute at base, acute-teeth; sepals ovate, obtuse at apex; corolla 8~6 mm long, 3 mm wide; capsule broadly ovate, 5~6 mm long, 4~5 mm wide.....*Scrophularia alata* var. *boreali-koreana*
 2. Petioles wingless; leaves broadly ovate, acuminate at apex, rounded to subcordate at base, acute-teeth; sepals oblong-ovate or broadly lanceolate, acuminate; corolla 13 mm long, 6 mm wide.....*Scrophularia cephalantha*
1. Stems 4-angled, wingless.
 4. Panicles very narrow and spike-like, densely flowered; flowers yellow-green, 6~7 mm long; capsule ca. 5 mm long, 3 mm wide; main root thickened, sublignose.....*Scrophularia buergeriana*
 5. Stems 90~150 cm tall; leaves 6~8 cm long, 3~4 cm wide.....var. *buergeriana*
 5. Stems 30~70 cm tall; leaves 2~3 cm long, 1.5~2.5 cm wide.....var. *quelp-artensis*
 4. Panicles broader and looser; flowers dark purple, 8~9 mm long; capsule 6~9 mm long, 4~6 mm wide; main root not thickened, some of lateral roots thickened, fusiform.
 6. Flowers in terminal panicles; sepals ovate, acute or subacute at apex.....*Scrophularia kakudensis*

7. Leaves 5~12 cm long, 3~5 cm wide.....var. *kakudensis*

7. Leaves 2~4 cm long, 1~2 cm wide.....var. *microphylla*

6. Flowers generally in axillary racemes; sepals lanceolate, acuminate at apex.....

Scrophularia koraiensis

8. Plants glabrous or sparsely pilose.....var. *koraiensis*

8. Plants subdensely hirsute.....var. *velutina*

Scrophularia buergeriana Miq. in Ann. Mus. Bot. Lugd.-Bat. 2: 116 (1865). Yamazaki in Journ. Jap. Bot. 23: 85 (1949). Chung, T. H., Korean Fl. 2: 592, t.1184 (1957). Lee, T. B., Ill. Fl. Korea: 669, t. 2674 (1980).

Scrophularia oldhami Oliver in Journ. Linn. Soc. Bot. 9: 167 (1867). Komarov, Fl. Mansh. 3: 415 (1907). Nakai, Fl. Koreana 2: 118 (1911).

Distr. C. and N. China, Manchuria, Korea, Kyushu, C. and W. Honshu.]

Specimens. 平南. 平壤 (H. Imai, Jul. 1910, TI); 大同郡, 大寶山 (I. Hurusawa, Aug. 1943, TI). 京畿. 高陽 (T. Uchiyama, Sept. 1902, TI); 長端 (T. Nakai, no. 3047, TI); 清涼里 (T. Uchiyama, Jul. 1902, TI). 水原 (T. Lee, Sept. 1964, HAS)

var. ***quelpartensis*** Yamazaki in Journ. Jap. Bot. 23: 85 (1949).

Distr. Korea (Jeju-do).

Specimens. Jeju-do (Taquet, no. 6043. Type in TI).

Scrophularia cephalantha Nakai in Journ. Jap. Bot. 14: 634 (1938).

This species was reported on the base of the young plant, so the description is very imperfect. It is added to the description of flower from the Lee's specimen.

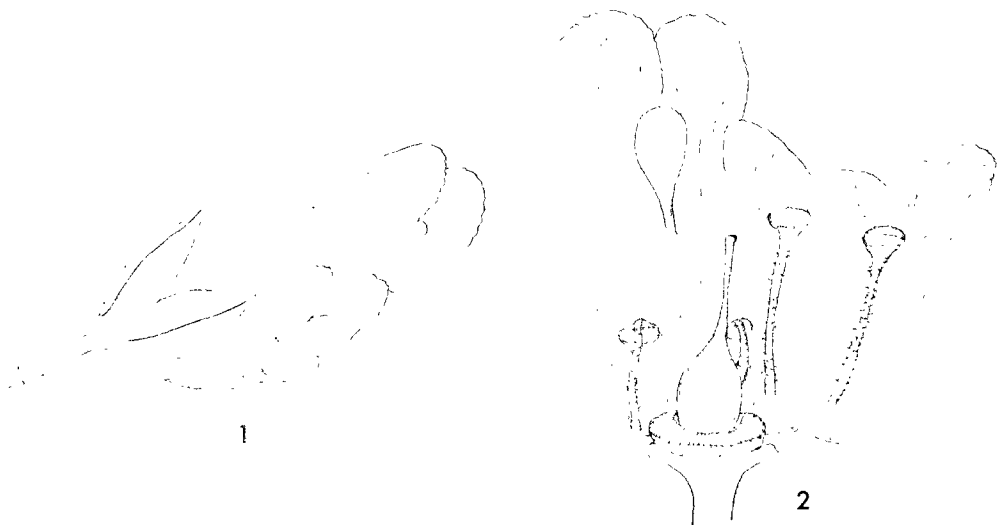


Fig. 6. *Scrophularia cephalantha* (Lee, T. B. May 1965): 1, flower $\times 3.5$. 2, corolla opened $\times 3.5$.

Inflorescence shortly panicled, 6 cm long, 4 cm wide. Pedicels stout, 5~10 mm long, sparsely glandular-pilose. Bracts linear, attenuate-acuminate, 5~8 mm long, 0.6~1 mm wide, glabrous. Calyx campanulate, deeply 5-lobed; sepals oblong-ovate or broadly lanceolate, ca. 4 mm long, 2~2.5 mm wide. Corolla atropurpurea ca. 13 mm long; tube urceolate, ca. 6 mm wide; posterior lobe elongate, ca. 6 mm long and wide, bilobed, the lobes elliptic-orbicular, ca. 2.5 mm long, 3.5 mm wide, undulate on margins; anterior lobe 3-lobed, the lateral 2 lobes transversely oblong ca. 2 mm long, 3.5 mm wide, the middle lobe orbicular ca. 2.5 mm long and wide. Staminodium large, spatulate, ca. 4 mm long, 2 mm wide. Stamens 4 included; filaments ca. 4 mm long, glandular-puncted. Ovary ovate ca. 2.5 mm long, 2 mm wide. Style filiform, ca. 3 mm long, punctate-stigmatose.

Distr. S. Korea.

Specimens. 慶南. 統營郡, 彌勒山(T. Nakai, no. 12146, May 1928, Type in TI; T. B. Lee, May 1965, Kwanak Arb. Korea).

Scrophularia alata A. Gray var. ***boreali-koreana*** (Nakai) Kitagawa, Neo-Lineam. Fl. Mansh.: 570 (1979).

Scrophularia grayana (non Maxim.) Komarov, Fl. Mansh. 3: 415 (1907). Nakai, Fl. Sylv. Koreana 14: 68 (1923), p. p. excl. Isl. Ullüng-do. Chung, T. H., Korean Fl. 2: 591, t. 1181 (1957), p. p., excl. Isl. Ullüng-do.

Scrophularia alata (non A.Gray.) Nakai, Fl. Koreana 2: 118 (1911).

Scrophularia boreali-koreana Nakai in Journ. Jap. 14: 632 (1938).

Scrophularia grayana Maxim. var. *boreali-koreana* (Nakai) Yamazaki in Journ. Jap. Bot. 37: 264 (1962).

Distr. N. Korea and Ussuri.

Specimens. 咸北. 黃雪嶺 (T. Nakai, no. 7437. Type in TI); 漁大津 (T. Nakai, no. 7439, TI); 朱乙 (T. Nakai, no. 7438, TI). 咸南. 西湖津 (T. Nakai, Jun. 1909, TI). 江原. 海金剛 (T. Nakai, no. 5823, TI); 大關嶺 (T. B., Lee, July 1964, Kwanak Arb. Korea).

The figure of *S. boreali-koreana* in Lee, T. B., Ill. Fl. Korea is incorrect by the acute sepals.

Scrophularia kakudensis Fr. in Bull. Soc. Bot. France 26: 87 (1879). Nakai, Fl. Sylv. Koreana 14: 69 (1923). Chung, T. H., Korean Fl. 2: 591, t. 1182 (1957). Lee, T. B., Ill. Fl. Korea: 669, t. 2675 (1980).

Distr. Hokkaido, Honshu, Shikoku, Kyushu, Korea and S. Manchuria.

Specimens. 平北. 宜川 (T. Nakai, no. 2991, TI). 京畿. 光教山 (T. Nakai, no. 531, TI); 光陵 (T. B. Lee, Aug. 1964, Kwanak Arb. Korea). 江原. 長箭 (T. Nakai, no. 6091,

TI). 慶南. 智異山 (K. R. Smith, no. 39, TI). 全南. 白雲山 (T. Nakai, Aug. 1934, TI); 智異山. 老姑壇 (T. Yamazaki, Aug. 1982, TI). 全北. 內藏山 (T. B. Lee, Aug. 1975, Kwanak Arb. Korea). 濟州道 (T. Lee, no. 9869, HAS)

var. *microphylla* Nakai in Journ. Jap. Bot. 14: 637 (1938).

Distr. Korea. Jeju do.

Specimens. Jeju-do (Taquet, Aug. 1913. Type in TI; Faurie, no. 455, 790, TI; T. Nakai, no. 6468, TI).

Scrophularia koraiensis Nakai in Bot. Mag. Tokyo 23: 189 (1909); Fl. Koreana 2: 118 (1911). Chung, T. H., Korean Fl. 2: 592, t. 1183 (1957). Lee, T. B., Ill. Fl. Korea: 669, t. 2676 (1980).

Scrophularia erecta Stiefelh. in Engl. Bot. Jahrb. 44: 458 (1910).

Scrophularia mandshurica Maxim. sensu Komarov. Fl. Mansh. 3: 413 (1907), pro parte. Yamazaki in Journ. Jap. Bot. 49: 306 (1974).

Scrophularia toyamae Hatusima ex Yamazaki in Journ. Jap. Bot. 25: 215, f. 3 (1950), syn. nov

Scrophularia mazinowiczii Gorschk in Not. Syst. Herb. Inst. Bot. Lom. Acad. Sci. URSS 14: 441, f. 2 (1951), syn. nov.

Distr. Ussuri, Korea and Kyushu (Isl. Tsushima).

Specimens. 咸南. 長津湖 (全錫奎, no. 21, TI) 平南. 狼林山 (T. Mori, Jul. 1916, TI). 江原. 金剛山 (T. Uchiyama, Aug. 1902, Type in TI); 月精寺 (T. B. Lee, Aug. 1963, Kwanak Arb. Korea); 中旺山 (T. B. Lee, Aug. 1963, Kwanak Arb. Korea); 五臺山 (T. B. Lee, Sept. 1971, Kwanak Arb. Korea); 雪岳山 (T. B. Lee, Aug. 1979, Kwanak Arb. Korea). 忠北. 俗離山 (T. B. Lee, 1958, Kwanak Arb. Korea).

var. *velutina* Sakata ex Uyeki et Sakata in Acta. Phytotax. Geobot. 7: 16 (1938).

Scrophularia paecamicola Sakata, l.c. (1938), pro syn.

Scrophularia pilosa Nakai in Journ. Jap. Bot. 14: 632 (1938).

Distr. The same with the typical form.

Specimens. 咸北. 西水羅 (J. Ohwi, no. 597, TI). 咸南. 元豐里 (J. Ohwi, Jun. 1932, KYO). 平北. 大紅山 (全錫奎 no. 112, TI). 慶北. 日月山 (T. H. Chung, Jul. 1937—Type of *S. pilosa* in TI).

Scrophularia takesimensis Nakai in Journ. Jap. Bot. 14: 635 (1938).

Scrophularia grayana (non Maxim.) Nakai, Veget. Dagelet: 25 (1919), pro parte.

Scrophularia grayana Maxim. var. *takesimensis* (Nakai) Yamazaki in Journ. Jap. Bot. 37: 264 (1962).

Distr. Korea (Isl. Ullung-do).

Specimens. Isl. Ullung-do: 上峯 (T. Nakai, no. 4661. Type in TI); 錐山 (T. Nakai, no. 4538, TI); 道洞~芋洞 (T. Nakai, no. 130, TI). 天府洞 (T. Lee, no. 8468, HAS)

The figure of *S. takesimensis* in T. B. Lee, Ill. Fl. Korea: 670, t. 2677 (1980) coincides with *S. alata* var. *boreali-koreana*.

***Siphonostegia* Benth.**

***Siphonostegia chinensis* Benth. ex Hook. et Arn., Bot. Capt. Beech. Voy.: 203, t.49 (1841). Palidin, Consp. Fl. Koreae 2: 21 (1900). Komarov, Fl. Mansh. 3: 459 (1907). Nakai, Fl. Koreana 2: 123 (1911). Chung, T. H., Korean Fl. 2: 593, t. 1185 (1957). Lee, T. B., Ill. Fl. Korea: 680, t. 2719 (1980).**

Distr. Kuriles, Hokkaido, Honshu, Shikoku, Kyushu, Lyukyu, Korea, China, Mongolia and Amur.

Specimens. 咸南. 三水~惠山嶺 (T. Nakai, no. 2553, TI); 元山 (T. Nakai, June 1909, TI). 平南. 大寶山 (I. Hurusawa, Aug. 1943, TI). 南漢山 (T. Uchiyama, Aug. 1902, TI); 水原 (T. Nakai, no. 3104, TI). 江原. 長箭 (T. Nakai, no. 5822, TI); 瑞興 (T. Nakai, no. 2863, TI). 慶北. 達城郡, 解龍面 (T. Nakai, no. 8174, TI). 慶南. 德山 (T. Nakai, no. 302, TI). 全南. 大黑山島 (T. Ishidoya, no. 3699, TI). 濟州道 (Taquet, no. 5832, TI; T. Nakai, no. 6470). 珍島 (T. Lee & M. Cho, Aug. 1964, HAS)

***Veronica* L.**

Römpf in Fedde Rep. Sp. Nov. Veget. 50: 1-172 (1928). Borisova in Fl. U.R.S.S. 22: 329-500 (1955). Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 7:133-162 (1957).

1. Perennial herbs; racemes terminal, with many flowers.

2. Stems erect, not prostrate, pubescent; leaves toothed, pubescent; capsule elliptic, longer than the width.....*Veronica stelleri*

2. Stems with repent sterile leafy branches, with spreading viscid hairs; leaves fleshy, low-dentate, glabrous; capsule broadly obcordate, wider than the length.....*Veronica tenella*

1. Annual or biennial herbs.

3. Flowers on the axils of alternate leaves.

4. Flowers and fruits shortly pedicelate, pedicels less than 1 mm long; capsule much compressed and obcordate.

5. Stems and leaves fleshy, glabrous or sparsely glandular pilose; leaves spatulate, oblong or linear, entire or low dentate.....*Veronica peregrina*

5. Stems and leaves scarcely fleshy, pubescent; lower leaves ovate toothed; upper leaves ovate-oblong merely toothed or entire.....*Veronica arvensis*

4. Flowers and fruits with filiform conspicuous pedicels of 0.5~3 cm long; capsule

thickened and obcordate.

6. Leaves with 2-3 paired teeth; sepals narrowly ovate; corolla lilac, 2~3 mm diam. capsule with two locules, rounded at apex.....*Veronica polita*

6. Leaves with 3~5 paired teeth; sepals oblong-lanceolate; corolla blue, 7~10 mm diam.; capsule with two locules, obtuse at apex.....*Veronica persica*

3. Flowers in lateral slender racemes; leaves opposite and fleshy.

7. Pedicels straightly ascending, making the racemes 8~12 mm wide when fruiting*Veronica anagallis-aquatica*

7. Pedicels spreading, usually distally upcurved, making the racemes 13~15 mm wide when fruiting.....*Veronica undulata*

Veronica anagallis-aquatica L., Sp. Pl.: 12 (1753). Komarov, Fl. Mansh. 3: 473 (1907). Yamazaki in Journ. Jap. Bot. 31: 300 (1956). Lee, T. B., Ill. Fl. Korea: 678, t. 2710 (1980).

Veronica aquatica (non L.) Nakai, Fl. Koreana 2: 128 (1911).

Distr. Widespread over from Europe to N. China, Manchuria and N. Korea.

Specimens. 咸北. 富寧 (T. Nakai, June 1909, TI); 鏡城郡, 生氣嶺 (T. Nakai, no. 7441, TI). 咸南. 三水~惠山鎮 (T. Nakai, no. 2554, TI); 甲山郡, 獐項里 (M. Furumi, Jun. 1917, TI). 서울 (R. G. Mills, no. 931, TI); 丹陽 (T. Lee et al, no. 760, HAS)

Veronica arvensis L., Sp. Pl.: 13 (1753). Chung, T. H., Korean Fl. 2: 596, t. 1191 (1957). Lee, T. B., Ill. Fl. Korea: 677, t. 2706 (1980).

Distr. Naturalized from Europe, widespread weed in the northern hemisphere.

Specimens. Isl. Ullung-do (T. Nakai, May 1917, TI). 麗水 (T. Lee, May 1964, HAS)

Veronica peregrina L., Sp. Pl.: 14 (1753). Komarov, Fl. Mansh. 3: 434 (1907). Nakai, Fl. Sylv. Koreana 14: 70 (1923). Lee, T. B., Ill. Fl. Korea: 677, t. 2705 (1979).

Veronica peregrina L. var. *xalapensis* (Humb.) Pennell in Torreyia 19: 167 (1980).

Distr. Widespread weed in the world.

Specimens. 서울 (R. G. Mills, no. 930, TI). 水原·光教山 (T. Lee et al., Apr. 1964, HAS). 濟州道 (Taquet, no. 6031, TI).

Veronica persica Poiret, Dict. Encycl. 8: 542 (1801), not seen. Roemer et Schult., Syst. Veget. 1: 126 (1817). Lee, T. B., Ill. Fl. Korea: 677, t. 2707 (1980).

Distr. Introduced from Europe, widespread weed in the northern hemisphere.

Specimens. 麗水 (T. Lee et al, May 1964, HAS). 鬱陵島 (T. Lee & M. Cho, no. 8437, HAS).

Veronica polita Fries var. *lilacina* (Yamaz.) Yamazaki, comb. nov.

Veronica agrestis (non L.) Palibin, Consp. Pl. Korea 2: 20 (1900). Nakai, Fl. Koreana

2: 127 (1911); Fl. Sylv. Koreana 14: 69 (1923). Chung, T. H., Korean Fl. 2: 594, t. 1188 (1957).

Veronica caninotesticulata Makino, Ill. Fl. Nippon: 140, t.418 (1940).

Veronica didyma Tenore var. *lilacina* Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect. III, 7: 150 (1957). Lee, T. B., Ill. Fl Korea: 677, t. 2708 (1980).

Distr. Honshu, Shikoku, Kyushu, Ryukyu, S. Korea, S. and C. China.

Specimens. 全北. 井邑~長城 (T. Nakai, no. 1192, 1193, TI). 慶南. 東萊郡, 機張面 (T. Nakai, no. 12144, TI). 晉州 (T. Lee, June 1980, HAS). Isl. Ullŭng-do 道洞 (T. Nakai, no. 4541, TI). Jeju-do (Taquet, no. 4324, TI).

Veronica stelleri Pall, var. *longistyla* Kitagawa in Rep. Inst. Sci. Res. Manch. 4: 127 (1942). Chung, T. H., Korean Fl. 2: 602, t. 1204 (1957), excl. syn. Lee, T. B., Ill. Fl. Korea: 676, t. 2703 (1980).

Veronica alpina (non L.) Komarov, Fl. Mansh. 3: 435 (1907).

Veronica stelleri Pall. seusu Nakai, Fl. Sylv. Koreana 14: 70 (1923).

Distr. N. Korea, Sachalin and Hokkaido.

Specimens. 白頭山 (T. Nakai, Aug. 1914. Type in TI: H. Hirai, Aug. 1913, TI;

T. Mori, Aug. 1913, TI; M. Furumi, July 1917, TI). The figure of *V. langrimsanensis* T. H. Chung (Korean Fl.: 598, t. 2703, 1957) is probably the same with this species.

Veronich tenella Allioni, Fl. Pedem. 1: 75, t. 22, f.1 (1785), not seen. Hultén, Fl. Alask. Yuk. 9: 1379 (1949).

Veronica humifusa Dickson in Trans. Linn. Soc. 2: 288 (1794).

Veronica serpyllifolia L. & *humifusa* Walp., Rep. Bot. Syst. 3: 358 (1844 45).

Veronica serpyllifolia (non L.) Komarov, Fl. Mansh. 3: 433 (1907). Nakai, Fl. Sylv. Koreana 14: 70 (1923). Chung, T. H., Korean Fl. 2: 600, t. 1200 (1957).

Veronica serpyrifolia L. subsp. *humifusa* (Dicks.) Pennell in Acad. Nat. Sci. Philadel. Monogr. 5: 77 (1943).

Distr. Europe to Siberia, Himalayas, N. and C. China, N. Korea, C. Honshu, Hokkaido, Sachalin, Kamtchatika, Alaska and N. America.

Specimens. 咸南. 雲仙嶺 (T. Nakai, no. 15690, TI); 胞胎山~虛項嶺 (T. Nakai, no. 3242, TI). 惠山嶺 (T. Mori, no. 351, TI).

Veronica undulata Wall. ex Roxb., Fl. Ind. ed. Carey 1: 147 (1820). Pennell in Acad. Nat. Sci. Philadel. Monogr. 5: 91 (1943). Yamazaki in Journ. Jap. Bot. 31: 300 (1956).

Distr. Afganistan, Nepal, Bhutan, Bengal, N. Indochina, S. and C. China, S. Korea and Japan.

Specimens. Jeju-do (Taquet, no. 9837, TI; T. Nakai, no. 1276, TI).

Veronicastrum Heister ex Farbicus

Yamazaki in Journ. Fac. Sci. Univ. Tokyo sect .III, 7: 126-133 (1957).

Veronicastrum sibiricum (L.) Pennell in Acad. Nat. Sci. Philadel. Monogr. 1: 321 (1935). Yamazaki in Journ. Jap. Bot. 27: 94 (1952).

1. Stamens and leaves glabrous or sparsely pubescent.....var. *sibiricum*

1. Stamens and leaves subdensely pubescent.....var. *zuccarinii*

var. ***sibiricum***.

Veronicastrum sibiricum (L.) Pennell. Lee, T. B., Ill. Fl. Korea: 679, t. 2716 (1980).

Veronica sibirica L., Pl. ed. 2: 12 (1762). Komarov, Fl. Mansh. 3: 425 (1907). Nakai in Journ. Jap. Bot. 19: 5 (1943). Chung, T. H., Korean Fl. 2: 601, t. 1201 (1957).

Veronica virginica L. var. *sibirica* (L.) Maxim. ex Herder, Pl. Radd. Monop. 6: 1 (1884), in syn. Nakai in Bot. Mag. Tokyo 26: 170 (1912).

Veronica virginica (non L.) Palibin, Consp. Fl. Koreae 2: 21 (1900). Nakai, Fl. Koreana 2: 127 (1911).

Veronica sibirica L. var. *glabra* Nakai in Journ. Jap. Bot. 19: 5 (1943).

Distr. Ural, Altai, Dahuria, Amur, Ussuri, Manchuria and Korea.

Specimens. 白頭山 (T. Mori, no. 149, TI); 葱田嶺 (T. Nakai, no. 1607, TI). 平南. 上南洞 (T. Mori, July 1916, TI). 安眠島 (T. Lee et al, no. 5643, HAS). 鎮安 (T. Lee July 1970, HAS)

var. ***zuccarinii*** (Koidz.) Hara in Journ. Jap. Bot. 16: 160 (1940).

Veronica virginica L. var. *zuccarinii* Koidz. in Bot. Mag. Tokyo 44: 112 (1930).

Veronica sibirica L. var. *zuccarinii* (Koidz.) Nakai in Journ. Jap. Bot. 19: 9 (1943), cum f. *angustifolia* Nakai.

veronica sibirica L. var. *latifolia* Nakai ex Chung, T. H., Korean Fl. 2: 601, t. 1202 (1957).

Distr. Korea and N. Kyushu.

Specimens. 咸北. 清津 (T. Nakai, Jun. 1909, TI); 朱乙溫面, 甫上洞 (T. Nakai, no. 7442, TI). 咸南. 漢信里 (T. Nakai, no. 15691, TI). 平南. 加音崖 (T. Mori, July 1916, TI). 黄海. 九味浦 (R. K. Smith, Aug. 1932, TI). 서울. 南山 (T. Uchiyama, July 1902, TI); 光陵 (T. Mori, no. 247, TI). 江原. 洗浦~蘭谷 (T. Nakai, Sept. 1916, TI). 慶北 Haka-san (R. K. Smith, no. 125, TI). 全南. 白雲山 (T. Nakai, Aug. 1932, TI).

Many intermediate forms are found between var. *sibiricum* and var. *zuccarinii*.

***Paulownia* S. et Z.**

1. Trichomes on the leaf beneath pale brown: Corolla pale violet or pale whitish violet with darker spots inside.

2. Corolla pale violet.....*P. tomentosa*

2. Corolla pale whitish violet.....*P. tomentosa* for. *pallida*

1. Trichomes on the leaf beneath dark brown: flowers violet without darker spots or paler spots inside.

3. Flowers without darker spots.....*P. coreana*

3. Flowers without darker spots or mixed with vestigial spots.....*P. intermedia*

Paulownia coreana Uyeki in Bull. Agr. For. Coll. Suwon 1, 20 t. 16 f. 1-10 (1925); Woody Pl. 95 (1940). Chung, T. H., Fl. Kor. 1: Nakai in Synopt. Sketch 101 (1952). Lee, T. B., Arb. Kor. 273 (1947); Ill. Woody Pl. 166 t. 664 (1969); Ill. Fl. Kor. 668 t. 2672 (1980)

Distr. South to Pyung-an-namdo, China

Specimens. 雪岳山(T. Lee, May. 1966, HAS). 水原(T. Lee, May. 1981, HAS)

Paulownia* × *intermedia T. Lee, hyb. nov.

Trichomes on the leaf surface are very variable both colour and density of these. Colour of corolla appears to be intermediate between *Paulownia coreana* and *P. tomentosa* while a tree had flowers of both types mixed with vestigial spots inside.

Specimens 忠武市·彊勒山(T. Lee, Park, J. D., T.W. Cho, May 1965, HAS)

Paulownia tomentosa(Thunb.) Steudel in Nomencl. Bot. ed. 2, 2:278(1841)—Nakai, Fl. Sylv. Kor. 14:74 t. 16, 17 (1923); Synopt. Sketch 101 (1952); Lee, T. B., Arb. Kor. 273 (1947); Ill. Woody Pl. Kor. 166 t. 664 (1969); Ill. Fl. Kor. 668 t. 2671 (1980).

Bignonia tomentosa Thunb. in Fl. Jap. 252 (1785)

Paulownia imperialis S. et Z. in Fl. Jap. 2:27 t. 10 (1835)

Distr. China and Korea (South to Huang-Hae-do)

Specimens. 水原(T. Lee, no. 2922 HAS)

for. *pallida* (Schneider) Rehder in Bibliogr. Cult. Trees etc. 592 (1940).

Paulownia tomentosa var. *pallida* Schneider, Ill. Handb. Laubh. 2:618 (1911)

Specimens. 水原·遲遲臺(T. Lee, No. 2925 HAS)



Flower of *Paulownia intermedia*



Variation of darker spots inside of corolla of *Paulownia* spp., left; *P. tomentosa* middle; *P. intermedia*, right; *P. coreana*