

# **Centaurea caroli-henrici Gabrielian & Dittrich : a new species from Armenia (Compositae - Cardueae)**

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# Centaurea caroli-henrici Gabrielian & Dittrich, a new species from Armenia (Compositae — Cardueae)

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## ZUSAMMENFASSUNG

DITTRICH, M. & E. GABRIELIAN (1993). *Centaurea caroli-henrici* Gabrielian & Dittrich, eine neue Art von Armenia (Compositae — Cardueae). *Candollea* 48: 245-251. Auf Englisch, deutsche und englische Zusammenfassungen.

Vergleichend morphologische, mikromorphologische und palynologische Untersuchungen haben ergeben, dass die bei Djermuk (Armenien) gefundene *Centaurea*-Art als für die Wissenschaft neu angesehen werden muß; sie wird hier als *Centaurea caroli-henrici* Gabrielian & Dittrich<sup>1</sup> beschrieben und der Sektion *Grossheimia* (Sosn. & Takht.) Dittrich zugeordnet.

## ABSTRACT

DITTRICH, M. & E. GABRIELIAN (1993). *Centaurea caroli-henrici* Gabrielian & Dittrich, a new species from Armenia (Compositae — Cardueae). *Candollea* 48: 245-251. In English, German and English abstracts.

Comparative morphological, micromorphological and palynological investigations have shown that a specimen of *Centaurea*, collected near Djermuk in Armenia, represents a species new to science. It is described here as *Centaurea caroli-henrici* Gabrielian & Dittrich<sup>1</sup>; the new species belongs to the section *Grossheimia* (Sosn. & Takht.) Dittrich.

**KEY-WORDS:** *Centaurea caroli-henrici* — COMPOSITAE — Morphology — Palynology — Taxonomy.

## Diagnosis

***Centaurea caroli-henrici* Gabrielian & Dittrich, spec. nov.** (sect. *Grossheimia* (Sosn. & Takht.) Dittrich).

Herba rhizomate ca. 1 cm crasso plagiotropo perennis, turionibus annotinis usque ad 90 cm longis a medio ramosis. Folia basalia indivisa integra, petiolis usque ad 20 cm longis, lamina 30 cm longa, 5 cm lata elliptica; folia caulina indivisa, oblongo-spathulata ad oblonga, decurrentia.

Capitula heterogama, discoidea; involucrium rotundato-ovatum, 25-30 mm altum, 20-25 mm latum; involucri phylla imbricata, appendicibus distinctis scariosis, pallide brunneis, macula basali atrata; appendicibus phyllorum intermediorum rotundatis convexis baso cordatis, margine irregulariter dentatis et fissis; receptaculum planum, fimbriis 12 mm longis, albis.

<sup>1</sup>This species is dedicated to our friend and the eminent botanist, Prof. Dr. Karl Heinz Rechinger (Vienna).

Flores flavi, marginales steriles, corollae lobis 3-4, angustis, limbo a tubo vix distincto; flores ceteri hermaphroditi  $\pm$  radiati, tubo 16-18 mm, limbo 12 mm longo, corollae lobis quinis, 6 mm longis; corollae nervi rufo-brunnei, in corollae lobos excurrentibus. Stamina 15 mm longa, appendicibus apicalibus evittatis et antherarum appendicibus basalibus bilobis, 0.5 mm longis, integris, filamenta 5.5 mm longa, papillis dispersis hyalinis obsita. Apices styli basi pilis annulato-dispositis obsiti; styli rami 2.5 mm longi, paulo tantum divergentes.

Achaenia 5.6 mm longa, 2.5 mm lata, lateraliter applanata, oblique cuneata; pericarpium superficies atrobrunnea, opaca minute cicatricosa, subglabra; vasae longitudinales distinctae eburneae; margo apicalis achaenii denticulata; cicatrix basalis laterali-adaxialis, obtrullata, 0.5 mm alta, elaiosoma minutum cingens.

**Typus:** Armenia, Vaikh distr., near Djermuk, subalpine meadow below a forest of *Quercus macranthera* Fisch. & Mey., 2100 m, 12 July 1989, Gabrielian & Dittrich D4235a (G, isotypi: B, BM, herb. Dittr., E, ERE, K, LE, W).

## Description

### a. Habit

Perennial unarmed herbs (Fig. 1a), rhizomes ca. 10 mm in diameter, black, creeping, bearing some sterile rosettes of leaves and 1 to several (until 18) annual shoots; stems up to 90 cm high, sparingly branched (1-2 times) in the upper half. Basal leaves petiolate; petioles 20 cm long; laminae lanceolate, entire, 30 cm long and 5 cm broad. Cauline leaves sessile, decurrent, entire, oblong-spatulate to oblong; like the basal ones hirsute on both surfaces.

### b. Capitula

Capitula heterogamous (Fig. 1a-b), discoid, terminal; involucre broadly ovoid, 25-30 mm long, 20-25 mm broad and later, when matured, up to 30 mm broad and hemispherical. Phyllaries pluriserial (Fig. 1b), imbricate and slightly adpressed; their clearly distinct appendages scarious, brownish and at the base with a dark brown semilunary spot, concave, cochleate, somewhat spreading, not completely concealing the basal part of the phyllaries; appendages of the middle phyllaries broadly ovate from a cordate base, 8 mm long, 8-9 mm broad, irregularly denticulate as well as lacerate. Receptacle flat, covered with ca. 12 mm long white hairs.

### c. Flowers

Flowers yellow, tubular, hermaphrodite except for a few marginal sterile ones (these not clearly separated in tube and limb, and usually only with 3-4 narrow corolla lobes); corolla tubes 16-18 mm long, basally not enlarged; limbs 12 mm long, campanulate below, above with 5 oblong, 6 mm long and ca. 0.6 mm broad corolla lobes; the 5 commissural nerves red-brown, diverging at the base of the lobes and running marginally to the apices. Stamens 15 mm long; anthers characterised by apical 4 mm long, basally 0.5 mm broad, ensiform appendages of the connectives (Fig. 2c), the absence of oil grooves and by bifid to bicuspidate anther appendages (Fig. 2a-b). Filaments 5.5 mm long, flattened, over the entire length on both surfaces sparsely covered with 0.1 mm long hyaline papillae (Fig. 2a-b). Style (Fig. 3a-c) composed of an unstructured, terete and basally not enlarged shaft, bearing a 4.5 mm long tip (with a basal corona of hairs: Fig. 3c). The two style branches oblong, 2.5 mm long, 0.3 mm broad, a little diverging over a length of 1 mm, marginally and on inner surface covered with papillae (Fig. 3a).

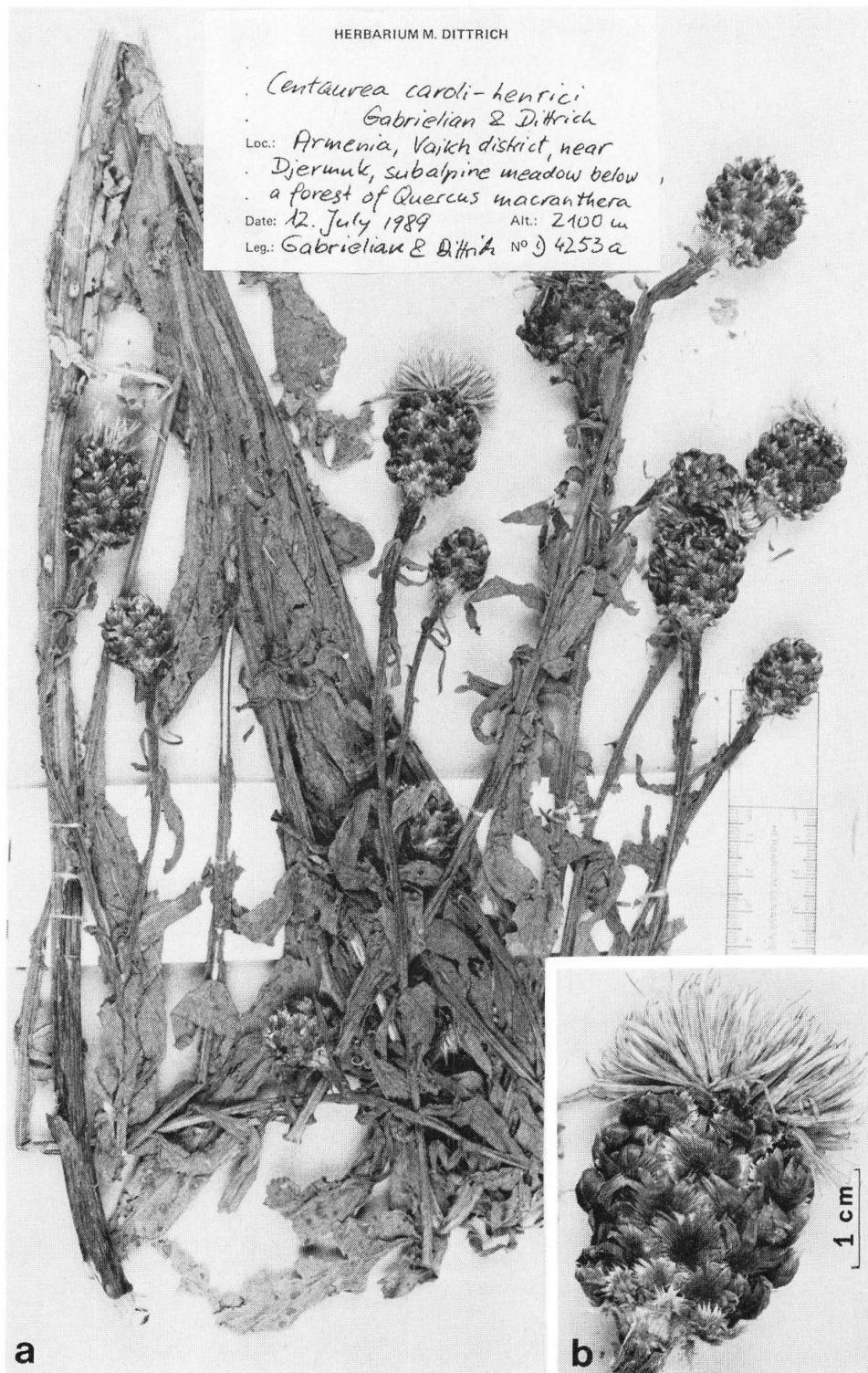


Fig. 1. — *Centaurea caroli-henrici* Gabrielian & Dittrich: **a**, type specimen; **b**, details of the capitulum.

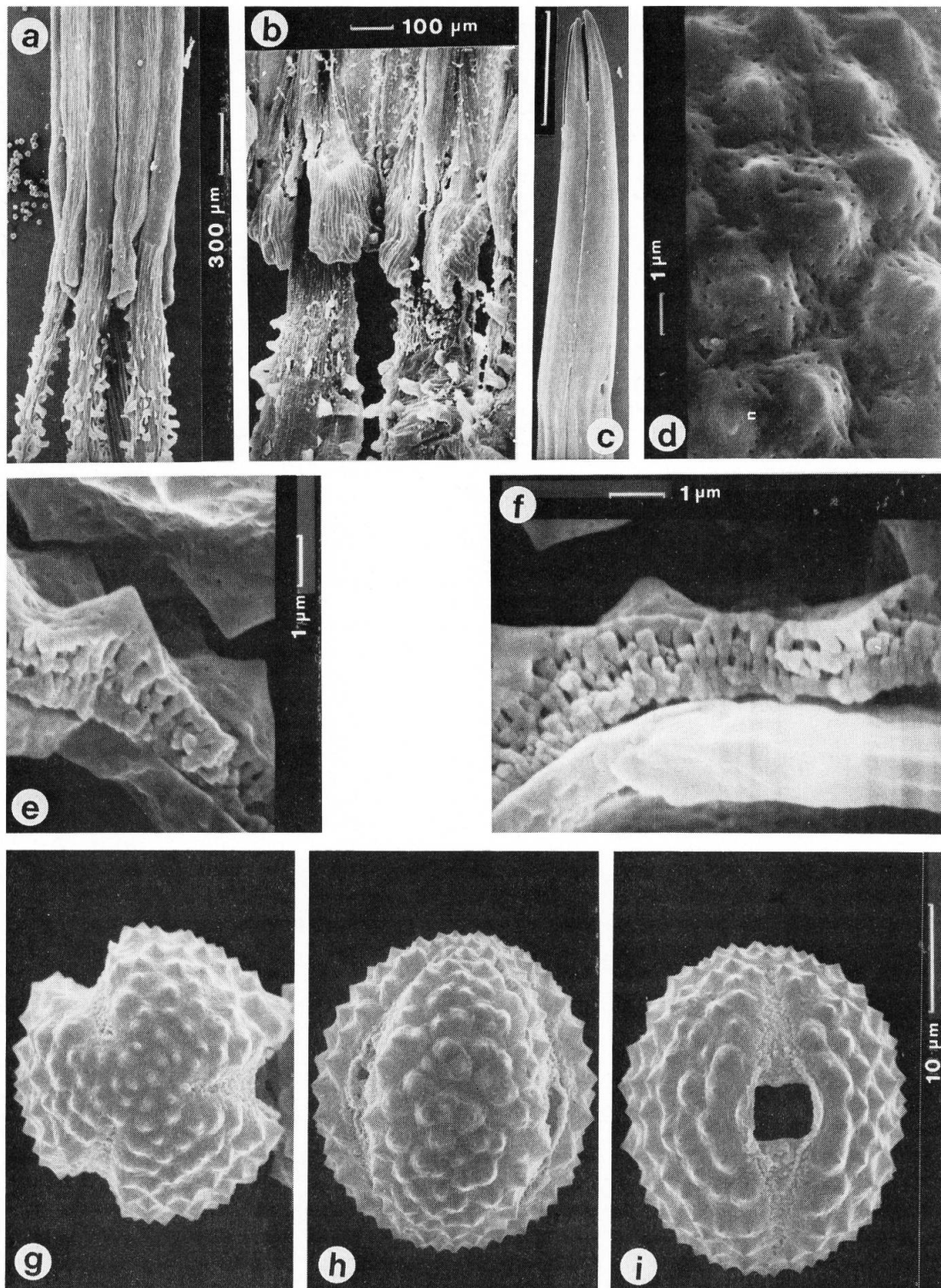


Fig. 2. — *Centaurea caroli-henrici* Gabrielian & Dittrich: **a**, basal part of a stamen showing the papillose filaments as well as the bifid anther appendages; **b**, anther appendages from inside; **c**, connective appendages (scale 1mm); **d**, surface of a pollen grain; **e** and **f**, "cut" through the sporoderm; **g**, polar and **h-i**, equatorial view of a pollen grain (scale always as in **i**).

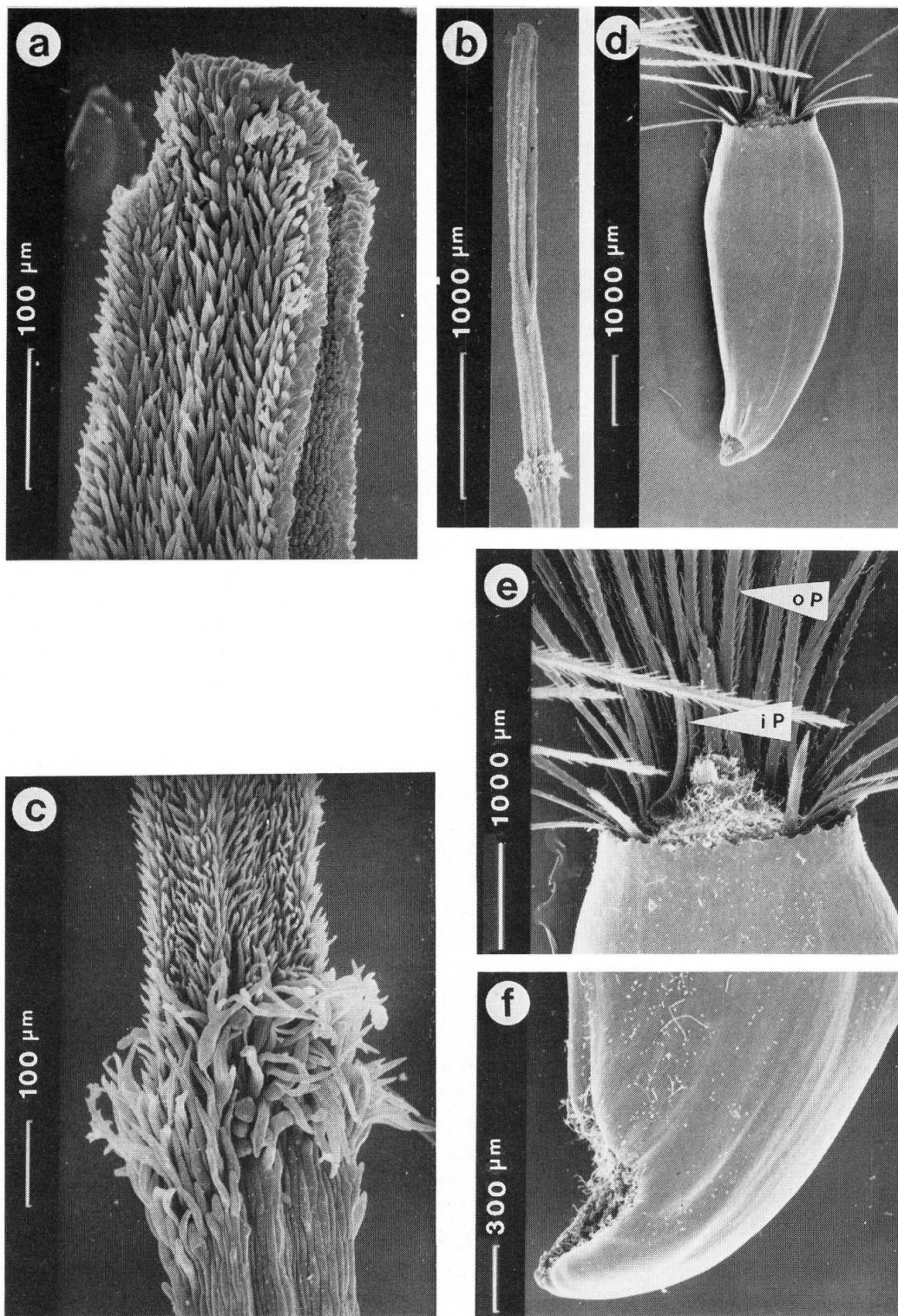


Fig. 3. — *Centaurea caroli-henrici* Gabrielian & Dittrich: a-c, b, totality of the tip of a style with its "pollen brush" at its base (as in c); a, tips of the two style branches; d, achene; e, apical part of the achene showing the double pappus (arrow: oP = outer and iP = inner pappus); f, base of the achene with its detachment area.

#### d. Achenes

Achenes (6.3-)6.5 mm long, 2.5/0.5(-0.7) mm (Bm/Bt)<sup>1</sup> broad, obliquely cuneate, bilaterally flattened, elliptic to quadrangular in cross-section (Fig. 3d); surface dark brown, mat, somewhat scarred, almost glabrous (with a few 0.2 mm long unicellular fragile hairs); the 4 longitudinal ribs (2 median and 2 transversal ones) prominent, as whitish as the base of the two carpels; apical crown rarely fully developed but an irregularly dentate achene border clearly present (Fig. 3e). Orientation of basal detachment area lateral/adaxial (Fig. 3f), 0.5 mm high, obtrullate in outline; with a small rounded, whitish elaiosome-like detachment tissue. Seed testaceous, fixed by a "hilum laterale" on the base of the abaxial carpel. Pappus double (Fig. 3e); bristles of the outer ones barbellate, inserted in 4-5 ranks on the apical plate, increasing in length from the outside to the inside (up to 8-9 mm); inner pappus in one rank, its 10-15 scales 1.2-1.5 mm long, geniculately curved and enlarged basally.

#### d. Pollen

Pollen grains (after the terminology of ERDTMAN (1946), WAGENITZ (1955) and SKVARLA (1977)) subprolate (length from pol to pol 32  $\mu$ m and / equatorial diameter 25  $\mu$ m: pollen index 1.28), tricolporate, with very long colpi reaching nearly from pol to pol (Fig. 2g-i). Upper surface of the pollen wall echinate, length of the smooth spines: 1-1.2  $\mu$ m and with small irregularly spread perforations (Fig. 2d).

"Cuts" of pollen grains (Fig. 2e-f) showing an exine without columellae (baculae, STIX, 1960); ektexine joined to the foot layer only at the margins of the apertures forming  $\pm$  high spaces (cavus) or in a more or less loose contact with her. Ektexine consisting of two layers of fine densely arranged sticks ("äußere Stäbchenschicht", WAGENITZ, 1955) divided by a homogenous and perforated layer looking like those of the outer and inner surface of the ektexine.

### Systematic position

Habit, inflorescence as well as both flower and achene characters make it clear that this species belongs to the "*Grossheimia-Chartolepis*"- branch of the genus *Centaurea* (DITTRICH, 1968).

A closer relationship to species of the section *Chartolepis* (Cass.) DC. is, in view of the differences of the involucre, out of question; whereas the appendages of the bracts in this section are almost circular, slightly decurrent, soft, hyaline, minutely denticulate and somewhat spreading, those of *Centaurea caroli-henrici* are terminated by brown, ovate-cordate appendages of a scarios texture. On the other hand, however, all these characters can be found in *Centaurea macrocephala* Muss. Puschk. ex Willd. (sect. *Macrocephala* (Sosn. & Takht.) Dittr.). Similarities are also displayed in the morphology of both the achenes and the pappus as well as in morphological flower characters. Another argument for the close relationship to the sections mentioned above are palynological characters: as described before the pollen grains are elliptical, subprolate, tricolporate and echinate with long colpi and relatively short and smooth spines; these characters as well as an ektexine without an inner layer of columellae (baculae) show that the pollen must be classified into the "*Centaurea jacea* type" of WAGENITZ (1955), the same group of *Centaurea* species, respectively sections in which Wagenitz placed the sections *Chartolepis* and *Grossheimia*, too.

### Specimina visa

**Armenia, Vaikh distr.**, near Djermuk (the first three specimens as *Centaurea macrocephala*  $\times$  *C. glastifolia* nom.): slopes above the source of mineral water, 5.8.1978, Takhtajan & Gabrielian

<sup>1</sup>(Bm/Bt): median and transversal breadth of achene.

ERE 127552 (ERE); ibidem, between the villages Djermuk and Kusči, meadow between forests, 6.8.1978, Takhtajan & Gabrielian ERE 127650 (ERE); ibidem, south-eastern slopes, ca. 2000 m, 7.8.1978, Takhtajan & Gabrielian ERE 127549; ibidem, subalpine meadow below a forest of *Quercus macranthera* Fisch. & Mey., 2100 m, 12.7.1989, Gabrielian & Dittrich D 4235a (BM, E, ERE, G, K, LE); ibidem, right bank of river Arpa, between Djermuk and fishfactory, along the road, 18.8.1991, Oganessian, det. Gabrielian (ERE 117667), 117670, 117671; FS-Dittrich 1139).

### Distribution

Endemic to Armenia, known only from several places near Djermuk (Vaikh district).

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