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# Three new species of *Alchemilla* in the Balkans

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## RÉSUMÉ

PLOCEK, A. (1998). Trois espèces nouvelles d'*Alchemilla* dans les Balkans. *Candollea* 53: 309-320. En anglais, résumés français et anglais.

Trois espèces nouvelles *A. vincekii* Plocek, *A. rubidula* Plocek et *A. montenegrina* Plocek sont décrites dans la sect. *Alchemilla*, subsect. *Calycanthum* Rothm. à partir de récoltes faites dans les Balkans de 1993 à 1996. Chacune est du Monténégro (Prokletije planina, Moračka planina et le mont Štitan, respectivement). Ses espèces nouvelles sont illustrées et commentées quant à leurs caractères distinctifs et leur position taxonomique.

## ABSTRACT

PLOCEK, A. (1998). Three new species of *Alchemilla* in the Balkans. *Candollea* 53: 309-320. In English, French and English abstracts.

From *Alchemilla* material collected in the Balkans in 1993-1996, three species are described as new, *Alchemilla vincekii* Plocek, *A. rubidula* Plocek and *A. montenegrina* Plocek, from sect. *Alchemilla* subsect. *Calycanthum* Rothm. Each is probably a narrow endemic to the mountains of Montenegro (Prokletije planina, Moračka planina and the Štitan mountain, respectively). The new species are illustrated and commented on as regards to their distinctive characters and taxonomic position.

**KEY-WORDS:** *Alchemilla* – *ROSACEAE* – Balkans – New species.

## Introduction

In 1993-1996, D. Fišerová (Praha) collected Alchemillas in the mountains of Montenegro (mostly), Serbia, and the F.Y.R.O. Macedonia. She asked me for determination of species. After thorough examination of both dried and living specimens from her material as well as from many other sources, I can recognise 29 species from the collections under review, including several that require to be described as new. Three of them are published here.

## Material and methods

Dried specimens under review were etiquetted as "Collectiones Alchemillarum ex rebus publicis Balcanicis", 89 numbers in total. These were not always perfect for determination. Luckily, living rhizomes were also gathered and submitted to me for appropriate treatment. They have been cultivated in N Bohemia, under open air, the pots being surrounded by natural grass-land, in an area of moist climate and rather severe Winter conditions. The pots were covered by snow for about 4 months a year. Thus most of ca. 136 transplanted rhizomes produced a speci-

men of natural size and habitus. They were examined for variation, sampled for herbarium and determined if possible. Unnecessary specimens were then liquidated.

Recognition of the Balkan *Alchemillas* may be uneasy not only because of lack of critical elaboration of the genus and a key for determination. I have growing suspicion that a relevant taxonomic treatment of *Alchemillas* will always lead to recognition of species groups, complexes of separable variants, and other types of aggregations. Inevitably, limits of some *Alchemilla* species will come out with blurred contours or arbitrary. Endemics so far described should not only be enumerated, they deserve to be re-analysed thoroughly. The point is accented in the comments below.

One may try to sort his Balkan material by WALTERS & PAWŁOWSKI (1968), ASENOV (1973) and FROST-OLSEN (1986). Essential was information from all the Balkan specimens I have seen and revised (often repeatedly in years) since 1975. For general features of *Alchemilla* apomicts, see PLOCEK (1976), WALTERS (1986) or FRÖHNER (1990). Names for groups are adopted from PLOCEK (1982) where types for names in use and detailed reference to the authors may be found.

## Results

Species collected by D. Fišerová have been in most part the widely known from the Balkan area and elsewhere in Europe (e.g. *Alchemilla monticola* Opiz, *A. crinita* Buser, *A. xanthochlora* Rothm., *A. straminea* Buser). In *A. gracillima* Rothm., even 68 specimens from 7 localities were gathered. What is of real taxonomic interest is a proportion of the species that are apparently new. Results in sect. *Alchemilla* subsect. *Calycanthum* Rothm. are most spectacular, because out of 6 species detected, 4 may be considered as new. Of these, 3 are described and commented in the following.

### 1. *Alchemilla vincekii* Plocek, spec. nova

**Type:** Montenegro, Prokletije planina, 22.7.1994 leg. D. Fišerová, Coll. Alch. Balc. 21-23 (holotype no. 21, PR; isotypes, M, herb. Plocek). (Fig. 1, 3, 4, 5.)

*Planta perennis robusta, firma, sordide luteoviridis, demum tarde ex rubiginoso colorata. Folia radicalia subtus e venatione secundi ordinis pinnatim prominenti insignia, valde undulata, subrotundata, contra insertionem petioli excentrica, maxime ad 25% radii laminae lobata, sinu basali parum aperto. Lobi late semiovati vel arcuati, apice obtusi vel subtruncati, circumcirca grosse sed aequaliter dentati, margine usque crenato; dentibus utrinque 6-8(-9), oblique semiovatis, obtusis. Dens apicalis ambo vicinis subaequiformis quamquam subdupo angustior. Superficies foliorum glaberrima, pagina inferior ad nervos principales adque margines pilosa, inter nervos glabra. Petioli omnes in tota longitudine pilis erectis, breviusculis, modice densis tecti. Stipulae basilares ad basin incolores. Caulis erectus, maxime 40 cm longus, rigidus, ad internodium primum inflorescentiae pilosus, superne fere glaber vel glaberrimus. Rami infimi laterales pilosi, medii glabriusculi, supremi glaberrimi. Ramuli glaberrimi. Folia caulina in lobos latos grosse dentatos divisa, interdum fere indivisa. Stipulae eorum auriculis magnis late expansis improfunde divisis tubisque brevibus extus usque dense pilosis constantes. Stipula bene evoluta, ea primi ordinis improfunde multidentata. Flores luteovirides, mediocres vel magni, illos singulos axillares (si bene evolutos) vidi 6,5-6,8 mm latos, itaque inter maximos generis pertinentes, in glomerulos initio densos approximatosque aggregati, cum pedicellis glabri. Quamquam flos tetramerum unicarpellatum est, rarissime vidi flores singulos trimeros vel pentameros sicut bicarpellatos. Hypanthium breviter urceolato-campanulatum, basi cito contractum. Sepala subpatentia, semiovata. Episepala oblongo-lanceolata, fere semper integra, ea florum axillarium sepalis usque aequilata, cetera 1,5-2× angustiora. Nux matura superne leviter striata. Hab. in Montenegro, in locis alpinis humidis montium Prokletije, ad fines reae publicae Albaniae.*

A species of robust and erect form, dimly yellow-green (of dingy image), later slightly flushed brick-red. Radical leaves undulate, round-reniform, with eccentric insertion of petiole, shallowly lobed, the lower surface exhibits prominent lateral veins. Basal sinus closed or narrowly open. Leaf lobes broadly half-ovate or arcuate, obtuse or obtuse-truncate at apex, at base without toothless incisions, on each side with 6-8(-9) semiovate teeth that are coarse but subequal. Apical tooth resembles both its neighbours in shape but is 1,5 times narrower. Leaves on upper surface entirely glabrous, below with hairs on main veins and margin of lobes, glabrous elsewhere. All petioles on their complete length covered with relatively short erect hairs. Stipules of radical leaves without red coloration at base. Flowering stem erect, 40 cm long at max., rigid, hairy on lower half, above glabrous. Lowest branches hairy, mid ones with a few hairs, upper ones glabrous. Branchlets glabrous. Cauline leaves shallowly lobed to 1/3 at max. Cauline stipules at base shortly tubular, their auricles large, expanded, with broad undivided part. Stipula with wide, coarse teeth. Flowers yellow-green, numerous, sometimes up to 6,5-6,8 mm in diam., initially aggregated to dense and approximated glomerules, later more expanded, on glabrous pedicels. Hypanthium urceolate-campanulate. Sepals subpatent. Episepals oblong-lanceolate, nearly always entire, those of the axillary flowers nearly as wide as sepals, other 1,5-2 times narrower. Stigma not exceeding apex of ripening fruit. It thrives in Montenegro, in moist alpine sites, on Prokletije planina, towards the frontier of Albania. The name commemorates Mr. Daniel Vincsek, an amateur naturalist from Kolašin in (Montenegro, Yugoslavia), whose support is highly appreciated by many botanists that visit the area.

## 2. *Alchemilla rubidula* Plocek, spec. nova

**Type:** Montenegro, Moračka planina, 9.8.1996 leg. D. Fišerová, Coll. Alch. Balc. 119 (holotype, PR). (Fig. 2, 3, 4.)

*Planta insignis petiolis caulibusque in sole demum purpureis (inde nomen), atque stipuliis profunde inciso-dentatis. Folia clare viridia usque luteoviridia, patelliformia vel plana, rotundato-reniformia, paulo excentrica, sinu basali parum aperto, ad insertionem petioli fere clauso, ad 25-30% 9-loba, nervis valde conspicuis, molliter pilosa, pilis paulo protinus orientibus. Lobi semiovati vel semirotundi usque arcuati, interdum subtriangulares, circumcirca dentati, dentibus utrinque 6-9, ovato-triangularibus, plerumque acutis, vix vel parum incurvatis. Petioli omnes molliter suberecto-patenter pilosi. Caulis gracilis, in sole purpureus, fere totus pilosus, ad apicem glaber. Rami laterales glabri vel omnes pilosi. Stipulae caulinae ad basin in tubo brevi coailitae, ad margines grosse subregulariter inciso-dentatae. Stipula (ramorum supremorum) dentibus (lobulis) elongatis, subaequiformibus, haud numerosis praedita. Flores luteovirides, vix ultra 4,5(-5) mm in diam., conspicue venosi, post anthesin ± rigide aperti. Hypanthium obconico-ovoideum, ad apicem vix constrictum, plerumque glabrum, rarius ad basin pilis singulis praeditum. Sepala et episepala modice elongata, integra, hypanthio subaequilonga. Episepala lanceolata, sepalis subbreviora et distincte angustiora. Annulus disci latus. Nux supra discum parum sed conspicue exsertum. Hab. in Montenegro, in alpinis montium Moračka planina.*

The plant is most conspicuous by its purplish flowering stems and pedicels in late Summer (hence the name), as well as by deeply dentate uppermost cauline stipules and stipula. Leaves pure green or yellow-green, plane or saucer-shaped, round-reniform, somewhat eccentric, with narrowly open basal sinus, lobed to 25-30%, with prominent nerves, covered by ± dense hairs. Leaf lobes half-ovate to arcuate, sometimes subtriangular, on each side with 6-8(-9) rather regular and sharp teeth. All petioles with dense ± errecto-patent hairs. Flowering stems slender, covered with hairs nearly completely. Lateral branches glabrous or hairy. Cauline stipules with short tube at base. Stipula on the uppermost branches deeply cut to ± aequiform teeth or lobules. Flowers yellow green, open, with conspicuous veins. Hypanthium obconical-ovoid, not constricted at apex. Sepals and episepals not much elongated, entire, ± as long as hypanthium. Episepals lanceolate, distinctly narrower than sepals. It occurs in Montenegro, in the alpine sites of Moračka planina.



Fig. 1. – *Alchemilla vincekii* Plocek spec. nova. Photo of holotype. Scale = 5 cm.

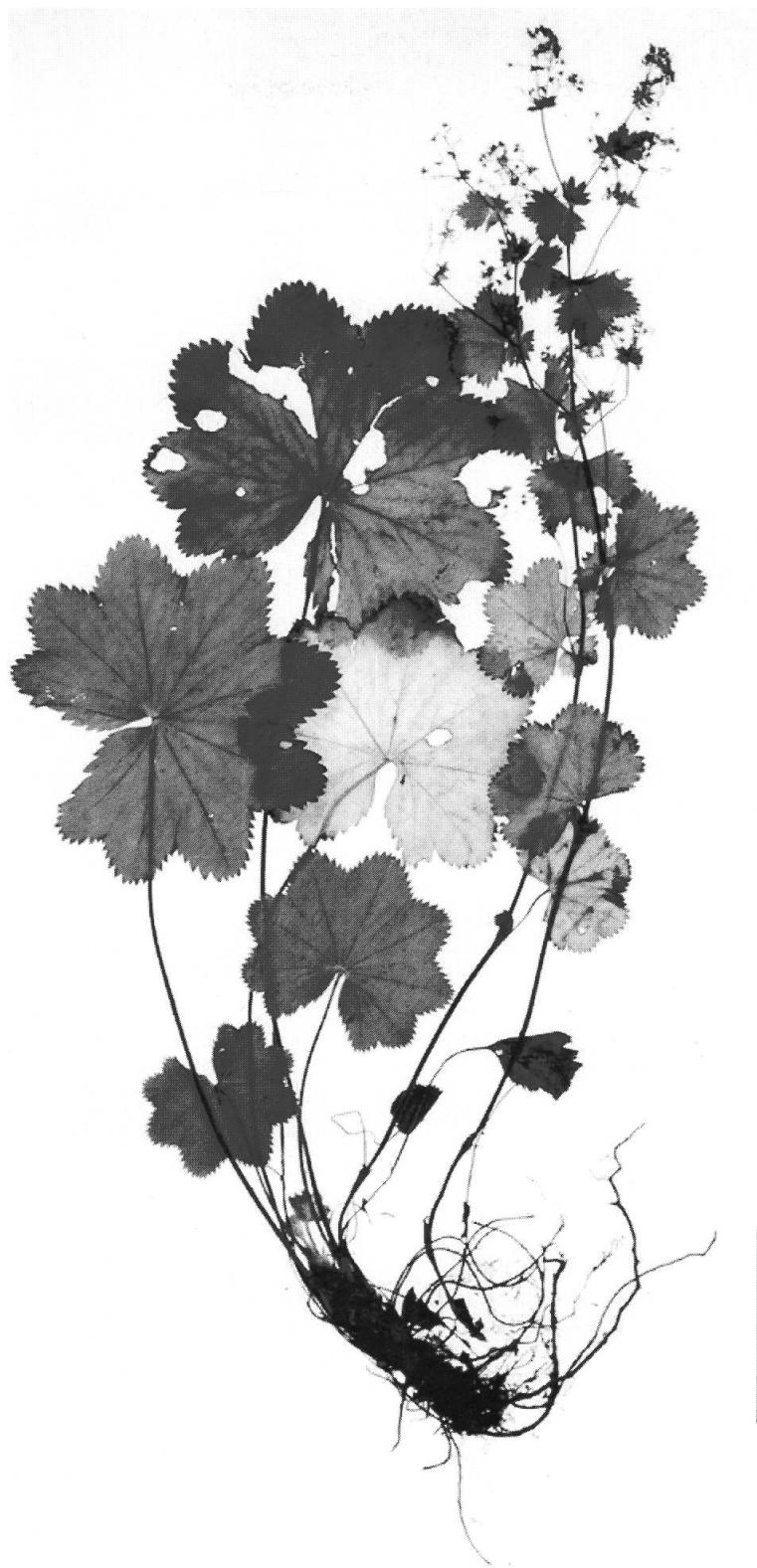


Fig. 2. – *Alchemilla rubidula* Plocek spec. nova. Photo of holotype. Scale = 5 cm.

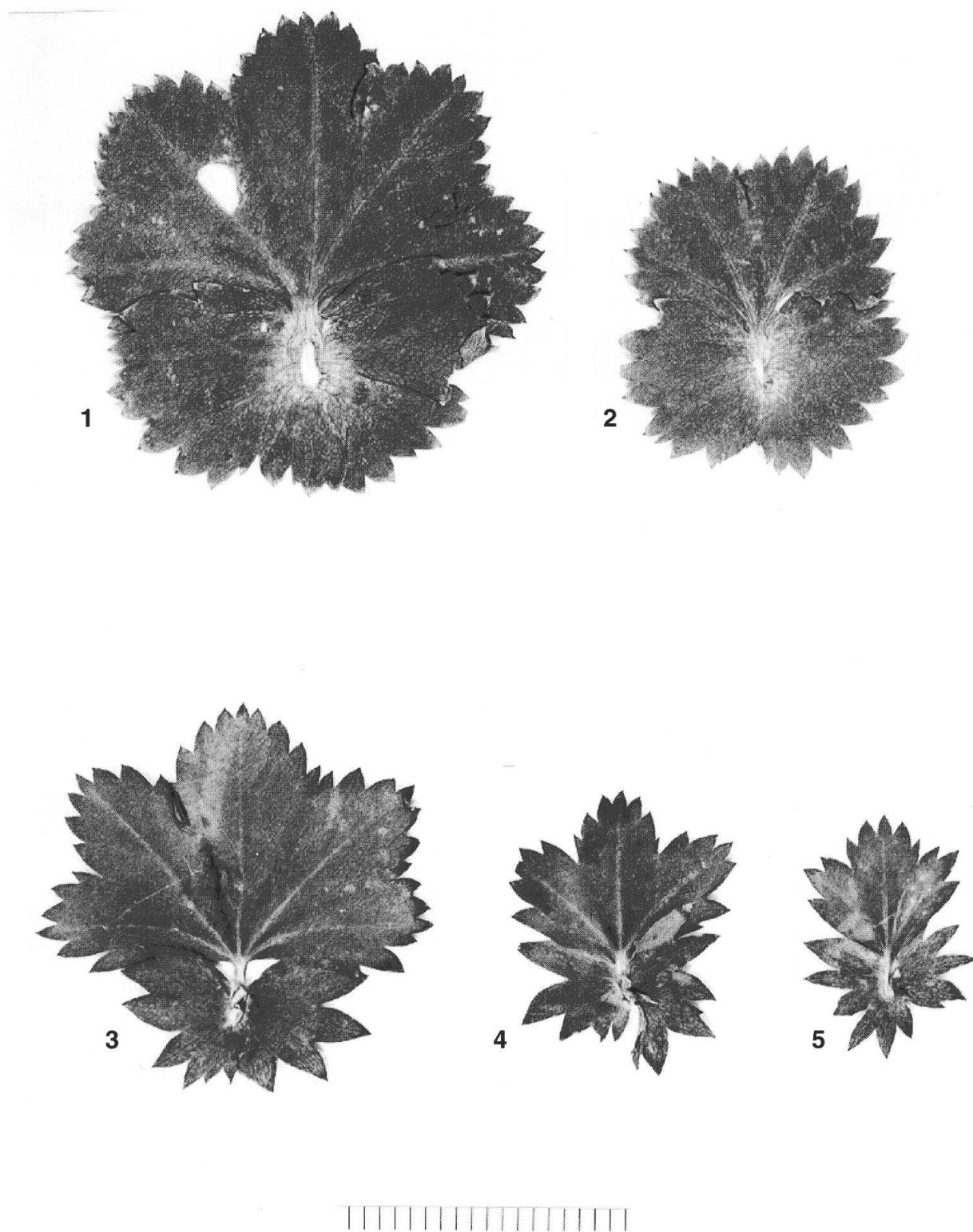


Fig. 3. – Cauline leaves and their stipules in *Alchemilla vincekii* (1, 2) and *Alchemilla rubidula* (3- 5). From the type collections. Scale in mm.

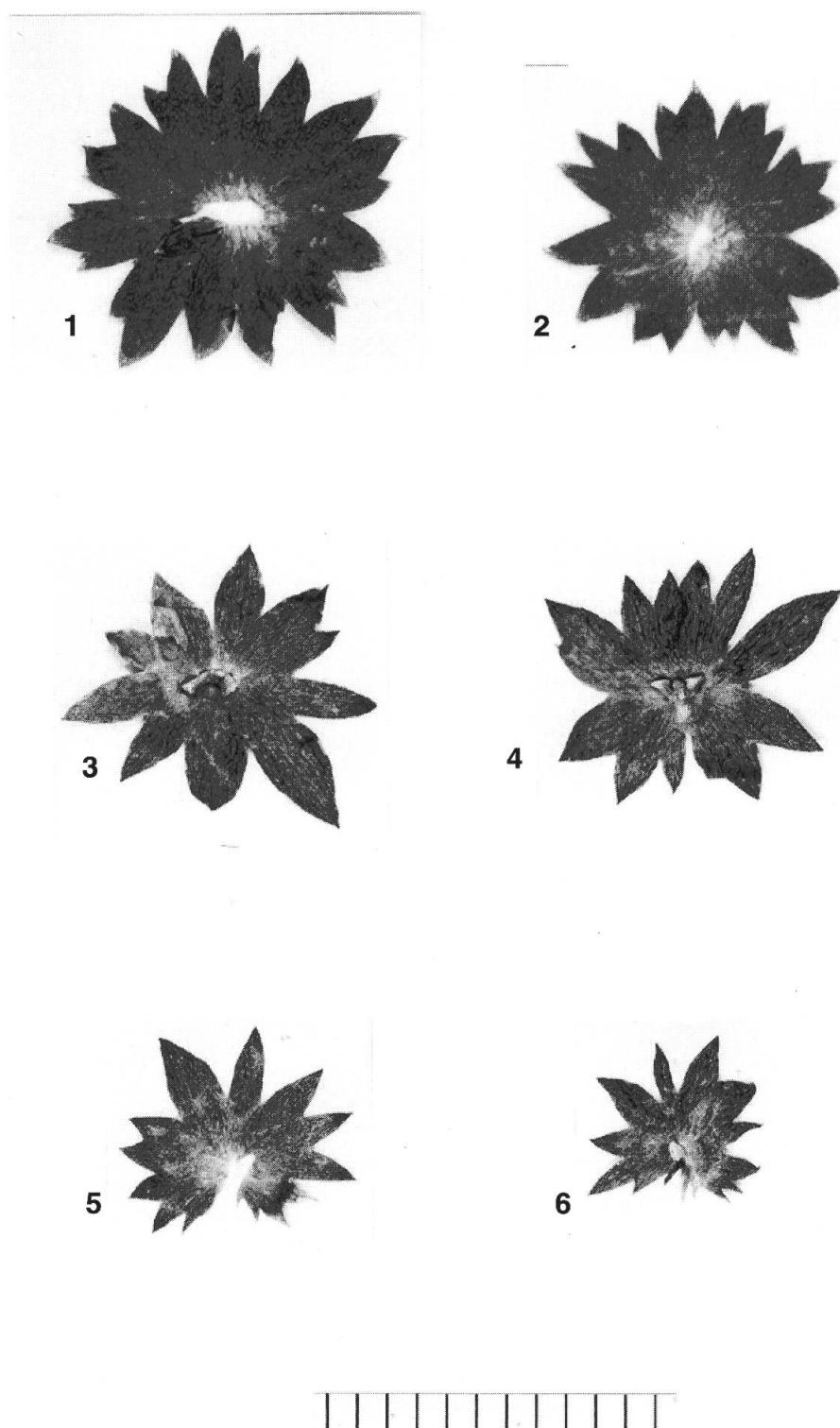


Fig. 4. – Stipula of the first order in *Alchemilla vincekii* (1, 2) and *Alchemilla rubidula* (3, 4). Stipula of the second order in *Alchemilla rubidula* (5, 6). From the type collections. Scale in mm.

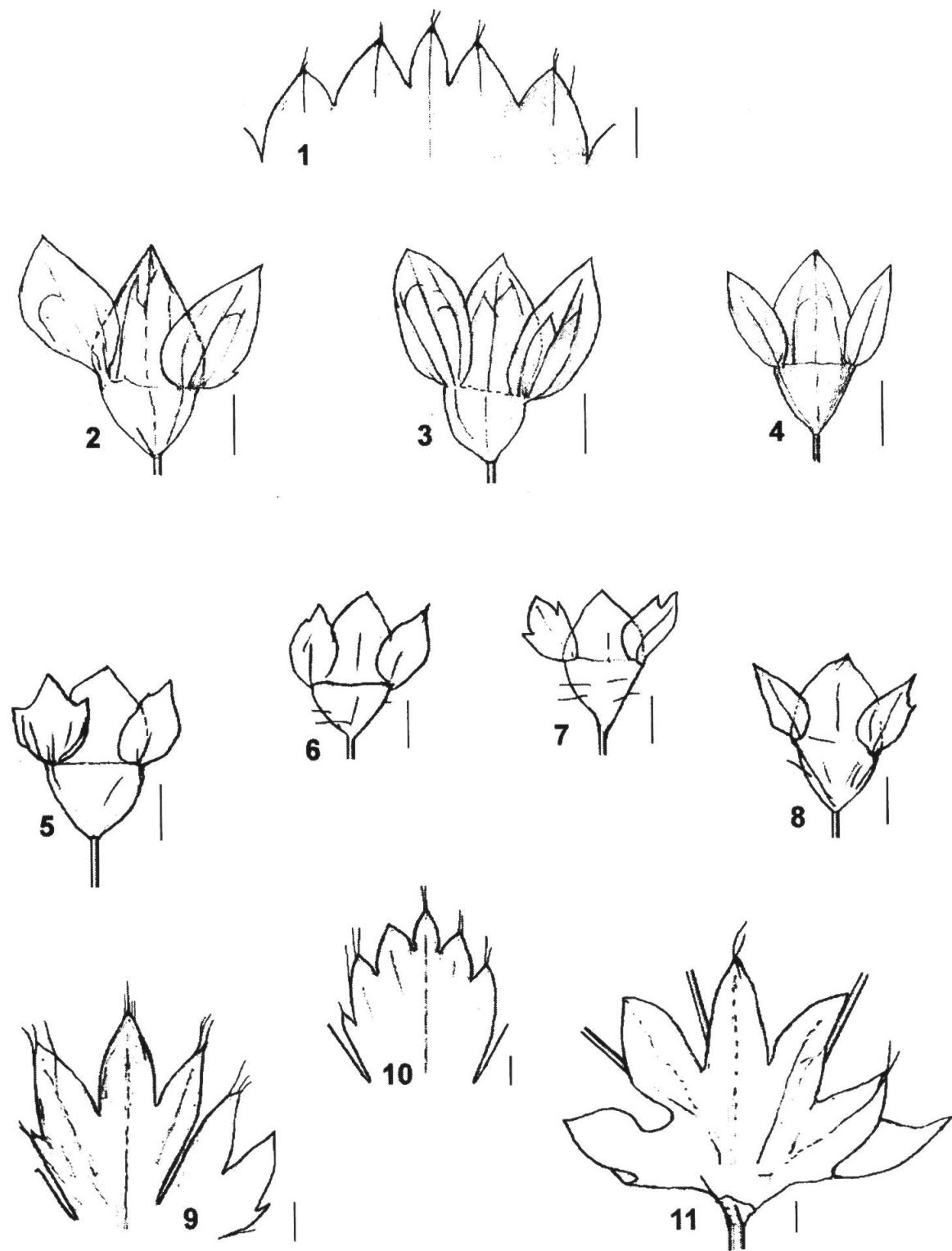


Fig. 5. – Comparison of *Alchemilla vincekii* (1-4) with *Alchemilla catochnoa* (5-11). Axillary or subaxillary flowers (2, 3; 5-7). Subapical flowers (4; 8). Terminal 5-toothed lobes of the second topmost cauline leaves (1; 10). Terminal 3-toothed lobe of the topmost cauline leaf (9). Stipulum of the second order (11). *Alchemilla catochnoa* from Korab Mts., 15.7.1937, F. Weber s.n. (PR). *Alchemilla vincekii* from holotype. Scale = 1 mm.

### 3. *Alchemilla montenegrina* Plocek, spec. nova

**Type:** Montenegro, in locis alpinis montis Štitan (15 km bor.-or. ab opp. Titograd), 1600-1900 m, 16.7.1995 leg. D. Fišerová, Coll. Alch. Balc. 33 (holotype, PR).

*Ob foliorum forma et florum structura A. catochnoam paulo revocans, differt autem (inter notas alias) petiolis omnes et caulibus per totam longitudinem pilis ± appressis tectis. Planta pallidicolor, petiolis caulibusque gracilibus, haud valde strictis. Folia radicalia undulata, rotundata, multiloba (etiam parva plane 11-loba). Lobi conspicui, usque semiovati vel parabolici, circumcirca dentati vel basi breviter integri. Margo loborum leviter crenato-serrata, dentibus utrinque 7-11, protinus inclinatis. Folia interiora utrinque tota facie dense pilosa, ea parva exteriora utrinque glaberrima (subtus nervis pilosis exceptis). Folia 1-2 caulina infima utrinque glabra, cetera tota facie pilosa, suprema ad dimidium lobata. Flores luteovirides, pedicellis glabris. Hypanthium urceolato-campanulatum, ad basin pilis satis densis erectis praeditum. Episepala et sepala hypanthiis subaequilongis. Hab. in Montenegro, in locis alpinis montis Štitan.*

The species reminds *A. catochnoa* in its form of leaves and flower structure, differs above all in that its petioles and also the flowering stems are covered with the appressed hairs. The plant pale green in colour, with not entirely strict petioles and flowering stems. Radical leaves undulate, round, even small leaves distinctly 11-lobed. Leaf lobes conspicuous, half-round to half ovate or parabolic, with 6-11 teeth on each side, with or without entire base. Teeth crenate-serrate, short, rather delicate, 7-11 on each side of a lobe, forwards inclined. Inner leaves on both surfaces densely covered with hairs, small spring leaves on both surfaces glabrous (except hairy nerves below). The lowest cauline leaves glabrous, others covered with dense hairs on both surfaces. Topmost cauline leaves lobed to the half. Flowers yellow green, with glabrous pedicels, hypanthia at base with rather dense erect hairs. Episepals and sepals moderately elongated, slightly (at most) longer than hypanthium. It occurs in the alpine sites of Mt. Štitan in Montenegro.

### Comments

#### A. Distinctive characters

I initially recognised *Alchemilla vincekii* as a variant of *A. catochnoa* Rothm. with unusual leaves, erect hairs and twice larger flowers. In the European members of ser. *Elatae* (Rothm.) Rothm. s.s., only *A. catochnoa* and *A. vincekii* share the indumentum type where leaves are mostly glabrous on both sides, all the petioles are hairy, but inflorescence and lateral branches are glabrous either completely or except some hairs on their basal parts. Difference between both if examined in detail may be as follows:

1a. Leaves flat when pressed; hairs on petioles and flowering stems patent, sometimes rather dense, well-present on outer margins of some lower leaf surfaces; lobes on well-developed radical leaves up to 11(-13) in number, with relatively fine and numerous teeth (sometimes up to 8-12 on each side of a lobe); terminal lobes of upper cauline leaves semiovate to narrowly semiovate, with distinct toothless base, teeth on their lobes (as well as on stipules and stipula) rather narrow (Fig. 5: 9-11); lateral cymes contracted-fasciculated, richly composed of relatively small flowers (these are usually not broader than 4,0-4,5 mm in diam.); episepals and sepals relatively short (Fig. 5: 5-8); hypanthium at times with single hairs

#### *A. catochnoa*

1b. Leaves undulate in vivo, with folds when pressed; hairs on petioles and flowering stems erect, scarcer; leaf lobes 9 at max., with broader and less numerous teeth; terminal lobes of upper cauline leaves arcuate to broadly semiovate, their teeth relatively wide, toothless base usually indistinct (Fig. 5: 1); lateral cymes more voluminous, with larger flowers (reaching 6,5-6,8 mm in diam.); episepals and sepals relatively longer (Fig. 5: 2-4); hypanthium nearly always glabrous . . . . .

#### *A. vincekii*

*Alchemilla rubidula* may resemble *A. vulgaris* L. em. Fröhner (= *A. acutiloba* Opiz) in traces of triangular leaf lobes and triangular-serrate toothing, though leaves with only 9 lobes are more round, prominently veined, coloured pure green, flowers in the contracted scorpioids have  $\pm$  elongated sepals and episeps and obconical hypanthium. *A. pawlowskii* Asenov, 1973 (type: Bulgaria, Rila Mts., 1250 m, 3.6.1909, leg. B. Davidov s.n., SOM n.v.) seemingly refers to *A. rubidula* in flowers and indumentum, but it has round leaves with closed basal sinus, toothless incisions at base of leaf lobes, with up to 8-10 subobtuse teeth on their each side, rigidly erect flowering stems, and probably many other differences could be defined from detailed comparison. Other species such as *A. catochnoa* Rothm. or *A. heterophylla* Rothm. stay rather apart. The characteristic purple coloration develops best in late Summer, at open sunny places. It was expectably dimmed (though still recognised) in a shady garden stand. Pattern of toothing on stipular and stipular margin, which itself seems to be a distinctive character, is shown on Fig. 3 & 4.

*Alchemilla montenegrina* could be grasped as a variant of *A. catochnoa* with appressed hairs, i.e. *A. catochnoa* f. (status) *appressepilosa* (cf. PLOCEK, 1976 for the concept of such forms). The notion is untrue because *A. montenegrina* has other disposition of indumentum than *A. catochnoa*: outer leaves are glabrous on both surfaces, inner leaves are completely hairy on both surfaces, numerous hairs cover the topmost branchlets and base of hypanthia; it also has undulate leaves (plicate in sicco) of round form with closed basal sinus, other type of shallow teeth on leaf lobes and stipula, etc.

#### B. Taxonomic position

**Subsect. *Calycanthum*** is one of three subsections ROTHMALER (1938: 59) recognised under sect. *Alchemilla*, using flower structure for diagnoses of subsections. Three new species match three respective segments (series) of subsect. *Calycanthum* Rothm., i.e. ser. *Elatae* (Rothm.) Rothm. s.s., ser. *Subelatae* (Pawł.), and ser. *Semielatae* (Pawł.). These series contain the characteristic plants found in Europe rather scarcely in the mountain ranges from the Balkan states to the Carpathians as it is summarised below. (A few rare representatives in the Urals and Crimea are not considered here.) It should be noticed FRÖHNER (1986, 1990, etc.) would reject this arrangement as artificial.

**Ser. *Elatae* s.s.** includes the species with well-conspicuous *Calycanthum*-like structure of flowers associated with robust habitus and  $\pm$  dense patent indumentum. Its famous Balkan representative is *A. indivisa* group, consisting of *A. indivisa* (Hayek) Rothm. (cultivated from the type locality on Mt. Adžibarica; incl. *A. jumrukczalica* Pawł., incl. *A. achariowii* Pawł., seen the type collection of each in KRA & KRAM) and *A. peristerica* Pawł. (a species not much different to the previous; seen its type in KRA, also cultivated a specimen from the type locality on Mt. Pelister). *A. indivisa* group is a wide endemic to the Balkan flora or non-endemic if identified with *A. epipsila* group from Anatolia and Caucasia. Another “core” species is *A. heterotricha* Rothm., either a wide Balkan endemic, or not so if its relationship from Caucasia and Anatolia is recognised (incl. *A. oxysepala* Juz. etc.) and referred to its Balkan partition.

Entirely different to the previous seem *A. catochnoa* Rothm. and *A. vincekii* Plocek spec. nova. While *A. indivisa* and *A. heterotricha* refer to the taxonomic centre of ser. *Elatae* s.s., that is to sect. *Erectae* Fröhner, 1986 (type: *A. epipsila* Juz.), both *A. catochnoa* and *A. vincekii* are to be excluded from sect. *Erectae*. I have not yet been sure if both may be treated as a group or whether they are too unlike for such a notion. *A. catochnoa* itself may in fact turn out as an aggregation of separable variants having together a wide endemic range in the Balkans (specimens seen from Bulgaria, F.Y.R.O. Macedonia, Montenegro and Bosnia, expected in Greece, type of the name is from Albania). On the other hand, *A. vincekii* appears as a narrow endemic to Mon-

tenegro, highly isolated from anything around, until at least the more detailed sampling of the Balkan Alchemillas is made. Curiously, no relationship to this complex from Anatolia and Caucasia has been known, perhaps only because of rudimentary stage of taxonomic knowledge on Asian Alchemillas.

This list of the Balkan *Elatae* s.s. may be completed with *A. mollis* (Buser) Rothm. (only seen from Romania), *A. aroanica* (Buser) Rothm. (a narrow endemic to Greece) and ? *A. albanica* Rothm.

**Ser. Subelatae** consists of rare isolated species or their groups or aggregations showing incomplete signs of ser. *Elatae* s.s. PAWŁOWSKI (1954:43) proposed this name (type: *A. zapalowiczii* Pawł.) for a subseries that contained besides *A. zapalowiczii* Pawł. (Carpathians) also *A. bandericensis* Pawł. (a complex from ?Greece and Bulgaria). Other known constituents in Europe:

- a) *A. viridiflora* Rothm. (likewise a complex from Greece and Bulgaria).
- b) A triad featuring *A. virginea* group from N Carpathians (*A. virginea* Plocek and *A. echinogloba* Plocek, cf. PLOCEK, 1990) and *A. szaferi* Pawł. from E Carpathians.
- c) *A. bucovinensis* group (Ukraine and Romania) including *A. bucovinensis* Sytschak, 1992 (*A. romanica* Plocek, 1983 nom. ined. in sch.) and *A. apocentra* Plocek nom. prov. Both latter simulate *A. xanthochlora* Rothm. (See that the leaves that are glabrous above and densely covered with patent hairs below are also characteristic to *A. indivisa* group.)
- d) *A. rubidula* Plocek spec. nova may approach *A. pawlowskii* Asenov or rather it is a singular species within ser. *Subelatae*. Though if detailed samples are available, it may come out as a variant from a difficult complex or a species group that extends in range from Montenegro to a wider area. Probably not to Asia, however.

Although the centre of diversity of ser. *Elatae* (s.l.) is situated in Caucasia and NE Anatolia (see also ROTHMALER, 1938; PAWŁOWSKI, 1972; KALHEBER, 1994), and “intermediate” or “transient” Alchemillas of ser. *Subelatae* should be distinct also there, the Asian diversity referable to ser. *Subelatae* (if ever recognised) is surely incompatible with that in Europe, at the level of species (conventionally accepted) at least. My extensive examination of both living and dried Caucasian Alchemillas supports this notion.

**Ser. Semielatae** is likewise diagnosed by incomplete signs of ser. *Elatae* s.s., but hairs are appressed or nearly so. It allocates several groups or complexes, including *A. montenegrina* Plocek spec. nova. The group was originally proposed (PAWŁOWSKI, 1954: 43) to accommodate *A. goricensis* Pawł. (type for name of the group) and *A. damianicensis* Pawł. The former species is apparently a complex of two (at least) separate variants. Latter species is better considered as a member of a species group (covering *A. damianicensis* Pawł. from Bulgaria and *A. turkulensis* Pawł. from the Carpathians). In Europe, here also belongs a very peculiar taxon named as *A. sirjaevii* Plocek, 1983 (Stara planina in Bulgaria) as well as *A. obesa* aggregation (= subser. *Pterophyllum* Plocek, 1990) from N Carpathians (*A. obesa* Plocek, *A. amauropetra* Plocek, *A. amblyodes* Plocek, *A. exaperta* Plocek, *A. thaumasia* Plocek). *A. haraldii* Juz. from the S Urals is excluded to ser. *Venosae* Plocek, 1982 s.s., while *A. vranicensis* Pawł. is better placed to subsect. *Alchemilla*. Members of ser. *Semielatae* seem well-represented in Asia, but only through the species different to those found in Europe.

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