

THE GENUS LAGOCHILUS (LABIATAE) IN IRAN

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A revision of the genus *Lagochilus* (Labiatae) in Iran is presented. Altogether 6 species are recognized from Iran. A new species, *L. quadridentatus* and 3 new subspecific taxa including *L. aucheri* subsp. *heterophyllus*, *L. aucheri* subsp. *aucheri* var. *elegans* and *L. aucheri* subsp. *aucheri* var. *tomentosus* are described.

L. lasiocalyx is the new combination, based on *L. aucheri* var. *lasiocalyx*. *L. aucheri* var. *perhispidus* is treated as a synonym of *L. lasiocalyx*.

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جنس *Lagochilus* در ایران

از: زیبا جمزاد

مروری از جنس *Lagochilus* در ایران ارائه می‌شود. از مجموع ۶ گونه‌ای که از این جنس در ایران شناخته شده، گونه *L. quadridentatus* بعنوان گونه جدید نامگذاری و معرفی میگردد. علاوه بر این واحدهای تحت گونه زیر نیز بعنوان واحدهای رده‌بندی جدیدی نامگذاری و معرفی میشوند.

L. aucheri subsp. *heterophyllus*, *L. aucheri* subsp. *aucheri* var. *elegans*, *L. aucheri* subsp. *aucheri* var. *tomentosus*.

گونه *L. lasiocalyx* ترکیب جدیدی است که براساس نام *L. aucheri* var. *lasiocalyx* ساخته میشود و *L. aucheri* var. *perhispidus* مترادف آن

گذاشته می‌شود.

Introduction

Lagochilus is a genus from the *Labiatae* family with about 60 species from which 6 occur in Iran. The genus has its wide distribution in Central Asia. Boissier (1879) mentioned 6 species, Parsa (1949) mentioned 6 species and two varieties and Rechinger (1982) recognized 5 species from Iran.

In the course of naming herbarium materials of the genus *Lagochilus* in the herbarium of Research Institute of Forests and Rangelands (TARI), a taxonomic complexity in *L. aucheri* group was noticed. Also a new species was recognized from Iran and finally I came to the conclusion to do a revision of the genus in Iran.

This work is based on the study of about 100 herbarium specimens, which belong to the herbaria of TARI and Plant Pests and Diseases Research Institute (EVIN).

Valuable taxonomic characters

INDUMENTUM

Calyx indumentum shows a variation within a species, ranging from glabrous to more or less lanate. In some collections both glabrous and hairy calyx occur together. They are usually more frequent on immature flowers. The hairs are either

short appressed or long patent. The sessile glands are present on the calyx in most species. The stems are covered by short appressed tomentose hairs in some taxa. The long patent hairs mostly at the nodes and some on the other parts, usually fall in age. The leaves in most species are covered with hairs on the ribs and punctate glands mostly on the lower surface. The indumentum is one of the characteristics that can be used in distinguishing varieties.

LEAF

The shape of the leaf in *Lagochilus* species, is a reasonably constant character. Most of the Iranian species have dissected leaves. The leaf shape varies in outline, they are triangular, ovate, or linear-lanceolate. The leaf segments apices are spiny and acute in *L. macracanthus* and *L. aucheri* subsp. *aucheri* var. *tomentosus* or obtuse almost without a spine in *L. quadridentatus*. The margins are revolute in some and almost flat in others. Heterophylly is seen in *L. macracanthus* and *L. aucheri* subsp. *heterophyllus*. The leaf shape is one of the useful characters in distinguishing different species and subspecies. Figure 1 shows the leaf shape in different species, subspecies and varieties.

CALYX

The calyx is tubular - campanulate, usually 5 toothed but 4 in *L. quadridentatus*. The teeth are linear - lanceolate with acute spinose tip or obtuse - spinose. The length ratio of calyx teeth to the tube is different. The length of calyx tube and teeth are more or less equal in *L. macracanthus* and *L. alutaceus*. In other species, the calyx teeth's length varies from 1.5 to 2.5 times as long as the tube.

NUTLETS

The nutlets are trigone, truncate at the apex, usually with a glandular surface or covered with long hairs (in *L. lasiocalyx*).

Lagochilus Bunge in Benth.

Bunge in Benth., Lab. Gen. sp. 640 (1834); DC. Prod. XII: 514(1848); Boiss. Fl. Or. IV. 768 (1879); O.E. Korring Fl. of the USSR XXI: 160 (1954); Parsa, Fl. de l'Iran IV, 821 (1949); Rechinger, Fl. Iranica 150;227 (1982).

Small erect shrub with spiny bracts. Leaves simple, trifold or pinnatisect. Calyx tubular - campanulate, 5 or 4 toothed, the teeth terminating to spines. Corolla bilabiate with a ring of hairs inside near the base of tube; upper lip erect, hairy,

emarginate; lower lip 3 - lobed, the two laterals small, the middle larger. Stamens 4. Style with two equal lobes. Nutlets trigone with a truncate apex, glandular or hairy.

Key to the species and subspecific taxa

1. Calyx teeth 4; the teeth 4 - 5 mm wide.

4. *L. quadridentatus* Jamzad

Calyx teeth 5; the teeth 2 - 4 mm wide. 2

2. Calyx teeth shorter or equal to the length of the tube. All basal and cauline leaves trifold or trilobed. 3

Calyx teeth evidently longer than the tube. Basal and cauline leaves dissected or simple and trifold. 4

3. Upper floral leaves simple, lanceolate. Verticillasters remote.

6. *L. macracanthus* Fisch. & C.A. Mey. All leaves trilobed. Verticillasters closer than above.

5. *L. alutaceus* Bunge

4. Calyx with a ring of hairs in the throat. Plants totally covered with stiff hairs. Nutlets hairy at the apex.

2. *L. lasiocalyx* (Stapf) Jamzad Calyx without a ring of hairs in the throat, glabrous, tomentose, lanate or covered with long, patent hairs. Nutlets not hairy. 5

5. Calyx small, 16 - 20 mm long; the

teeth 11 -- 15 mm long.

2. *L. cabulicus* Benth.

Calyx and teeth longer (1. *L. aucheri* Boiss.) 6

6. Basal and some cauline leaves simple, linear.

subsp. *heterophyllus* Jamzad

All leaves dissected. (subsp. *aucheri*.) 7

7. Calyx glabrous or more or less lanate.

Stem glabrous or covered with short hairs. 8

Calyx and stem covered with short or long patent hairs. 9

8. Calyx and stem glabrous,

var. *aucheri*

Calyx more or less lanate. Stem pubescent.

var. *kotschyanus* (Boiss.) Bornm.

9. Calyx covered with long patent hairs.

Leaves dissected from 1/3 of their length into oblong obtuse segments.

var. *elegans* Jamzad

Calyx tomentose. Leaves dissected from the base into acute linear segments.

var. *tomentosus* Jamzad

1. *L. aucheri* Boiss., Diagn. Pl. Or. Nov. ser. 1,5: 38 (1844).

Perennial, 15 -- 35 cm high. Stems numerous, erect, glabrous or hairy. Leaves pinnatisect or simple and trilobed

(in subsp. *heterophyllus*), glabrous or hairy, 2.5 -- 3.5 x 1.5 -- 4.5 cm, the segments oblong, linear. Bracts spiny, glabrous or hairy, 10 -- 20 mm long. Calyx campanulate, glabrous or hairy, 16 -- 30 mm long; the teeth 1.5 -- 2 times as long as the tube. Nutlets glandular at the apex.

1a. *L. aucheri* Boiss. subsp. *aucheri* var. *aucheri*

Stems glabrous, whitish. Leaves triangular or ovate in outline, dissected almost from the base into linear segments with revolute margins, glabrous, glandular dotted beneath or tomentose on both sides. Calyx glabrous, covered with punctate glands; the teeth linear, acute, terminating into a spine, the margins ciliate.

Distribution. Iran (endemic).

Azarbayejan: Mianeh to Tabriz, 100 m, Sabeti 12882. -- Kordestan: Sanandaj to Marivan, Pass Ariz, 2200 -- 2350 m, Termeh 14487 E; Marivan, 1800 -- 2100 m, Iranshahr & Termeh 12311 E; Bijar, Salamatabad, 1750 m, Iranshahr & Dezfoulisan s.n.; E. Sanandaj to Mahabad, 1800 m, Furse & Syngé 7680. -- Hamadan: 3 km W. Hamadan, 2070 m, Pabot 1477. - Lorestan: Aligodarz-Sholabad, Ghalikuh

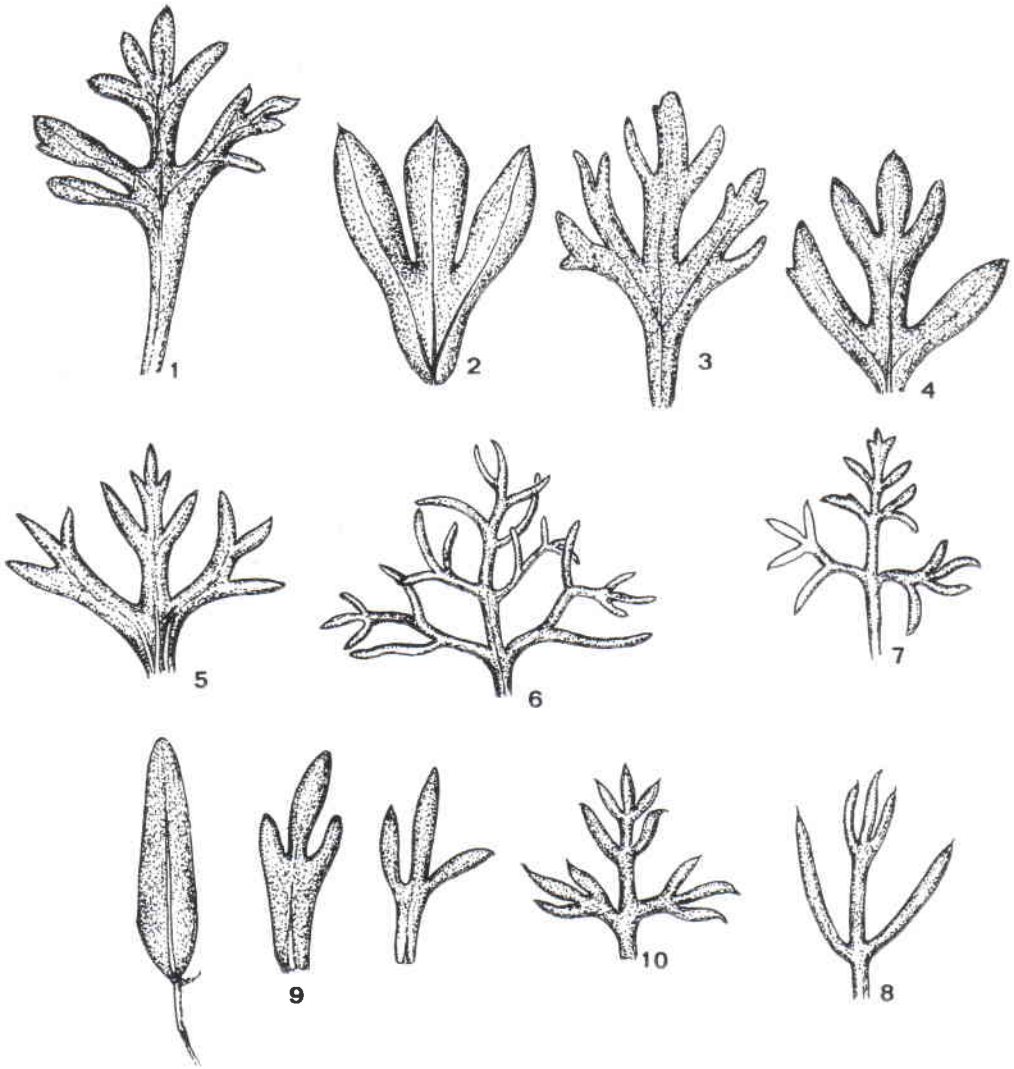


Fig. 1—10. Basal leaves in *Lagochilus*. —1. *L. quadridentatus* (x 1.5). —2. *L. macracanthus* (x 2). —3. *L. cabulicus* (x 2). —4. *L. alutaceus* (x 2). —5. *L. aucheri* subsp. *aucheri* var. *kotschyanus* (x 1). — 6. ——— var. *aucheri* (x 1). — 7. ——— var. *elegans* (x 1). — 8. ——— var. *tomentosus* (x 1.5). —9. ——— subsp. *heterophyllus* (x 2). —10. *L. lasiocalyx* (x 2).

2200 — 3500 m, Mozaffarian & Sardabi 42371 & 42255. — Tehran: Damavand, Homande Absard, Mozaffarian 45013, Firuzkuh, Rostamabad, 2400 m, Dini & Arazm 12885.

1b. — — — var. *tomentosus* Jamzad var. nov.

Caulis erectus, tomentosus. Folia 3 — lobata usque ad basin divisa; lobis linearibus, margine revolutis. Calyx 22 — 25 mm longus, tomentosus, glanduloso-punctatus.

Stems erect, tomentose. Leaves 3 — lobed, divided almost to the base into linear, revolute segments. Calyx 22 — 25 mm long, covered with short hairs and sessile glands.

Distribution. Iran.

Typus. W. of Tehran, Souleghun, 1500 — 2000 m, Jamzad, 57063. (Holotypus, TARI).

Mazandaran: Lar valley, 2450 — 2550 m, Wendelbo & Assadi 13257. — Azarbayejan: 50 km SE. Zanjan, S. Soltaniyeh, Pabot 39060. — Tehran: Abali, 2200m, Dini & Arazm 12870; Damavand, Tar lake, Sabzevari E.

1c. — — — var. *kotschyanus* (Boiss. in DC.)

Bornm. comb. nov.

Syn. *L. kotschyanus* Boiss. in DC. Prodr. 12: 515 (1848); *L. aucheri* Boiss. var. *kotschyanus* (Boiss. in DC.) Bornm. in Beihefte Bot. Centralbl. 22, 2 (1907) p. 134.

Stems numerous, covered with short and scattered long patent hairs in the inflorescence. Leaves pinnatisect; the segments linear-lanceolate with revolute margins, covered with hairs on both sides. Calyx campanulate; the tube covered with tomentose and long villose hairs with the appearance of lanate form indumentum.

Distribution. Iran (endemic).

Mazandaran: Kandavan, 2400 m, Pabot 4878 & Termeh & Matin E. — Tehran: road to Firouzkuh, Sarbandan, 2050 m, Amin 12892.

1d. — — — var. *elegans* Jamzad, var. nov.

Caulis erectus, pilis patentis obsiti. Folia ad $1/3$ longitudine divisa, segmentis oblongis, margine \pm planis, glanduloso-punctatus. Calyx 30 mm longus, campanulatus, pilis patentis longis obsiti. Stems erect, covered with long patent hairs. Leaves dissected from $1/3$ of its length in oblong obtuse \pm flat margin segments, covered with punctate glands

mostly on lower surface and a few hairs on the midrib and margin. Calyx campanulate, 30 mm long, covered with long patent hairs, the teeth two times as long as the tube, more or less obtuse, terminating to a spine 0.5 — 1 mm long.

Distribution. Iran (endemic).

Typus. Semnan: Shahroud, Kuh-e Abr, 1900 m, Riazi 5402 (holotypus TARI).

Gorgan: Ziyarat, Kuh-e Talambar, 1750 — 2810 m, Moussavi et al. E; Tange Chehel Dokhtar, Sharif 24 E; Below Almehr, 1250 — 1400 m, Wendelbo & Foroughi 12721. — Semnan: Kuh-e Ghatry, 1950 m, Forough 8969; 54 km N.E. Shahrud, 1650 m, Pabot 8146.

1e. — — — subsp. *heterophyllus* Jamzad, **subsp. nov.**

Caulis glabrous vel pilis longis ad bases verticillastros obsitis. Folia basalia et caulina trilobata et indivisa, margine ± planis. Calyx campanulatus, glabrous vel lanatus.

Perennial, 15 — 30 cm high, stems numerous, erect or ± flexuosus, glabrous or covered with long hairs at the base of verticillasters. Basal and cauline leaves in two forms, linear and trilobed, more or less glabrous, the margins ± flat. Calyx

glabrous or lanate; the teeth 1.5 to 2 times as long as the tube, linear - lanceolate, acute, terminating to a spine 1 mm long. Spiny bracts spreading, 1.5 — 2 cm long, glabrous or covered with scattered hairs. Corolla pinkish white 1.5 times as long as the calyx.

Distribution. Iran (endemic).

Typus. Iran: Kohgilouyeh - Boir Ahmad, ca. 50 km E. of Deh Dasht, Kuh-e Nil, 2400 — 3200 m, Assadi & Abouhamzeh 46545 (holotypus TARI).

Fars: 150 km S. Abadeh, Babakhanlou & Bazargan. 24047; Bavanat, Sourian mt. Termeh & Izadyar E. — Bakhtiari: Tang-e Sayad, near Morghak, 2550 m, Iranshahr 25664 E.

Note. The new subspecies differs from subsp. *aucheri* in leaf shape which is undivided on the sterile shoots and on the lower parts of the stem and trilobed in upper part and different habit.

The specimen no. 25664 E. is a young specimen similar to the subspecies in leaf character but calyx with very long and dense hairs.

This subspecies can be divided to varietal rank, but due to the poor material no more divisions are made.

2. *L. lasiocalyx* (Stapf) Jamzad, **state & comb. nov.**

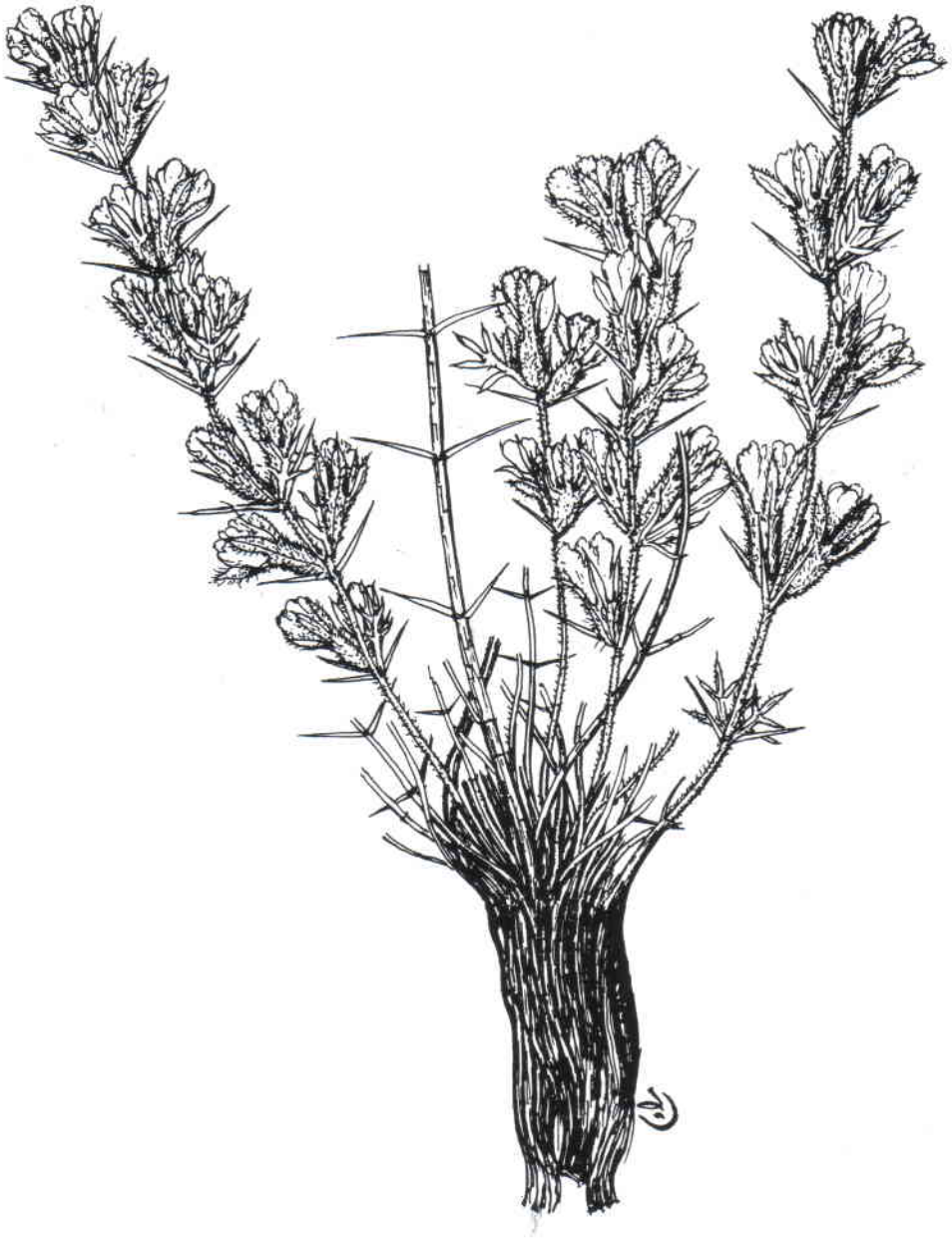


Fig. 11. *Lagochilus lasiocalyx* (x 0.8).

Syn. *L. aucheri* Boiss. var. *lasiocalyx* Stapf, Denksch. Akad. Wiss. Wien Math. Nat. K1. 50: 4 (1885); *L. aucheri* Boiss. var. *perhispidus* Bornm., Beih. Bot. Centralbl. 22,2: 134 (1907).

Perennial, 10 – 20 cm high. Stems erect, covered with short and scattered long bristles. Leaves trilobed, each lobe dissected into linear and acute segments with revolute margin, terminating to a spine, covered on both sides with upright hairs. Calyx campanulate, the tube covered with dense long hairs. and sessile glands, Calyx throat covered with a ring of hairs inside, the teeth 1.5 – 2 times as long as the tube, acute, terminating to a spine ca. 1 mm long. Bracts spiny, hairy up to the middle or more or less glabrous, 10 – 12 mm long. Corolla as long as or slightly exceeding the calyx. Nutlets covered with hairs at the apex.

Distribution. Iran (endemic).

Kordestan: Bijar, Kuhe Hamze Arab, 2700 – 2550 m, Iranshahr & Dezfulian 13203 E.–Hamadan: 137 km from Hamadan on the road to Qhazvin, 2170 m, Assadi & Amini 13616; Gharghabad, 53 km from Saveh on the road to Hamadan, 1750 m, Assadi & Shirdelpur 13184. — Tehran: ca. 15 km from Ashtian to Tafresh, Shahrab (UV2), 2100 m, Mozaf-

farian & Maassumi 48116; Arak, 39 km S.E. Arak, Andjadan, Godare Serkuh, Akhani 1569; 6 km S. Arak, Senedjan, Mt. Faradjollah, Akhani 3510.

I have not seen the type specimens of *L. aucheri* Boiss. var. *lasiocalyx* stapf and *L. aucheri* Boiss. var. *perhispidus* Bornm., but the specimens which were collected from their type localities are identical and fit well to their descriptions. The distinct differences between *L. lasiocalyx* and *L. aucheri* are the presence of a ring of hairs on the calyx throat and seed with hairy apex in *L. lasiocalyx*.

3. *L. cabulicus* Benth. in DC. Prodr. 12: 515 (1848).

Perennial, 12 – 20 cm high. Stems many, covered with short and scattered long hairs. Leaves ovate in outline, trilobed, each lobe dissected to linear segments with revolute margin, covered by punctate glands and upright hairs. Calyx campanulate, glabrous or covered with long hairs on the veins or papilose-glandulose, 16 – 20 mm long, the teeth obtuse, mucronate with 0.5 – 1 mm long spines, 1.5 to 2 times as long as the tube. Spiny bracts 1 – 1.5 cm long. Corolla 1 – 1.5 times as long as the calyx. Nutlets covered with punctate glands at the apex.

Distribution. Afghanistan, Turcomanistan and Iran.

Khorasan: Esfarayen, Shah - Jahan mt. Sarcheshmeh, 1700 m, Mozaffarian. 48402; Ghuchan, Alamli pass, Rechinger et al. 4803. — Semnan: 35 km from Shahmirzad to Fuladmahaleh, 2300 m, Assadi & Mozaffarian 40407; Shahmirzad, Kuhe Nizva, 2800 m, Iranshahr & Zargani 35473 E. — Tehran: 12 km N. Firuzkuh, 2130 m, Babakhanlou & Amin 12886.

Note. *L. cabulicus* is very close to *L. aucheri* and sometimes it is difficult to distinguish them. More investigations may reveal their identity.

4. *L. quadridentatus* Jamzad, sp. nov.

Perennis, caulis erectus, numerosus, 12 — 16 cm altus, simplicibus vel parce ramosus, residuis caulium floriferum annorum praecedentium persistentibus, breviter appresse tomentosus, pilis longis patentibus immixtis. Folia ad dimidium dissecta, segmentis lanceolatis, obtusis, \pm revolutis, breviter - tomentosis. Calyx campanulatus, glaber, 17 mm longus, quadridentatus; laciniae obtusae, mucronatae, quam tubi 1.5 plo longiores. Bractee spiniformes, patentees, 5 — 6 mm longae, glabrae. Corolla flava, calyce paulo longior. Verticillastri biflori. Nux triquetra, apice

truncata, glandulosa.

Perennial, 12 — 16 cm high. Stems numerous, simple or partly ramose, with remnants of old shoots, covered with short appressed and some long patent hairs. Leaves dissected in upper half of their length, the segments lanceolate, obtuse with slightly revolute margins, covered with some short hairs on both sides. Calyx campanulate, glabrous, 17 mm long, with 4 obtuse mucronate teeth, the teeth 1.5 times as long as the tube. Spiny bracts patent, 5 — 9 mm long, glabrous. Corolla yellow, slightly exceeding the calyx. Verticillasters 2-flowered. Nutlets triangular, truncate at the apex with a glandular surface.

It differs from *L. paulsenii* (The endemic species of Pamir - Alai), the only four toothed calyx species mentioned in Flora Iranica (Rechinger l.c.p. 343), in the plant length which is 30 — 50 cm, the flowers which are pink with dark nerves, and the calyx 30 — 35 mm long in *L. paulsenii*.

Distribution. Iran. (endemic).

Typus. Iran, Mazandaran: 85 km from Kandavan to Haraz - road, Mazid village, 1900 — 2000 m, 23,6,1979, Assadi & Mozaffarian 33030 (holotypus: TARI), Assadi & Jamzad 55242 a.



Fig. 12. *Lagochilus quadridentatus* (nat. size).

5. *L. alutaceus* Bunge in Mem. Acad. Imp. Scienc. Petersbg. ser. 7, 21, 1: 74 (1873).

Perennial, 15 cm high, Stems erect, covered with short and scattered long hairs. Leaves trilobed, cuneate, covered with punctate glands on lower and short hairs on upper surface. Calyx Campanulate - infundibular, \pm 12 mm long, glandular; the teeth obtuse, mucronate, as long as the tube. Spiny bracts very vigorous, 8 - 10 mm long, glabrous. Corolla \pm 2 times as long as the calyx. Nutlets glandular at the apex.

Distribution. Iran (endemic).

Iran, Semnan; 70 km on the road from Semnan to Damghan, 1050 m, Assadi & Maassoumi 21004.

6. *L. macracanthus* Fisch. & C. A. Mey. in Schrenk, Enum, P1. Nov. 30 (1841).

Syn. Yermoloffia insignis Bel. Voy. Indes Orient Ic. (1846); *L. insignis* (Bel.) Boiss., Fl. Orientalis 4: 770 (1879).

Perennial, 15 - 60 cm high. Stems erect, glabrous or covered with short hairs intermixed with punctate glands. Leaves ovate, 3 - lobed up to the middle; floral leaves lanceolate, simple, undivided, spinose at the tip. Calyx campanulate, covered with short hairs and sessile

glands, the teeth as long as the tube, acute or \pm obtuse, terminating into a spine \pm 0.5 mm long. Spiny bracts 15 - 20 mm long, glabrous or covered with short hairs and sessile glands at the base. Corolla 2 times as long as the calyx. Nutlets glandular at the apex.

Distribution. Iran (endemic).

Tehran: Chitgar, N. of Botanical garden, 1330 m Amini 12554, Vardavard valley, 1700 m, Wendelbo et al. 12531; 31 km S.W. of Karaj, 1250m, Babakhanlou & Amin 12875, Arthur Cronquist 10731; Road to Saveh, Hezar Mehtar, 950m, Babakhanlou & Amin 12883; Eshtehard, Jafarabad, 1300 m, Asefi, 12905.

Doubtful records & species

1. *Lagochilus balchanicus* Czerniak., Fedd. Rep. (1929 - 30) p. 278.

This species was described from north Turcomania, Balkhany mountain by Czerniakowska (Fedd. Rep. XXVII, 1930, p. 278). Parsa (1949 p. 823) in Fl. de l' Iran mentioned it from N.E. Iran, Turkamanestan, probably based on Czerniakowska's, record (l.c.) as a possible member of the flora of Iran.

2. *Lagochilus hispidus* Fisch. & C.A. Mey.

in Schrenk Enum Pl. Nov. 33 (1841); DC. Prodr. 12: 515 (1848).

Syn: *Yermoloffia hispida* Bel., Voy. Indes Orient. Ic. sine numero nec. discr; *L. hispidus* (Bel.) Boiss., Fl. Or. 4: 769 (1879); Rechinger Fl. Ir. 150: 344 (1982).

Benth. in DC. l.c. mentions pilose calyx for the species, while Boiss. l.c. describes it with glabrous calyx and hispid hairs on the stem and leaf. Moreover Rechinger l.c. believes that the specimen with the label "Elburs supra Nur, BUHSE, in G. Boiss. which has been cited under *L. hispidus* by Boiss. l.c. is *L. kotschyanus*.

Acknowledgments

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