

4. Very robust; heads relatively short and broad; achenes brown, 3 mm long, 0.6 mm wide, beak 1 mm long, less fine than in most forms; pappus 3 mm long. The short, relatively broad achenes with very short, coarser beak are found only on certain plants of a strain cultivated from seed collected in Oregon by Dr. C. V. Piper. Other plants of the same strain bear achenes 4–5 mm long, 0.5 mm wide, with beak slender, equal to body. Introduced, probably from Europe. Ex hort. genet. Calif. 30.1017–5 (UC) grown from seed collected at Silverton, Oregon, U. S. A.

188, *b*. ***Crepis setosa Topaliana*** Babc. Univ. Calif. Publ. Bot. 19: 403. 1941. Plant 0.8–3.5 dm high; involucre 7 mm long, 4–5 mm wide near base; corolla 8 mm long; ligule 1.75 mm wide, pubescent below with short acicular hairs; ligule teeth 0.15–0.5 mm long; corolla tube 3 mm long, pubescent with acicular hairs 0.05–0.4 mm long; anther tube 2.5 × 1 mm dis.; appendages 0.4 mm long, oblong, acute; filaments 0.4 mm longer; style branches 1.5 mm long, 0.1 mm wide, attenuate at tip, pale greenish-yellow; achenes bifiform, pale tawny or yellowish; marginal achenes 3 mm long, 0.5 mm wide, laterally compressed, ventrally straight with median ridge, paler, faintly ribbed, dorsally convex, darker, strongly ribbed, constricted at the rounded calloused base, gradually attenuate to the narrow summit, with slightly expanded pappus disk, not beaked or the beak less than 1 mm long, these sometimes absent or replaced by typical inner achenes; inner achenes 3–3.75 mm long, 0.3–0.4 mm wide, fusiform, subterete, constricted at the narrow calloused base, gradually or abruptly attenuate into a very slender beak 1–2 mm long, with abruptly expanded pappus disk, 10-ribbed, ribs narrow, rounded, strongly spiculate near base of beak; pappus 3–3.5 mm long. Flowering June–July; flowers yellow, with or without red on outer face of ligules. Chromosomes, $2n = 8$; the B-chromosome with distal arm shorter than in subsp. *typica*. See fig. 293.

Greece: Thessaly, Kato Lehonía, near Volo, *Miss Topali* in 1933 (UC) type; *ibid.*, grounds of Mr. P. S. Topali, *Babcock 338* (UC); *ibid.*, between Kato Lehonía and Drakia, *Babcock 360* (UC); Mt. Pelion, Portaria, *Miss Topali* in 1932 (UC); Thessaly, between Kalabaka and Kastanea, riverbanks and lower hills, *Babcock 346* (UC) m.v. 5; *ibid.*, along Penion R., above Kalabaka, *Babcock 356a* (UC) m.v. 6; Sporades Is., Skiathos, *Miss Topali* in 1932 (UC); E. Thessaly, north of Mt. Ossa, between Pyrgetos and Baba, *Miss Topali 38–10* (UC) near m.v. 5.

Minor Variants of *C. setosa Topaliana*

5. Style branches green; marginal achenes scarcely beaked, not laterally compressed, 2–2.5 mm long; ventrally flat, faintly ribbed; inner achenes 2.75–3.5 mm long, beak fine, 1–2 mm long; pappus 3 mm long. Probably a form derived from natural hybridization between the 2 subspecies. *Babcock 346* (UC), between Kalabaka and Kastanea, Thessaly, Greece.

6. Marginal achenes 3 mm long with beak 1 mm long, subterete or ventrally flat and paler; inner achenes 3.5 mm long, beak 1.5 mm long, very fine; pappus 3 mm long; style branches pale greenish-yellow. Probably only an extreme variant of this subspecies in the less modified, longer beaked marginal achenes. *Babcock 356a* (UC), along Penion R., above Kalabaka, Thessaly, Greece.

Relationship

Crepis setosa is closest to *C. Muhlisii*, from which it is well distinguished by the upright or ascending habit, longer oblanceolate lower leaves, and conspicuous cauline leaves; subsp. *typica* is also distinct in the uniform, longer, and usually longer-beaked achenes; and subsp. *Topaliana*, in the paler, longer-beaked inner achenes, the marginal achenes without basal scar, the broader corolla, and longer pale greenish-yellow style branches. *C. setosa* is less close to *C. aspera*, which it superficially resembles.

189. ***Crepis Muhlisii*** sp. nov.

(Fig. 294.)

Herba annua 0.7–1.5 dm alta; folia caudicalia 1–2.5 cm longa interdum 0.9 cm lata oblanceolata runcinata dentata vel denticulata in petiolum brevissimum attenuata pubescentia eglanulosa; folia caulina linearia sessilia auriculata parvis-

sima; caulis erectus tenuissimus glabrus 1–3-ramosus, ramis divaricatis 1–3-furcatis cum 2–4 capitula; pedunculi filiformes 1.5–5 cm longi tomentosi; capitula parva circa 50-flora virginea nutantia (?); involucrium in fructum 6–7 mm longum ad basim 3–4 mm latum, squamis exterioribus aequalibus interdum 2-plo brevioribus linearibus leviter carinatis, interioribus 12–14 lanceolatis acuminatis dense setulosis

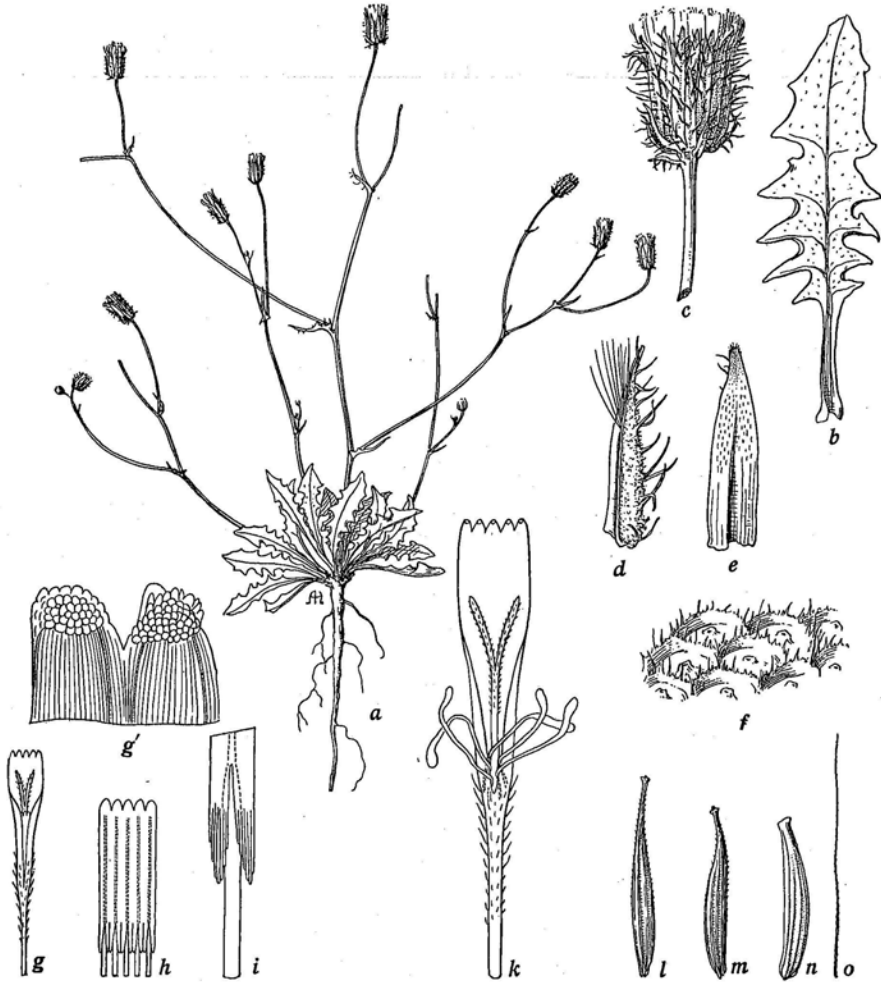


Fig. 294. *Crepis Muhlbisii*, from type (UC 463868): *a*, plant, $\times \frac{1}{2}$; *b*, leaf, $\times 2$; *c*, fruiting head, $\times 2$; *d*, *e*, inner involucre bract, lateral view and inner face, $\times 4$; *f*, detail of receptacle, $\times 25$; *g*, floret lacking ovary, $\times 4$; *g'*, detail of ligule teeth, $\times 50$; *h*, anther tube, $\times 8$; *i*, detail of appendages, $\times 32$; *k*, floret with abnormal anthers, $\times 8$; *l*–*o*, 3 achenes and a pappus seta, $\times 8$.

ventraliter pubescentibus in dorso valde carinatis achaenia marginalia includentibus; receptaculum alveolatum ciliatum; corolla 7.5 mm longa, ligula 1.25 mm lata flava in dorso purpurea, tubo 3 mm longo pubescenti; antherae normales 2.5 mm longae flavi; rami styli 1.25 mm longi virentes; achaenia fulva 2.5–3 mm longa biformia; marginalia a latere compressa pallida in dorso valde striata ad summum tatem constricta vel breve rostrata valde spiculata; interioria fusiformia in rostrum tenuum brevum gradatim attenuata 10-costata ad apicem valde spiculata; pappus albus 3–4 mm longus 2-seriatus tenuis mollis caducus,

Annual, 0.7–1.5 dm high; root slender; caudex up to 5 mm wide, leafy; basal leaves numerous, 1–2.5 cm long, up to 0.9 cm wide, oblanceolate, acute or obtuse, runcinately dentate or denticulate, attenuate into a very short winged petiole with broader base, pubescent on both sides with short pale spreading glandless hairs, apex and teeth corneous-mucronate; cauline leaves linear, sessile, entire or denticulate, acutely auriculate, very small, mostly bractlike; stem erect, very slender, terete, striate, glabrous, 1–3-branched from near base, branches widely divaricate, like axis 1–3-furcate, 2–4-headed; peduncles filiform, 1.5–5 cm long, \pm tomentose; heads nodding (?) before anthesis, small, about 50-flowered; involucre in fruiting heads 6–7 mm high, 3–4 mm wide near base; outer bracts 10–12, nearly equal, longest $\frac{1}{2}$ as long as inner bracts, linear, acuminate, pale below, dark near apex, shallow-carinate, glabrous or sparsely setulose; inner bracts 12–14, lanceolate, acuminate, canescent-tomentose below, dark near apex, densely beset with yellow glandless setules, appressed-pubescent on inner face, becoming strongly carinate, infolding marginal achenes; receptacle alveolate, alveolae 0.2 mm wide, fimbriae fleshy, shortly ciliate; corolla 7.5 mm long; ligule 1.25 mm wide, shortly pubescent near base; ligule teeth 0.15–0.2 mm long; corolla tube 3 mm long, pubescent with acicular hairs 0.05–0.3 mm long; anther tube (normal) 2.5×0.9 mm dis., often abnormal, anthers \pm degenerate, not united, partly fertile; appendages 0.5 mm long, lanceolate, acute or acuminate; filaments 0.4 mm longer; style branches 1.25 mm long, 0.1 mm wide, attenuate at apex, green; achenes (nearly mature) deep tawny, 2.5–3 mm long, biform; marginal achenes laterally compressed, ventrally straight, paler, obscurely ribbed, dorsally convex, strongly ribbed, with small oblique basal scar, strongly constricted below the expanded pappus disk or shortly beaked, strongly spiculate near summit, sometimes more like inner achenes in shape and ribs; inner achenes fusiform, subterete, constricted at the narrow calloused base, gradually attenuate into a fine beak about 1 mm long, 10-ribbed, ribs rather prominent, rounded, strongly spiculate near the apex; pappus white, 3–4 mm long, 2-seriate, fine, soft, caducous. Flowering May–June; flowers yellow, purple on outer face of ligules, ligule teeth deep purple.

Known only from the type locality.

Monomorphic.

Turkey (Bithynia): near Scutaria, Bulgurlu Dag, stony slope, about 150 m, *Krause 3210b* (UC 463868) type; *ibid.*, overgrown land, about 150 m, *Krause 3210* (UC).

Relationship

Crepis Muhlisii is closest to *C. setosa Topaliana*, from which it is easily distinguished by its darker, shortly beaked achenes, narrower florets with purplish ligules, shorter dark green style branches, low divaricate habit, and very small leaves. It is less close to *C. setosa typica*, from which it differs in the biform shortly beaked achenes, peculiar habit, and greatly reduced size throughout the whole plant. It is distinct from *C. fuliginosa* in the open divaricate habit, the few larger heads, the strong yellow setae on the involucre, the longer and narrower florets, and the larger more definitely biform achenes.

The very abnormal partly degenerate anthers, found in 4 of the 5 plants in Krause's original collections, are unique in *Crepis*, and this peculiar feature may be a dominant character. Numerous, normal-appearing pollen grains, however, were observed *before anthesis* in young florets from a plant exhibiting the abnormality uniformly after anthesis. In fully expanded florets the style branches have numerous pollen grains adhering to them, and other normal appearing grains were found on the abnormal anthers. These observations, particularly those made on florets

before anthesis, prove that the abnormal anthers are somewhat fertile and show that it might be possible for this retrogressive variation to be perpetuated by self-fertilization. The establishment in nature of such a radical departure from the typical morphology of the androecium would be a significant event in the current evolution of this genus. Additional collections and field observations are very desirable.