

dúnculos tomentulosos, con escamas lineares, de 4 a 8 mm. Flores marginales numerosas, de 10 a 11 mm de longitud, amarillas, liguladas, tetradentadas en el ápice; los flósculos pentadentados, de 5 a 8 mm de longitud. Vilano con las cerdas escuriosas en una sola fila, de 6 a 8 mm de longitud. Cipsela comprimida, de 4 a 5 mm, con costillas inconspicuas papilosas.

Relación con otros táxones

La ramificación laxa y las hojas más grandes agrupadas en roseta basal, discoloras y con indumento albo-tomentoso, aproximan esta especie a *Senecio okopanus* Cabrera. Destacamos las siguientes diferencias entre ambas especies:

- De 1 a 3 capítulos, de menos de 20 mm de anchura. Hojas basales lanceoladas, pinnatisectas, con lóbulos agudos y base truncada; pecíolo de hasta 40 mm de longitud *S. icaensis*
- De 2 a 4 capítulos, de más de 20 mm de anchura. Hojas basales de ovadas a elípticas, pinnatifidas, con lóbulos obtusos y base cuneada o ligeramente cordada; pecíolo de hasta 90 mm de longitud *S. okopanus*

Fitogeografía

Mientras que *S. okopanus* es un endemismo de las lomas costaneras del departamento de Arequipa [CABRERA, *Bol. Soc. Argent. Bot.* 10(1): 36. 1962], *S. icaensis* pertenece a las comunidades de lomas de la península de Ica. Según la tipología fito-

gráfica para el Perú propuesta por GALÁN DE MERA [Arnaldoa 2(2): 49-50. 1994], ambos táxones son endemismos de la provincia Limeño-Aricense (subregión del Desierto Pacífico, región Andina).

Material estudiado

Senecio icaensis H. Beltrán & Galán de Mera

PERÚ: Arequipa, Caravelí, los Cerrillos, al sur de Nazca, Km 500 de la Panamericana S, 23-IX-1958, 650-700 m, *R. Ferreyra* 13445, USM 29344 y 29345.

Senecio okopanus Cabrera

PERÚ: Arequipa, Caravelí, lomas de Cháparra, cerca de Chala, 14-X-1956, flores amarillas, falda arcillosa, 400-500 m, *Ramón Ferreyra* 11975, LP 895424 (*holotypus*). MO 2620097 y USM 34753 (*isotypi*). Arequipa, Caravelí, lomas de Okopa, cerca de Atiquipa, 11-X-1955, flores amarillas, falda de cerro rocoso-arcillosa, 500-600 m, *Ramón Ferreyra* 11466, LP 890997 y 895427, MO 2620096.

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CHEIROLOPHUS MANSANETIANUS STÜBING, PERIS, OLIVARES & MARTÍN, SP. NOV., AND CH. GRANDIFOLIUS (FONT QUER) STÜBING, PERIS, OLIVARES & MARTÍN, COMB. & STAT. NOV. (ASTERACEAE), TWO ENDEMICS FROM SPAIN

Until recently the genus *Cheirolophus* Cass. was believed to be represented (BOLÒS & VIGO, *Fl. dels Països Catalans* 3: 929. 1996) in the oriental part of the Iberian Peninsula and Balearic Islands, only by the species *Cheirolophus intybaceus* (Lam.) Dostal. Last year, however, we described [OLIVARES & al., *Anales Jard. Bot. Madrid* 53(2): 262-265. 1995] *Cheirolophus lagunae* Olivares, Peris, Stübing & Martín, an endemic species present only in some places on the Alicante coast. The preparation of that report led us to the revise a great deal of material labeled in the herbaria as *Cheirolophus intybaceus*. During this process we found samples of populations from coastal areas that are known for their many endemic species, such as the Cabo de Gata (Almería) and the Balearic Islands. Because of the highly peculiar

morphological characteristics of these populations they can, in our opinion, only be considered endemic species. In fact FONT QUER (*Bol. Soc. Esp. Hist. Nat.* 20: 141-159. 1920) gives the variety level for Balearic plants, which he considers different from the plants of the Iberian Peninsula (Oriental Pyrenees, Manresa, Castilla, Valencia, Cabo de Gata, etc.). Like in the Macaronesian territories, where the genus *Cheirolophus* includes a large number of endemic species, this genus is undoubtedly also represented by a considerable number of endemic species in the western Mediterranean, that have not until now been studied. In consequence, to the Alicante endemic *Ch. lagunae*, described recently (OLIVARES & al., *op. cit.*), the following two endemisms must be added:

Cheirolophus grandifolius (Font Quer) Stübing,
Peris, Olivares & Martín, *comb. & stat. nov.*

■ *Centaurea intybacea* Lamk. var. *grandifolia*
Font Quer, Bol. Soc. Esp. Hist. Nat. 20: 153-154
(1920) [basi6n.]

This is a Balearic endemic growing on degraded shrublands in coastal areas of Mallorca (Sierra de Tramuntana), Dragonera, Ibiza and Formentera (BOL6S & VIGO, *op. cit.*). We attach a detailed description that complements the one given by FONT QUER (*op. cit.*).

Caules basi suffrutescentes, 60-90 cm, *ramis erecto-patulis, striatis*. *Folia glabra, inferiora media pinnatolobulata lobulis lanceolato-mucronatis, sublobulis lanceolato-mucronatis vel triangularibus mucronatis; superioribus lineari-lanceolatis plerumque indivisis*. *Rami floriferi apice longe nudi, subaphylli, monocephali, subcapitulo incrassati*. *Involucrum subglobulosum* (1,5 × 1,8 cm), *basi pubescens, squamis ovato-oblongis, nervosis in tertia superiore parte, subapicem subrubrum in anthesi, appendice semilunari, pectinato-ciliata, ciliis* (7)9-11, *sub-*

aequalibus, rectis, adpressis, brevibus, margine ciliolatis. *Corolla purpuras, raro alba*. *Achaenia matura* 5 × 1,5 mm, *glabra, tam apice quam basi fusca*.

Lectotypus: Formentera, La Mola, 11-V-1918, Gros, MA 135142 (plant on the left).

Plant with stems slightly woody at the base, 60-90 cm, erect-spreading, striate. Leaves glabrous, the lower and middle pinnate-lobed with lobes lanceolate-mucronate, sublobes lanceolate-mucronate or triangular-mucronate; the upper linear-lanceolate mostly undivided. Flowering branches mostly without leaves, apical long naked, with a single head, swollen below capitula. Involucre almost globose (1.5 × 1.8 cm), pubescent at the base, scales ovate-oblong, nerved at the upper 1/3, somewhat reddish below the apex at the anthesis, with crescent-shaped appendages, pectinate-ciliate, cilia (7)-9-11, almost equal, straight, appressed, short, with ciliolated margin. Corolla purplish, seldom white. Mature achenia 5 × 1.5 mm, glabrous, blackish brown at the apex and at the base.

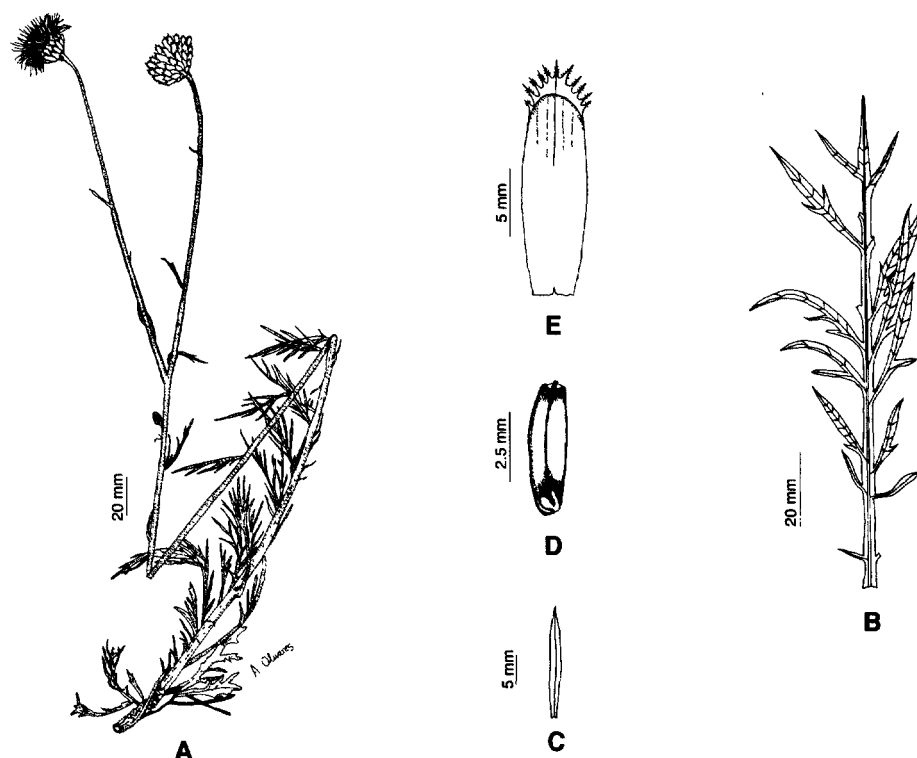


Fig. 1.—*Cheirolophus grandifolius*: A, general aspect; B, basal leaf; C, upper leaf; D, fruit; E, scale.

Cheirolophus mansanetianus Stübing, Peris, Olivares & Martín, sp. nov.

■ *Centaurea intybacea* Lam. var. *longiciliata* Pau in sched. (1902)

This is an endemic of the Cabo de Gata (Almería) growing on degraded shrublands of coastal areas.

Caules basi suffrutescentes, 20-50 cm, *ramis erecto-patulis*. *Folia, inferiora pinnato-lobulata, lobulis lanceolato-mucronatis, sublobulis lanceolato mucronatis vel triangularibus-mucronatis; media pinnato-lobulata, lobulis lanceolato-mucronatis; superiora linear-lanceolata indivisa vel dentata. Rami floriferi apice longe nudi, subaphylli, pleurumque monocephali, sub capitulo incrassati. Involucrum* 0,7-1,5 cm, *squamis ovato-oblongis, nervosis, appendice semilunari, ciliata, ciliis* 8-10, *plerumque longis et patulis. Corollae*

purpurascens. Achaenia matura 5 × 1,5 mm, *nigricantia.*

Holotypus. HS, ALMERÍA: Cabo de Gata, 22-V-1902, C. Pau, MA 135155. (Plant on the left.)

Dedicata doctori Josep Mansanet i Mansanet.

Plant with stems slightly woody at the base, 20-50 cm, erect-spreading. Lower leaves pinnate-lobed with lobes lanceolate-mucronate, sublobes lanceolate-mucronate or triangular; the middle pinnate-lobed with lobes lanceolate-mucronate; the upper linear-lanceolate undivided or toothed. Flowering branches mostly without leaves, apical long naked, with a single head, swollen below capitula. Involucre 0.7-1.5 cm, with scales ovate-oblong, nerved, with crescent-shaped appendages, pectinate-ciliate, cilia 8-10, usually long and spread. Corolla purplish. Mature achenia 5 × 1.5 mm, glabrous, blackish.

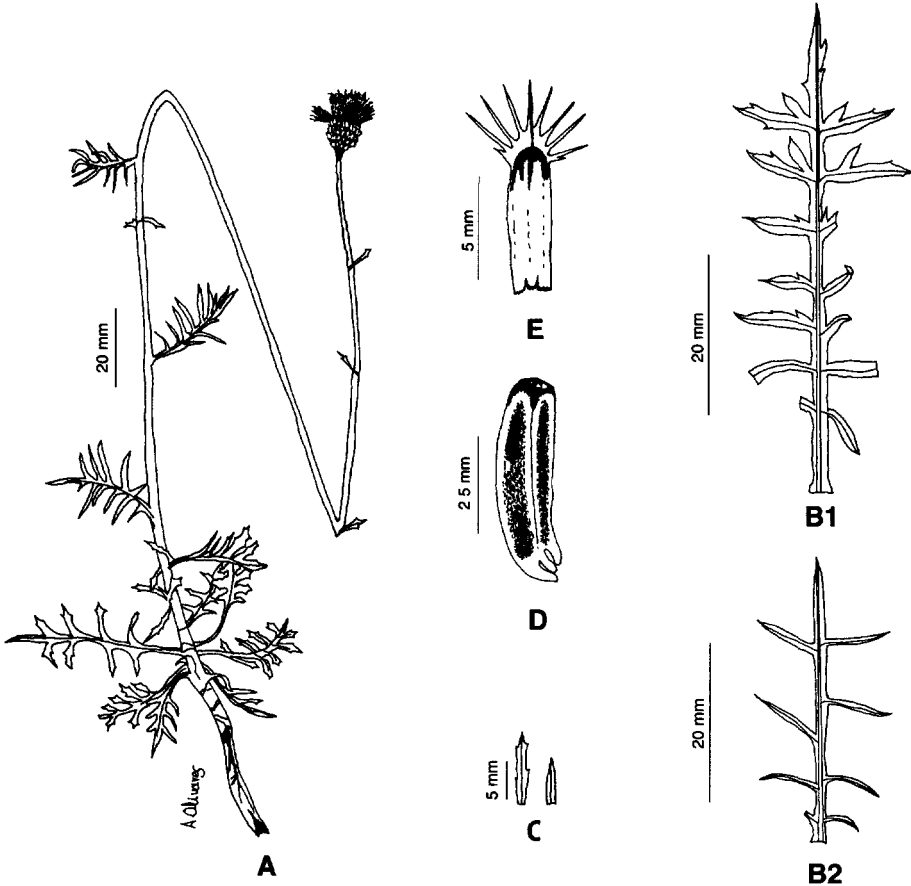


Fig. 2.—*Cheirolophus mansanetianus*: A, general aspect; B1, basal leaf; B2, middle leaf; C, upper leaf; D, fruit; E, scale.

TABLA 1
PALYNOLOGICAL CHARACTERISTICS OF *CHEIROLOPHUS GRANDIFOLIUS*, *CH. MANSANETIANUS*
AND *CH. INTYBACEUS*

	<i>C. grandifolius</i>	<i>C. mansanetianus</i>	<i>C. intybaceus</i>
Form	Prolate-spherical	Prolate-spherical	Prolate-spherical
Aperture system	Tricolporate	Tricolporate	Tricolporate
Polar axis (P); n = 15	48.28-63.89; \bar{x} = 54.50 σ_n = 4.16	51.51-69.27 \bar{x} = 59.94 σ_n = 4.19	45.37-59.23 \bar{x} = 51.22 σ_n = 4.64
Equatorial diameter (E) n = 15	40.82-54.33 \bar{x} = 48.15 σ_n = 3.12	48.24-59.89 \bar{x} = 55.57 σ_n = 3.28	39.36-54.53 \bar{x} = 47.72 σ_n = 3.81
Relation P/E	1.03-1.20 \bar{x} = 1.12 σ_n = 0.04	0.97-1.32 \bar{x} = 1.07 σ_n = 0.09	0.95-1.22 \bar{x} = 1.07 σ_n = 0.007
Ornamentation	Echinate	Echinate	Echinate
Spine length n = 10	2.33-4 \bar{x} = 3.12 σ_n = 0.42	2.5-4.58 \bar{x} = 3.30 σ_n = 0.75	2.16-3.33 \bar{x} = 2.60 σ_n = 0.43
Distance between spines n = 10	2-5.83 \bar{x} = 4.03 σ_n = 1.19	2.5-4.16 \bar{x} = 3.47 σ_n = 0.54	2.16-3.78 \bar{x} = 3.15 σ_n = 0.52
Spine diameter n = 10	3.66-6.33 \bar{x} = 4.48 σ_n = 0.71	4.16-6.66 \bar{x} = 5.25 σ_n = 0.67	3.95-6.35 \bar{x} = 4.6 σ_n = 0.71

TABLA 2
COMPARISON BETWEEN THE PALYNOLOGICAL OF *CHEIROLOPHUS GRANDIFOLIUS*, *CH. MANSANETIANUS*
AND *CH. INTYBACEUS*

	Spine length	Distance between spines	Spine diameter
<i>Ch. grandifolius/Ch. intybaceus</i>	t = 2.82 S	t = 2.27 S	t = 0.38 NS
<i>Ch. mansanetianus/Ch. intybaceus</i>	t = 3.18 S	t = 2.57 S	t = 1.65 NS
<i>Ch. mansanetianus/Ch. grandifolius</i>	t = 0.68 NS	t = 1.44 NS	t = 2.56 S

S, significant difference; NS, non significant difference. According to the Student t statistical analysis.

Relation with other species

A morphological comparison between the different species shows significant differences related to the morphology and size of the leaves, achenia and especially in the involucre scales. These differences are illustrated in the figures 1 and 2 for *Ch. grandifolius* and *Ch. mansanetianus* and in OLIVARES & al. (*op.cit.*) for *Ch. lagunae* and *Ch. intybaceus*.

As in the case of *Ch. lagunae* (OLIVARES & al., *op. cit.*), a palynological study gives significant information on the differences between the four species. However, the form, aperture system, polar axis (P), equatorial diameter (E), P/E relation and ornamentation do not, in general, serve as discriminating elements, while the spine height, distance between spines and spine diameter are useful characteristics for differentiating between *Ch. grandifolius*, *Ch. mansanetianus* and *Ch. intybaceus*. The attached tables (tables 1 and 2)

show that on the basis of the pollen morphology the three compared species are different.

Studied material

Ch. grandifolius. Hs, IBIZA: Isla Formentera, MA 135142. MALLORCA: Mallorca, MA 155646. Isla Dragonera, MA 422186.

Ch. mansanetianus. Hs, ALMERÍA: MA 135154, 492158, 135155.

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