

NEW CHENOPODIACEAE FROM TURKEY

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Beta adanensis Pamuk., *spec. nov.* (Sect. *Vulgares* Transchel).—Pamuk. in Sci. Rep. Fac. Sci. Ege Univ. 25: 10, 33, 45, 54, 68, f.1, 9, 15, 18 (1965) (descriptions of various parts of the plant in Turkish).

Differt a *B. vulgaris* L. perianthiis segmentis valde carinatis et excrescentiis validis ad basin segmentorum; a *B. trojana* Pamuk. bracteis magnis obovatis.

Planta annua (et biennis?), usque ad 30 cm alta, primum erecta, demum procumbens, basi valide et copiose ramosa. Radix usque ad 15 cm longa. Folia basalia rhombico-obovata, longe cuneato-protracta; folia caulina similia, in bracteis latas obovatas sessiles transientia. Bractee summae oblongo-ovatae, glomerulos superantes. Folia omnia glabra, subcarnosa. Glomeruli 2- usque multiflori. Flores plani, perianthii segmentis basi latis, triangulari-oblongis, carinatis (sed minus quam in *B. trojana*) excrescentiis basalibus spongiosis. Stigmata 3, rhombico-ovata, explanata, copiose papillosa. Floret Jun.-Aug.

TURKEY: Steppe, Karataş to Adana, 29 v 1963, *Pamukçuoğlu* (holo. Hb. Pamukçuoğlu, iso. Hb. Aellen).

Beta trojana Pamuk., *spec. nov.* (Sect. *Vulgares* Transchel).—Pamuk. in Sci. Rep. Fac. Sci. Ege Univ. 25: 11, 32, 46, 54, 68, t. 2, 8, 16, 17 (1965) (descriptions of various parts of the plant in Turkish).

Differt a *B. adanensis* Pamuk. perianthii segmentis magis fere alato-carinatis et bracteis parvis lineari-lanceolatis.

Planta annua usque perennis, usque ad 100 cm alta. Caulis validus, erectus. Radix tenuis, usque ad 45 cm longa. Folia basalia longe petiolata, basi rubescentia, lamina ovato-elliptica, basi truncata; folia caulina brevius petiolata, ovato-rhombica, basi cuneata, superiora lanceolata, sessilia; folia omnia disperse pilosa. Bractee lineari-lanceolatae, inferiores glomerulis longiores. Glomeruli remoti, 2-4-flori. Flores parvi, plani, perianthii segmentis late triangularibus dorso valde toroso- et partim alato-carinatis, parte anteriore membranaceo-marginatis, fructum fere tegentibus, excrescentiis validis pulviniformibus ad basin segmentorum. Filamenta brevia, quam segmenta non longiora. Stigmata 3, ovata usque rhombica, copiose papillosa. Floret Jun.-Aug.

TURKEY: Çanakkale, bei Troja, Seeküste, 1963, *Pamukçuoğlu* (holo. Hb. Pamukçuoğlu, iso. Hb. Aellen).

In the material collected by A. Pamukçuoğlu there are two plants worthy of note, which we can describe as new species. The perianth segments are strongly carinate on the back, sometimes almost winglike. The bases of the flowers have large spongy swellings, which give the glomerules an unusual appearance. Further research (pollen, chromosomes, etc.) should result in clarification of these species.

Walther in *Zeitschr. f. Pflanzenzücht.* 49 (2): 173-180 (1963) discusses the species of *Beta* in Sect. *Corallinae* and mentions a plant from Eskişehir with the appearance of *B. trigyna* Waldst. & Kit. but with $2n = 45$ (*B. penta*, nom. nud.).

***Beta maritima* L. var. *grisea* Aellen, var. nov.**

Planta pilis singulis longis et indumento denso e pilis brevibus crispis composito obsita.

TURKEY: Prov. Çanakkale: Çanakkale to Çiplak köyü Kocari Mevki, 25 vii 1961, *Pamukçuoğlu* 23 (hollo. Hb. Aellen, iso. Hb. Pamukçuoğlu).

This variety, like var. *pilosa*, has scattered long hairs, but there is also a felt of smaller crisped hairs.

***Chenopodium album* L. subsp. *iranicum* Aellen, subsp. nov.**

Planta valida ad 1.5 m alta. Folia 4-5 cm longa, 3.5-5 cm lata, late triangulari-deltaidea, basi lata breviter concavo-truncata, irregulariter lobata (lobis irregulariter dentatis $\pm$ obtusis), antice $\pm$ obtusa; folia superiora ovato-lanceolata integra, saepe crasse coriacea subtus $\pm$ griseo-pulverulenta. Petiolus $\frac{1}{2}$ usque $\frac{3}{4}$ longitudines laminae attingens. Inflorescentia laxa glomerulosa paniculata $\pm$ terminalis. Glomeruli $\pm$ albo-pulverulenti.

TYPE: Iran, Verlassenes Schweinezeit-Terrain in Mamudieh bei Tehran, 1200 m, 24 viii 1948, *Aellen* 257 (holo. in Hb. Aellen).

TURKEY: Prov. Kayseri: Kayseri, 1200 m, *Davis* 32740. Prov. Bitlis: d. Kotum, Kamer, 1900 m, *Davis* & *O. Polunin* (D 24578). Prov. Antalya: Girdev G., 1800 m, *Davis* 13755.

***Atriplex tatarica* L. var. *pseudo-ornata* Aellen, var. nov.**

Bracteolae lobo mediano angusto acuto, lobis lateralibus pluridentatis; appendices numerosae, saepe fasciculatae.

TURKEY: Prov. Niğde: Aksaray to Sultanhanı, salt steppe, 950 m, 1957, *Davis* & *Hedge* (D 32807; holo. E).

This variety is allied to *A. ornata* Iljin, but does not correspond in all parts. The deeply lobed bracts and stalk-like tube are the same in both species. The leaves of the new variety are broad and oval, instead of narrow and lanceolate; the bracts are less lacinate and there are fewer appendages.

***Atriplex davisii* Aellen, spec. nov.**

Differt ab *A. patula* L. et *A. hastata* L. appendicibus globosis in parte anteriore sitis.

Annua; rami usque ad 80 cm longi, longe et laxe ramosi, procumbentes, cinereo-virides, laxe lepidoti. Folia 3×3 cm, deltoideo-rhombica, majora in tertia parte inferiore lobis divergentibus plerumque simplicibus praedita, apicem versus aequaliter acuminata, $\pm$ integra vel leviter dentata. Florum glomeruli in spicam plerumque nudam elongatam vel in paniculas terminales dispositi. Bracteolae 1×1 mm, obovato-rhombicae, supra

medium latissimae, breviter apiculatae, partim denticulo laterali parvo provisae, laeves vel in parte anteriore appendicibus duobus globosis praeditae, fructum arcte cingentes et eo paulo tantum majores. Floret Jul.-Aug.

TURKEY: Prov. Niğde: Aksaray, 950 m, edge of ditch, *Davis & Hedge* (*D* 32846, holo. E). Prov. Izmir: Izmir, 1867, Ball. Prov. Ankara: by railway to Orman Çiftlik, *Frères E. C.* 622. Prov. Konya: Konya to Kayacik, *Davis* 14748.

It is difficult to classify this form under any known species. It is allied to *A. hastata*, L., but differs from it in habit, leaves and the short, close-lying bracts, characteristics which always occur together.

***Camphorosma monspeliaca* L. subsp. *lessingii* (Litw.) Aellen, comb. nov.**

Syn.: *Camphorosma lessingii* Litw. in Trav. Mus. Bot. Acad. St. Peters. 2: 169 (1905).

It is difficult in many cases to distinguish subsp. *lessingii* from subsp. *monspeliaca*, so that I recommend uniting both under one taxon. The species characteristics described by Ball (*Fl. Eur.* 1: 98, 1964) and Iljin (*Fl. U.R.S.S.* 6: 116, 1936) are not always correlated, so that the material cannot always be definitely classified.

***Kalidiopsis* Aellen, gen. nov.**

Genus *Kalidiopsis* a *Kalidio* perianthiis cum dissepimentis excavationum non connatis differt.

Suffrutex ramis non articulatis glabris. Folia alterna, semi-teretia. Flores in inflorescentias breves strobiliformes dispositi, in excavationibus dissepimentis validis separatis inserti. Perianthii segmenta connata. Stamina 2. Ovarium a latere compressum. Stigmata 2. Pericarpium membranaceum. Semen erectum, papillosum. Embryo annulatus; radícula basalis.

***Kalidiopsis wagentizii* Aellen, spec. nov.**

Syn.: *Kalidium foliatum* Wagenitz in Ber. Deutsch. Bot. Ges. 72: 156 (1959) et in Willdenowia 3 (2): 248 (1963)—non Moquin in DC., Prodr. 13 (2): 147 (1849).

Planta usque ad 25 cm alta; rami floriferi arcuato-ascendentes. Folia 10 × 2.5 mm, obtusa vel acutiuscula, subamplexicaulia et decurrentia, in bracteis foliis similes sed breviores transientia. Inflorescentiae strobiliformes, 1–2 cm longae, 3–4 mm crassae, in ramis simpliciter ramosis dispositae, pedunculo 1–2 cm longo. Flores hermaphroditi vel polygami, spiralter dispositi, in excavationibus inserti. Perianthii segmenta connata; perianthium fere omnino clausum, superne dilatatum/circumcirca crassius tunicato-marginatum, demum spongiosum, cum dissepimentis excavationes separantibus non connatum. Pericarpium membranaceum. Floret Mai-Jun.

TURKEY: Prov. Niğde: Offene Halophyten-Vegetation an der Südwestseite des Tuz Gölü, 6 x 1957, *Wagenitz & Beug* (W. 311) (holo. B, iso. Hb. Aellen).

The genus is without doubt related to *Kalidium* Wagenitz. *Kalidium* is described as having segmented stems, which is not true for *Kalidiopsis*. It is

stated (for instance, by Ulbrich in Engler & Prantl, Nat. Pflanzen fam. 16c: 543, 1934) that the flowers are connate with each other and the surrounding cavity. In contrast, the perianths of *Kalidiopsis* are separated in deep cavities with well distinguished walls between them.

***Suaeda prostrata* Pallas subsp. *anatolica* Aellen, subsp. nov.**

Perianthium gibberis validis in parte anteriore segmentorum sitis et volva valida triangulari transversali in mediis segmentis sita, quo modo perianthium stellatum videtur.

TURKEY: Prov. Konya: Kadinhan, 7 ix 1947, Davis 14754 (holo. E, iso. Hb. Aellen).

Suaeda prostrata/maritima occurs in many forms, in the numerous areas where it grows. Studies have not yet been started to show if the different forms are genetically fixed races or only habitat forms. Difficulties are caused also by the form of the perianth, which varies with age. The perianth of subsp. *anatolica* is star-shaped, as the segments have a well-marked triangular lump; besides this, a swelling is noticeable in the dorsal apical part.

***Suaeda cucullata* Aellen, spec. nov.**

Species nova *S. carnosissimae* Post proxima sed ab ea bracteis latis et glomerulis crassis in dimidio superiore ramorum sitis differt.

Annua, 15–25 cm alta, griseo-viridis, basi copiose ramosa. Folia conferta, 5–12 mm longa, 2–4 lata, oblongo-ovata, basi subdecurentia, vix acuminata, breviter crasse mucronata, carnosa, pallide membranaceo-marginata. Bractee foliis similes, glomerulos superantes. Bracteolae minutae, 0.5–0.75 mm longae, lingulatae vel rhombicae. Glomeruli crassi, multiflori, conferti, in spicestram elongatam dispositi; foliorum axillae incrassatae. Perianthii segmenta usque ad medium connata, ovata, rotundata, late membranaceo-marginata, apice cucullato-incrassata, dorso alato-carinata. Antherae 0.5 mm longae, 0.3 mm latae, oblongo-ellipticae, usque ad tertiam partem connatae. Stigmata 3, 0.3 mm longa, filiformia, minute breviter papillosa, in cupula humili sita. Semina erecta, nigra, valde turgida, laevia. Floret Sept.

TURKEY: Prov. Burdur: Kavuncu Çorağı, 180 inci km, 9 ix 1955, leg? (*Kasapligil?*) (holo. ANK, iso. Hb. Aellen).

A low annual plant, with all parts coarse. The glomerules are close together in long, mostly unbranched spikes, in the angles of well distinguished, broad bracts. The perianth lies loosely round the fruit. The apices of the segments are membranous, elongated and longer than the fruit. The membranous apices persist, even in the very dense glomerules, when the perianth has lost the dorsal wing on the keel.

***Salsola* Sect. *Cardiandra* Aellen, sect. nov.**

Plantae parvae annuae, farinosae et disperse pilosae. Antherae parvae ± cordatae.

The section is related to the Sect. *Aleuranthus* Iljin (in Fl. U.R.R.S. 6: 256, 1936). The species of Sect. *Aleuranthus* (*S. sclerantha* Meyer and S.

carinata Meyer) have relatively longer and narrower anthers, and the appendage of the connective is also longer, narrower and acuminate (according to Iljin "blunt"). The anthers of the species of Sect. *Cardiandra* are short, the halves together forming a heart; the appendage is more or less blunt.

Sect. *Cardiandra* includes *Salsola inermis* Forssk. (type), *S. stenoptera* Wagenitz and *S. anatolica* Aellen.

***Salsola anatolica* Aellen, spec. nov.**

Differt a *S. stenoptera* Wagenitz bracteis angustioribus oblongo-triangularibus aequaliter attenuatis (nec late rhombicis rostrato-acuminatis).

Annua, 15–30 cm alta, basi longe, superne breviter ramosa; rami juveniles pilis longis vitreis sparse obsiti. Folia 3–7 mm longa, et basi triangulari dilatata in apicem linearem semiteretem prolongata, pilis nonnullis longis et indumento farinaceo obsita, basi non decurrentia, margine paulo recurvata. Bracteae oblongo-triangulares, herbaceae, pallide membranaceo-marginatae, indumento ut in foliis, basi truncata, $\pm$ acuminata, bracteolas angustiores oblongo-lineares, flores paulo superantes circiter aequantes. Perianthii segmenta 1 mm longa, oblongo-ovata, late membranaceo-marginata; alae? Filamenta longa, basin versus dilatata. Antherae 0.5 mm longae, cordatae, parte anteriore connatae; connectivi appendices breves spatulatae acutae. Stylus brevis. Stigmata filiformia (?). Floret Jun.-Aug.

TURKEY: Prov. Ankara: Koçhisar to Tuz Gölü, 14 vi 1952, *Birand & Kasapligil* 673 (holo. ANK., iso. Hb. Aellen). Prov. Konya: Cihanbeyli, Bulok G., 1010 m, *Khan et al.* 437 (E).

This species is closely related to *S. stenoptera* Wagenitz, which is also a low, loosely branched, grey-green herb, but its bracts are narrower, oblong, triangular and regularly acuminate. The bracts of *S. stenoptera* are broadly rhombic with a much narrower, beak-like point.

***Petrosimonia nigdeensis* Aellen, spec. nov.**

Petrosimonia squarrosa (Schrenk) Bunge similis sed ab ea floribus majoribus magis remotis et bracteolis longioribus differt.

Annua, 10–40 cm alta, in parte inferiore longiuscule patule opposite ramosa, rami superiores breves, primum dense appresse pilosi, demum glabrescentes. Folia 2.5 cm longa, superiora alterna, semiteretia, superne canaliculata, acuta, basi membrana lata semiamplexicaulia et decurrentia, sursum in bracteis foliis similes sed breviores inferiores oblongo-ovatas superiores lineares transeuntia. Bracteolae bracteis breviores, 5–7 mm longae, primum herbaceo-membranaceae, in parte inferiore ventricosio-turgidae, apice herbaceo piloso brevi, demum corneo-induratae; bracteola quaeque florem ultra medium cingens, usque ad basin libera. Perianthii segmenta 3 (–2), parte inferiore ovata demum indurata, superiore subito angustata angustiore membranacea apice barbata. Stamina 5; antherae 2.5–3 mm longae, anguste lineares, primum flavescentes vel brunnescentes demum rubescentes; connectivi appendices breves, 2–4-laciniatae, cohaerentes (an semper?). Fructus a dorso compressus, erectus, 3 mm longus; radícula basalis. Pericarpium tenuiter membranaceum. Stylus 1 mm longus, tenuis. Stigmata 1.5–2 mm longa, filiformia, copiose papillosa. Floret Jun.-Aug.

TURKEY: Prov. Niğde: Tuz Gölü, NW of Ulukışla (NW of Aksaray), 900-950 m, salt steppe, 1 ix 1957, *Davis & Hedge* (D 32824) (holo. E); Aksaray to Sultanhanı, 950 m, salt steppe, 31 viii 1957, *Davis & Hedge* (D 32806); Tuz Gölü near Yavşan Memlehası, 900 m, dry saline, 1949, *Davis* 16668. Prov. Ankara: N edge of Tuz Gölü, 1962, *Zohary* (Z 7305). Prov. Konya: distr. Çihanbeyli: Aci Tuz Gölü near Kırkışla, 900 m, 1949, *Davis* 16629; distr. Çihanbeyli, Tarsakan Gölü, 1000 m, 1960, *Khan et al.* 762; Salzwüste südlich vom Salzee, 1953, *Birand & Zohary* (Z 1480).

Petrosimonia nigdeensis and *P. squarrosa* have the same number of segments in the perianth (3) and the same number of stamens (5). The perianths of the first species are bigger, glabrous, only ciliate on the points. *Petrosimonia squarrosa* is described as delicately-branched and adpressed smooth-haired, which is not the case for *P. nigdeensis*. The appendages of the connective adhere mostly together; *P. nigdeensis* therefore belongs to the Sect. *Synandra* Iljin.